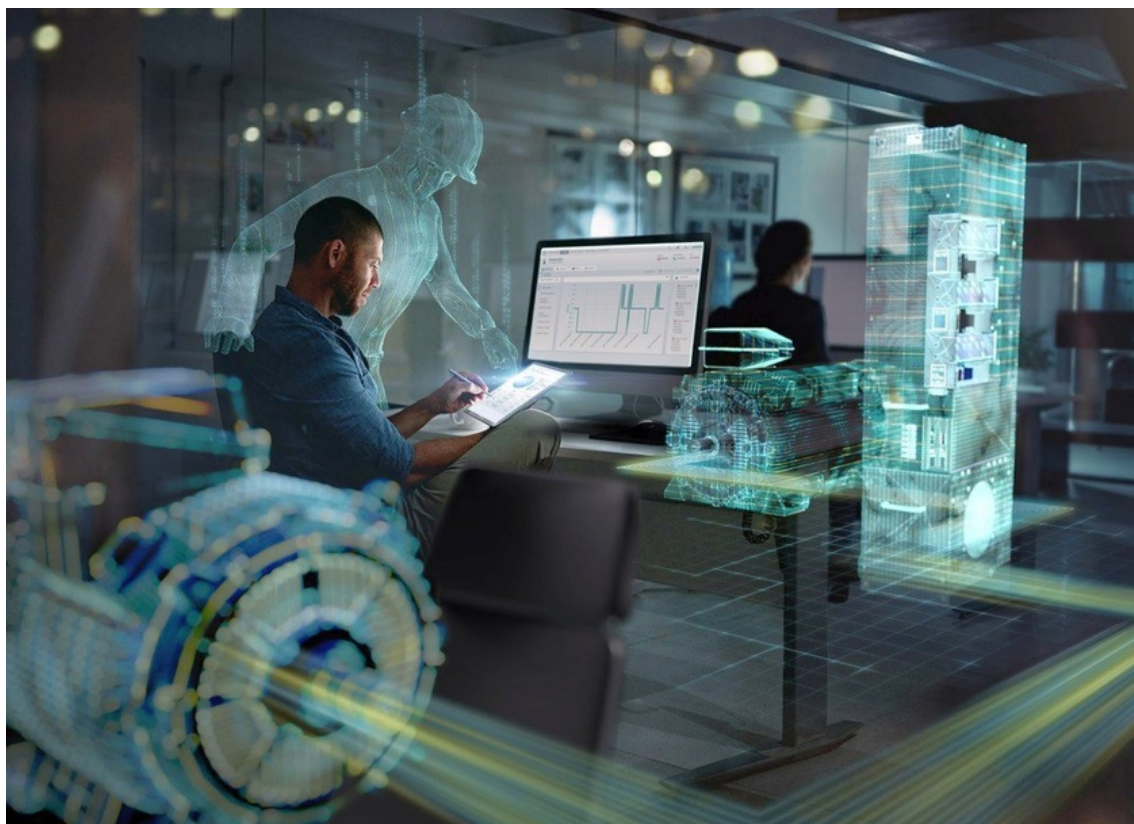


УНИВЕРСИТЕТ БИОТЕХНОЛОГИЙ
ФАКУЛЬТЕТ ЭКОНОМИКИ И УПРАВЛЕНИЯ



**ENGLISH FOR APPLIED COMPUTER SCIENCE AND
BIOINFORMATICS**
Учебно-методическое пособие для магистрантов и аспирантов

НОВОСИБИРСК 2026

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Учебно-методическое пособие предназначено для аудиторной и самостоятельной работы с учебным материалом профессиональной направленности на английском языке. Разделы пособия содержат текстовый материал профессионально-ориентированного характера. Издание призвано помочь студентам сформировать необходимые знания, умения и навыки: умение читать и анализировать тексты на английском языке с целью не только извлечения информации, но и приобретения навыков устной и письменной специализированной коммуникации. Учебный материал пособия может быть использован для аудиторной и самостоятельной работы студентов, а также в качестве заданий для промежуточной и итоговой аттестации по дисциплинам «Иностранный язык», «Иностранный язык в профессиональной деятельности», «Профессиональный иностранный язык» направления подготовки 09.04.03 – Прикладная информатика очной и заочной форм обучения.

Учебно-методическое пособие утверждено и рекомендовано к изданию методическим советом факультета Экономики и управления (протокол № 5 от 20 января 2026 г.).

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ПОЯСНИТЕЛЬНАЯ ЗАПИСКА

Данное учебно-методическое пособие предназначено, прежде всего, для магистров института цифровых технологий по направлению подготовки «Прикладная информатика» очной и заочной форм обучения.

Пособие рассчитано на 40-50 уч. часов аудиторных занятий и 100 часов самостоятельной работы, что соответствует базовым стандартам ФГОС. Издание может быть использовано в научно-исследовательской работе студентов и при подготовке к сдаче итогового экзамена по дисциплине «Профессиональный иностранный язык (английский)».

В основных разделах пособия представлены:

- 1) работа с текстовым материалом профессиональной направленности;
- 2) работа с текстовым материалом делового характера;
- 3) банк текстов профессиональной направленности для изучающего, ознакомительного чтения, подготовки презентаций, рефератов и научных докладов;
- 4) рекомендации и справочный материал для эффективной подготовки профессиональной и научной презентации;
- 5) методические указания по организации самостоятельной работы.

Раздел «Работа с текстовым материалом профессиональной направленности» представлен в 4 учебно-тематических блоках (Units), которые соответствуют уровню языковой подготовки A2-B1. Учебный блок открывается обширным тематическим вокабуляром и заданиями на его освоение. Текст для изучающего чтения каждого блока максимально насыщен специальной лексикой и представляет собой современный контент, отражающий специфику профессиональной деятельности. Текст для изучающего чтения сопровождается послетекстовыми заданиями на понимание содержания и закрепление специальной лексики (Comprehension Check). Завершающая часть блока – это упражнение на устную практику по тематике юнита в форме учебной групповой дискуссии (Speaking Practice). В каждом из блоков предусмотрены задания на самостоятельную работу – упражнения, ориентирующие студента на аналитическую работу с профессиональной лексикой, на поиск дополнительного материала в интернете и создание презентаций на его основе.

Раздел «Работа с текстовым материалом делового характера» содержит учебный материал по деловому английскому языку, который представлен в 4 учебно-тематических блоках и подборке текстов делового характера для перевода и работы со специальной лексикой. Цель раздела – обучить основам делового общения в устной и письменной формах. Тематика блоков определяется ситуацией устройства на работу, которая требует правильного заполнения типовых письменных форм и подготовки к устному собеседованию.

Раздел пособия «Банк текстов профессиональной направленности» представляет собой обширную подборку аутентичных текстов профессиональной тематики. Текстовый банк делится на три тематические части: 1) Applied Computer Science (25 текстов), 2) Business Informatics (25

текстов), 3) Digital Technologies in Agriculture (10 текстов). Представленный в пособии текстовый материал – это современный профессиональный контент, связанный с работой специалиста в области прикладной информатики и биоинформатики. В данном разделе содержатся тексты ознакомительного характера, которые помогут лучше понять роль прикладной и биоинформатики, её место и сферы применения в современном мире. Все три подборки текстов позволяют подробно изучить довольно обширный пласт специальной лексики, описывающий применение прикладной информатики в экономике, технологии отраслевой цифровизации, технологии цифровой трансформации, технологии и приложения интернета вещей, облачные технологии ведения бизнеса, цифровые платформенные решения, цифровизацию промышленности и бизнеса, цифровое мышление, примеры использования цифровых технологий для преобразования сельского хозяйства, автоматизацию предприятий, цифровую независимость промышленной России, применение искусственного интеллекта, машинное обучение и т.п.

Раздел пособия «Банк текстов профессиональной направленности» содержит иллюстрации, которые помогают наглядно представить ряд содержательных аспектов специализированного текстового материала.

Раздел «Инструкция для подготовки устной презентации текстового материала на английском языке» содержит методические рекомендации по общему алгоритму создания устных презентаций. Презентации могут выполняться студентами по текстам, представленным в текстовом банке. В разделе также содержится подробный справочный материал по компьютерным технологиям подготовки докладов и презентаций.

Раздел «Методические рекомендации по организации самостоятельной работы» ставит целью методическое обеспечение процесса самостоятельной работы и самоподготовки студентов. Как правило, самостоятельная работа студентов – это подготовка пересказа, реферата, аннотации, проекта. Подробные рекомендации по подготовке данных видов самостоятельной учебной деятельности представлены в разделе.

Раздел «Постмашинное редактирование перевода текстов профессиональной направленности на базе основных положений теории перевода» содержит основные положения теории перевода, знание которых необходимо для грамотного переводческого анализа текста.

Основные навыки, освоение которых является первоочередной задачей данного пособия:

- навык корректного перевода текстов профессиональной направленности;
- навык академически правильного устного представления/презентации контента профессиональной направленности.
- формирование навыков устной и письменной профессиональной коммуникации.

Таким образом, каждый блок, через тексты и систему упражнений стимулирует интерес обучающихся к научной коммуникации на

иностранном языке, повышает мотивацию к процессу обучения, способствует формированию основных и профессиональных компетенций:

- способность применять иностранный язык в сфере профессиональной деятельности;

- способность к письменной и устной профессиональной коммуникации на иностранном языке;

- способность использовать знание иностранного языка для получения профессиональной информации из иностранных источников.

Пособие может быть использовано в разнообразных условиях учебного процесса для развития базовой коммуникативной компетенции – умения получать, перерабатывать и передавать информацию на иностранном языке.

**РАЗДЕЛ 1. РАБОТА С ТЕКСТОВЫМ МАТЕРИАЛОМ
ПРОФЕССИОНАЛЬНОЙ НАПРАВЛЕННОСТИ**
**Тексты профессиональной направленности с практическими
заданиями по инженерным направлениям подготовки**

Unit 1. APPLIED COMPUTER SCIENCE

Exercise 1. Read and memorize the words and word combinations.

1. applied computer science прикладная информатика
2. software программное обеспечение (ПО), компьютерные программы, «софт»
3. hardware (HW) аппаратные средства, аппаратура, оборудование, хардвер, «железо»
4. process data обрабатывать данные
5. fundamentals основы, основные положения
6. field of study область исследований, область изучения
7. career opportunities перспективы карьерного роста
8. education образование; обучение, подготовка
9. requirements требования, необходимые условия
10. networking организация сетей; объединение в сеть; подключение к сети; работа в сети; использование сетей
11. data mining (DM) интеллектуальный анализ данных, извлечение информации из данных
12. artificial intelligence искусственный интеллект
13. machine learning устройство со средствами самообучения, обучение машин
14. computer vision (CV, computational vision) машинное зрение, техническое зрение
15. natural language processing обработка текстов (написанных) на естественных языках, обработка с использованием естественного языка
16. robotics робототехника
17. healthcare здравоохранение, медицинское обслуживание
18. dataset набор данных
19. facial recognition technology технология распознавания лиц
20. financial forecast финансовый прогноз
21. software engineer (SE) инженер-программист; программист-системотехник; системный программист

Exercise 2. Read and translate Text 1.

**Text 1. Exploring Applied Computer Science: An Introduction to the
Different Fields and Career Opportunities**

Source: <https://www.tffn.net/what-is-applied-computer-science/>

Introduction

Applied computer science is the study of the application of computer science principles and concepts to solve real-world problems. It involves the use of computers, software, and hardware to analyze and process data, create solutions, and

automate processes. Applied computer science can be used in a variety of fields, such as business, healthcare, engineering, and more.

In this article, we will explore the fundamentals of applied computer science, its uses and benefits, the different fields of study, the career opportunities available, the role it plays in modern society, the education requirements necessary, and the impact it has on everyday life.

Exploring the Fundamentals of Applied Computer Science

At its core, applied computer science is the study of using computers and their related technologies to solve real-world problems. This requires an understanding of the basic concepts and principles of computer science, such as algorithms, programming languages, operating systems, and networking.

The various applications of computer science include data mining, artificial intelligence, machine learning, computer vision, natural language processing, and robotics. These areas involve the use of computers to analyze and process data, create solutions, and automate processes.

Examining the Uses and Benefits of Applied Computer Science

Applied computer science has many advantages. It can be used to improve efficiency and accuracy in a wide range of sectors, including healthcare, finance, engineering, and manufacturing. For example, computer vision technology can be used to detect anomalies in medical images, while natural language processing can be used to automatically generate insights from large datasets.

In addition, applied computer science can be used in everyday life. For instance, facial recognition technology can be used to unlock smartphones, while voice recognition technology can be used to control smart home devices. Furthermore, machine learning algorithms can be used to recommend products and services based on user preferences.

Investigating the Different Fields of Applied Computer Science

Applied computer science can be found in a variety of fields, including business, healthcare, engineering, and more. In business, computer science is used to develop software applications, automate processes, and analyze customer data. In healthcare, computer science is used to create medical imaging systems and analyze patient records. In engineering, computer science is used to design and simulate complex systems.

Additionally, there are numerous research opportunities available in this field. For example, researchers are exploring the potential of artificial intelligence for medical diagnostics, autonomous vehicles, and financial forecasting.

Highlighting the Career Opportunities in Applied Computer Science

A career in applied computer science can be highly rewarding. Popular job roles include software engineer, data scientist, machine learning engineer, and computer vision engineer. The salary range varies depending on the position and experience level, but salaries tend to be higher than average.

A Look at the Education Requirements for Applied Computer Science

To pursue a degree or certification in applied computer science, individuals need to complete courses in mathematics, computer science, and programming.

Additionally, some employers may require candidates to possess certifications in specific areas, such as machine learning or artificial intelligence.

Understanding the Impact of Applied Computer Science on Everyday Life

Applied computer science has had a profound impact on our everyday lives. From facial recognition technology to voice recognition technology, computer science is enabling us to do things that were once thought impossible. Additionally, machine learning algorithms are being used to make predictions and recommendations based on user data.

Looking ahead, the potential uses of computer science are limitless. We can expect to see more advances in healthcare, finance, transportation, and other industries, as well as more applications in our everyday lives.

Conclusion

In conclusion, applied computer science is a rapidly growing field with vast potential. It involves the use of computers and their related technologies to solve real-world problems. It has many advantages, such as improved efficiency and accuracy, and can be found in a variety of fields, such as business, healthcare, and engineering. Additionally, there are numerous career opportunities available in this field, with salaries typically higher than average. Finally, applied computer science plays an important role in modern society and has had a profound impact on our everyday lives.

Exercise 3. Answer the questions.

1. What is applied computer science?
2. What do the applications of computer science include?
3. Which sectors of a country's economy can it be used in?
4. How can applied computer science be used in everyday life?
5. What examples of its use in different fields can you give?
6. What research opportunities are available in this field?
7. What are career opportunities?
8. What does the salary depend on?
9. What are the educational requirements for applied computer science?
10. What impact has applied computer science had on our everyday lives?

Exercise 4. Read about the Role of Applied Computer Science in Modern Society and complete the gaps (1-5) with the words given in the box.

Artificial, language, science, automate, efficiency

Information source: <https://www.tffn.net/what-is-applied-computer-science/>

Applied computer 1) ... plays an important role in modern society. Businesses and organizations rely on computer science to improve 2) ..., reduce costs, and stay competitive. Additionally, advances in this field have the potential to revolutionize industries and create new opportunities.

For example, 3) ... intelligence and machine learning are being used to 4) ... processes, predict customer behavior, and improve operational efficiency. Simi-

larly, computer vision and natural 5) ... processing are being used to analyze images and text, respectively.

Exercise 5. Match the questions about Applied Computer Science (1-5) with the appropriate answers (a-e).

Information source: <https://www.livelaptopspec.com/what-does-applied-computer-science-mean/>

1. What does applied computer science mean?	a. It can be rather hard to learn. The field requires a deep understanding of difficult topics like computer technology, software, and statistical algorithms. However, with enough time and motivation, anyone can succeed in a challenging field like computer science.
2. What does applied computer science major offer?	b. Computer scientists work with computational theories, powerful algorithms, and mathematical models which are used to develop software programmes and systems. Computer engineers, on the other hand, develop the hardware and firmware on which software and systems run.
3. How hard is applied computer science?	c. Applied computer science degrees mean new programs, created in response to recent employer demand for a business-focused IT professional. The applied program emphasizes using computer science theories and skills in a work setting to drive business decisions and operations.
4. Is applied computer science same as computer engineering?	d. Yes, it is. Because of the technical expertise and professional skills required of today's IT professionals, more and more employers are looking for IT candidates with bachelor's degrees. Candidates with an applied computing degree are especially valuable because they're skilled IT generalists.
5. Is applied computer science promising?	e. The Applied Computer Science major provides students with the knowledge and skills needed to pursue successful careers in fields such as software development, network administration, mobile computing, and website design.

Exercise 6. Discuss the following points.

1. Why is applied computer science regarded as a rapidly growing field with vast potential?
2. What advantages does it have?
3. What career opportunities are available in this field in Russia?
4. Does applied computer science play an important role in modern society?
5. Has it had a profound impact on our everyday lives?

Exercise 7. Search the Web for different fields of applied computer science in Russia. Make a presentation.

Exercise 8. Look through Unit 1 again. Make a list of the words and word combinations you consider to be the terms. Translate them into Russian.

Unit 2. INFORMATION TECHNOLOGIES ON SOCIETY AND BUSINESS

Exercise 1. Read and memorize the words and word combinations.

1. information technology (IT) информационная технология
2. digital data дискретные данные, цифровые данные
3. impact импульс; воздействие, влияние; эффект
4. connectivity возможность подключения; возможность связи; возможность соединения
5. online banking банковское обслуживание через интернет; онлайн-банкинг
6. cost saving экономия в расходах
7. social media социальные медиа вебсайты и приложения, используемые для построения социальных сетей
8. search engine поисковая система, поисковая служба, поисковый механизм
9. e-commerce = ecommerce, eCommerce, electronic commerce электронная торговля, электронная коммерция
10. revenue доход; выручка
11. big data большие данные
12. scalability расширяемость, масштабируемость

Exercise 2. Read and translate Text 1.

Text 1. Exploring the Impact of Information Technologies on Society and Business

Source: <https://www.tffn.net/what-are-information-technologies/>

Introduction

Information technologies (IT) are tools that enable people to store, access, and manipulate digital data. This includes computers, networks, software, and other forms of technology. IT has revolutionized the way we communicate, work, and do business, and its impact is felt in virtually every industry and sector of society. In this article, we will explore the impact of information technologies on society and business, as well as provide a guide to understanding the basics of IT.

Exploring the Impact of Information Technologies on Society

The widespread adoption of information technologies has had a profound impact on society. One of the most significant impacts is increased connectivity. With the advent of the internet and mobile devices, it is now easier than ever to stay connected with people around the world. According to a study by the Pew Research Center, 80% of Americans use the internet, and 77% own a smartphone. This increased connectivity has enabled people to easily access and share information, which has led to greater collaboration and innovation.

Another major impact of information technologies is improved efficiency. With the help of IT, tasks can be completed faster and more accurately. For example, automated processes such as online banking and online shopping have made it easier and faster to complete everyday tasks. Additionally, IT has enabled businesses to streamline their operations, leading to increased productivity and cost savings.

Finally, IT has opened up new opportunities for businesses. Companies can now reach new customers through digital channels such as social media, search engines, and e-commerce platforms. This has enabled businesses to expand their customer base and increase their revenue. Additionally, IT has enabled businesses to automate processes and optimize operations, leading to increased efficiency and cost savings.

How Information Technologies are Shaping the Future of Business

As business become increasingly digital, IT is playing an increasingly important role in shaping the future of business. Automation is one of the most important trends in IT, as it enables businesses to automate mundane tasks and free up employees to focus on more productive activities. Additionally, big data and analytics are becoming increasingly important, as they enable businesses to make better decisions based on real-time insights. Finally, cloud computing is becoming increasingly popular, as it enables businesses to quickly and easily access data and applications from anywhere in the world.

A Guide to Understanding the Basics of Information Technologies

Understanding the basics of information technologies is essential for businesses looking to take advantage of the latest trends. There are many different types of IT, including hardware, software, networks, and databases. Each type of IT has its own benefits and limitations, so it is important to understand the basics of each type before making any decisions.

Hardware refers to physical devices such as computers, servers, and printers. Software consists of instructions that tell a computer or device what to do. Networks connect multiple computers and devices together. And databases store and organize large amounts of data.

Each type of IT has its own advantages and disadvantages. Hardware is generally expensive and difficult to maintain, while software is usually cheaper and easier to maintain. Networks require a lot of upfront investment, but can pay off in the long run. And databases are typically more reliable and secure than other types of IT.

A Comparison of Different Information Technologies

When choosing the right IT for your business, it is important to compare different types of IT. A good comparison should consider factors such as cost, ease of use, scalability, and security. Additionally, it is important to consider the specific needs of your business and the type of data you need to store and access.

For example, if you need to access and store large amounts of data, then a database may be the best option. If you need to quickly access data from multiple locations, then a network may be the better choice. And if you want to automate certain processes, then software may be the best option.

Conclusion

In conclusion, information technologies have had a profound impact on society and business. They have enabled increased connectivity, improved efficiency, and new opportunities for businesses. Additionally, IT is helping to shape the future of business, as automation, big data, and cloud computing become increasingly important. Finally, businesses should understand the basics of IT and compare different types of IT before making any decisions. While IT can bring many benefits, it is important to consider the potential risks and challenges before investing in IT. Overall, IT is transforming the way we live, work, and do business. As the world continues to become more connected and digital, IT will continue to play an increasingly important role in our lives.

Exercise 3. Answer the questions.

1. What are information technologies?
2. What impact do information technologies have on society?
3. How are information technologies shaping the future of business?
4. What types of IT can you name?
5. What are the benefits and limitations of each type of IT?
6. Why is it important to compare different types of IT when choosing the right IT for your business?

Exercise 4. Read about the Pros and Cons of Information Technologies and complete the gaps (1-5) with the words given in the box.

Reduce, data, maintain, automated, disadvantages
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Information source: <https://www.tffn.net/what-are-information-technologies/>

It is important to consider the advantages and 1) ... of information technologies before making any decisions. On the one hand, IT can increase efficiency, 2) ... costs, and open up new opportunities for businesses. On the other hand, IT can be expensive to implement and 3) ..., and there is always the risk of data breaches or other security issues.

Additionally, IT can lead to job losses, as some tasks can be 4) This can be especially problematic in industries where jobs are already scarce. However, it is important to note that new jobs are being created in fields such as cyber security and 5) ... analytics.

Exercise 5. Match the questions about the ways computer science relates to economics and economy (1-5) with the appropriate answers (a-e).

Information source: <https://www.livelaptopspec.com/how-is-computer-science-used-in-economics/>

1. How is computer science used in economics?	a. One main reason for the use of computers in economic analysis and forecasting is the widespread availability of in expense, convenient microcomputers. For a small investment of time and effort one can now, perform various financial analyses more easily and quickly. The end result is increased productivity.
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2. How does computer science relate to economics?	b. The technologies that are needed to support electronic commerce include the network infrastructure (Internet, intranets, extranets), software tools for web site development and maintenance, secure ordering and payment methods, and resources for information sharing, communication and collaboration.
3. How are computers used in the economy?	c. One of the examples is economic forecasting computers. They are used in the creation of complex forecasting models. As in computational finance, computer simulations and models can be used to predict how markets will change.
4. What are the uses of computer applications in electronic commerce?	d. E-commerce based on computer technology and network technology runs through every aspect of network consumption interaction and can offer all-round services including web browsing, internet payment and network management, and both of its merchant's selling experience and buyer's shopping.
5. How computer can be useful in the field of e-commerce?	e. Economists, who study systems of rational agents, are inspired by and collaborate with computer scientists, who design and implement systems of automated agents, drawing on techniques and insights from game theory, mechanism design, and artificial intelligence, among other areas, she explained.

Exercise 6. Discuss the following points.

1. Have information technologies had a profound impact on society and business in Russia?
2. Do automation, big data, and cloud computing become increasingly important?
3. Why should businesses understand the basics of IT and compare different types of IT before making any decisions?
4. What benefits can IT bring?
5. What potential risks and challenges should be considered before investing in IT?

Exercise 7. Search the Web on how IT is transforming the way we live, work, and do business in Russia. Make a presentation.

Exercise 8. Look through Unit 2 again. Make a list of the words and word combinations you consider to be the terms. Translate them into Russian.

Unit 3. BUSINESS INFORMATICS

Exercise 1. Read and memorize the words and word combinations.

1. business informatics (BI) бизнес-информатика
2. business administration ведение дел (фирмы и т.п.)
3. accounting бухгалтерское дело; бухгалтерский учёт

4. internal audit внутренний аудит; внутренняя ревизия
5. enterprise (промышленное) предприятие (фабрика, завод); фирма, компания
6. foreign languages иностранные языки
7. law право; правоведение, законоведение, юриспруденция
8. taxation налогообложение
9. e-business = electronic business интернет-бизнес, электронный бизнес, интернет-компания, дот-ком (фирма, ведущая бизнес в интернете)
10. content management (CM) управление контентом, контент-менеджмент
11. networking technologies сетевые технологии
12. web programming веб-программирование, программирование для Web
13. advertising рекламная деятельность, рекламный бизнес
14. internship интернатура; стажировка, учебная практика
15. state-owned enterprise государственное предприятие
16. local government местные органы власти, местные органы самоуправления
17. state bodies органы государственной власти
18. research научно-исследовательская работа
19. commerce торговля, коммерция
20. management consulting консультативные услуги в области управления

Exercise 2. Read and translate Text 1.

Text 1. What Is Business Informatics?

Sources: <https://en.periodicalfinance.com/10786835-what-is-business-informatics>, [https://en.wikipedia.org/wiki/Business_informatics#:~:text=Business%20informatics%20\(BI\)%20is%20a,creating%20programming%20and%20equipment%20frameworks](https://en.wikipedia.org/wiki/Business_informatics#:~:text=Business%20informatics%20(BI)%20is%20a,creating%20programming%20and%20equipment%20frameworks), <https://eng.rudn.ru/education/educational-programs/16771?tab=493>, <http://www.ef.uni-lj.si/graduate/busifno>

Introduction

Business informatics (BI) is one of the latest scientific approaches to the construction and application of information and communication systems in business processes. This direction is built at the junction of several scientific disciplines: informatics, economics and management.

BI is a discipline combining economics, the economics of digitization, business administration, accounting, internal auditing, information technology (IT), and concepts of computer science. Business informatics centers around creating programming and equipment frameworks which ultimately provide the organization with effective operation based on information technology application. The focus on programming and equipment boosts the value of the analysis of economics and information technology.

The BI discipline was created and began to be taught in Germany. Currently, it is an established academic discipline, including Bachelor's, Master's, diploma

and PhD programs in Austria, Belgium, France, Hungary, Ireland, the Netherlands, Russia, Slovakia, Sweden, Switzerland, Turkey and the USA.

In the learning process, students master economics, computer science, information management, mathematics and statistics. Get practical skills in programming and design.

Business Informatics Educational Program

Business informatics specialists' professional activities are aimed towards development and application of information technologies and mathematical methods for solving business analysis problems in order to seek possible solutions (including managerial ones) for the development and optimization of business processes in an organization. Business Informatics specialists are engaged in developing architecture of an enterprise, managing integration projects, building models of an enterprise in terms of data, applications, and infrastructure; analyzing and modeling business processes in order to further implement information systems.



Image source: <http://www.ef.uni-lj.si/graduate/busifno>

History of Business Informatics

With the development of world globalization, with the widespread introduction of information technologies, the management of enterprises and industries required the introduction of new rules for doing business and new approaches to enterprise management. The level of training, the lack of specialists well versed in economics, computer science and management led to failure in attempts to create corporate information systems.

As a rule, many specialists either had excellent knowledge of IT, but little knowledge of management and economics, or vice versa. The creation of business informatics made it possible to obtain professionals with complex and harmoniously formed knowledge in economics, management, in the field of law, programming, implementation and management of IT systems.

Business Informatics Disciplines

The specialty Business Informatics is new for Russian universities. But thanks to the experience of foreign universities, our higher educational institutions have formed excellent curricula at the level of foreign educational standards.

The educational process includes the following blocks of disciplines:

1. Socio-economic disciplines (foreign languages, law, economics, management, marketing, accounting and taxation).
2. Natural sciences (mathematics, computer science, programming).
3. Profile disciplines (e-business, content management, business communications, enterprise management).
4. Special disciplines (network technologies, multimedia technologies, web programming, network advertising and marketing, IT strategies)

Practice and Employment, Career Prospects

Many leading domestic and foreign companies are interested in business informatics specialists. Therefore, even at the stage of the educational process, Microsoft, IBM, SAP, 1C, Intersoft Lab are invited to their practice. In some universities there is an opportunity to do internships abroad.

The demand for business informatics professionals is growing by an average of 25%, or 10,000 people per year. Therefore, graduates do not have any difficulties in getting a job in their specialty. They find jobs not only in private, but also in state-owned enterprises, institutions, local governments and state bodies.

Specialists in business informatics can work both in research and in commerce. In business, there are various uses, which may vary depending on professional experience. Bachelor graduates with a degree in Business Informatics can build their careers both as developers of specialized software, specialists in the development and implementation of information systems for various purposes, and in the management of IT sectors of enterprises, IT project managers, IT consultants in the area of information communications and intellectual systems. Other fields of employment may include: management consulting, information technology consulting, IT account manager, system analysis and organization, business analyst, IT auditor, solution architect and enterprise architect.

Possible jobs in Russia: a business analyst, an information system specialist, an IT project manager, a software developer, and a system analyst.

Possible employers: domestic and foreign companies, the banking sector, analytical and IT departments of state corporations and IT companies.

Exercise 3. Answer the questions.

1. What is business informatics?
2. What are the main characteristics of the BI educational program?
3. Where was the BI discipline created?
4. What blocks of disciplines does Business Informatics include in Russian universities?
5. Which companies invite student to have the practice?
6. Which enterprises can graduates work for?
7. What fields of employment can you name?

Exercise 4. Read about Business Informatics Bachelor's Degree program at the University of Vienna and complete the gaps (1-5) with the words given in the box.

Informatics, focuses, business, held, computer
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Information source: <https://studieren.univie.ac.at/en/bachelordiploma-programmes/business-informatics-bachelor-with-entrance-exam-procedure/>

The bachelor's programme in Business 1) ... prepares students to deal with the organisation of operational and institutional information and decision-making structures. Business informatics uses 2) ... administration models and descriptions, as well as techniques and procedures from the area of 3) ... science. The bachelor's programme 4) ... on algorithmic modelling and an IT-specific approach to economic questions. Some courses are 5) ... in English. Business informatics deals with the utilisation, design and development of information and communication systems and their implementation in companies.

Exercise 5. Match the questions about Business Informatics (1-5) with the appropriate answers (a-e).

*Information sources: <https://computing.louisiana.edu>,
https://en.wikipedia.org/wiki/Business_informatics, <https://ischool.sjsu.edu>,
<https://www.hs-bremerhaven.de/en/study/study-programmes/winif>,
<http://www.ef.uni-lj.si/graduate/busifno>*

1. What is meant by business informatics?	a. Development of business applications in interdisciplinary projects. The main task of business informatics graduates is to design, introduce and support business application systems tailored to production companies, service companies or public administration.
2. Is business informatics the same as business analytics?	b. Business Informatics and Business Analysis are two distinct but closely related fields within the broader domain of business and information technology. While they both play crucial roles in improving business processes and decision-making, they have different focuses and objectives.

3. What are the tasks of business informatics?	c. In the Business Informatics programme, students acquire knowledge in the field of digital transformation, business processes, business data analytics, business software solutions, digital business and innovation, information systems management, developing and introducing information systems and IT projects, as well as broader business knowledge. During the last improvement of the programme, we especially strengthened the field of business analytics and the field of digital business and innovation, as there is a great demand in the market for people with such knowledge.
4. What knowledge will students gain?	d. You will be qualified to work in various fields in companies and public sector organizations in Slovenia and abroad, especially for professional management of sectors and departments for IT or digitization, management of IT related projects, consulting and marketing in the field of digital transformation and information systems development, business process change, analyzing information needs, building and using business intelligence and analytics systems, and ensuring security and quality in the field of informatics.
5. What could be your future in this area?	e. The field of business informatics explores the interplay between technology, business, and society. Business informatics utilizes information management tools for the processing, management, and analysis of data that relates to business.

Exercise 6. Discuss the following points.

1. What do students of Business Informatics study?
2. What career opportunities are available in this field in Russia?

Exercise 7. Search the Web for any information related to Business Informatics in Russia. Make a presentation.

Exercise 8. Look through Unit 3 again. Make a list of the words and word combinations you consider to be the terms. Translate them into Russian.

Unit 4. ECONOMETRICS

Exercise 1. Read and memorize the words and word combinations.

1. happen случаться, происходить
2. cause быть причиной, вызывать
3. useful полезный
4. science наука
5. empirical полученный опытным путём
6. evidence доказательство
7. measure измерять

8. gather/collect evidence собирать доказательства
9. econometrics эконометрия
10. find out выяснять, узнавать
11. earn зарабатывать
12. income доход
13. amount количество
14. value ценность
15. differ различаться
16. variable переменная величина
17. change менять
18. dependent on зависимый от
19. time-series analysis анализ временных рядов
20. cross-sectional analysis структурный анализ
21. salary зарплата
22. increase повышать
23. compare сравнивать
24. panel data данные многомерного временного ряда
25. government правительство
26. survey исследование, обзор

Exercise 2. Choose the correct word.

1. Prices usually *increase* / *save* from one year to the next.
2. People work in order to *measure* / *to earn* money.
3. My grandmother's only *income* / *salary* is her pension.
4. Einstein is famous for his *theory* / *analysis* of relativity.
5. The police search for *evidence* / *variables* to help them find the criminal.
6. If you *increase* / *combine* blue with red you get purple.
7. Government *statistics* / *evidence* show that crime is rising.
8. People *save* / *increase* their money in bank accounts.
9. You can use a ruler *to measure* / *to earn* the size of things.
10. A person's *income* / *salary* is the money they earn each month from work.
11. His *theory* / *analysis* of the problem is very good.
12. In experiments, scientists try to find out what makes *a variable* / *evidence* change.
13. An expert in a subject who works and teaches at a university is known as *an individual* / *an academic*.

Exercise 3. Complete the sentences with the words from the box.

Salary, measured, surveys, happened, changed, increased, income, government, evidence, value, useful, earns, dependent, caused
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1. The ... government has announced to increase the minimum wage next year.
2. The photographs are of great historical

3. She's on quite a good ... in her present job.
4. Brazil ... many millions of dollars a year from coffee exports.
5. I could tell from her face that something terrible
6. The organization of a society is largely ... on its economic system.
7. The ... of the students differ significantly.
8. The difficult driving conditions several ... accidents.
9. The town has ... from a small fishing port to an amazing tourist attraction.
10. Our costs ... dramatically over the last decade.
11. Success isn't ... by how much money you have.
12. The Internet is a ... resource of information.
13. This theory needs to be backed up with serious empirical
14. The report shows that poor families spend a larger proportion of their ... on food.

Exercise 4. Read and translate Text 1.

Text 1. Econometrics

Source: <https://studfile.net/preview/2181275/>

Economists like to make theories. They theories about why inflation happens, for example, or what causes unemployment. But theories are not useful if you cannot test them. This is true for all sciences, and the same for economics.

To test a theory, you first need to gather what scientists call empirical evidence. That's evidence that can be measured, like money spent or babies born. When you have collected the evidence, you're ready to do the maths and statistics to test your theory. Economists call their maths econometrics.

Let's take an example. Imagine that you want to find out why some people save more money than others. You may think that this depends on two things: how much money they earn (their income) and how happy they generally are about saving money. We can express your theory as an econometric formula:

amount someone saves = their income X their happiness to save

Of course, we can't measure happiness to save exactly, but we can give it a value. Then we can see how that value differs between groups of people or cultures. Econometrics is about finding relationships between variables – in other words relationships between values that change. Economists try to find out if variable A changes every time value B changes. They want to find out if variable A is dependent on variable B. This is called analysis, and there are two main kinds of econometric analysis: time-series analysis and cross-sectional analysis.

Time-series analysis shows how variables change over a period of time. How salaries increased over the last century, for example. Cross-sectional analysis compares variables at one point in time. The salaries of men compared to women right now, for example. Of course, economists like to make things more complicated than that. Sometimes they combine cross-sectional with time-series analysis, and this is called panel data analysis.

As we said earlier, econometrics is good for testing economic theories. However, there is also a practical side to econometrics. The same maths and

statistics are used by governments and business managers, as well as academics. Econometrics can help governments and companies find out how well they are doing. With the data from all this mathematics, they can make better decisions and plan better for the future.

Exercise 5. Read text 1 and choose the best answer A, B or C to complete each sentence.

1. *A theory is only good if you can ...*
 - A. express it clearly.
 - B. test it.
 - C. measure it.
2. *Empirical evidence is evidence that ...*
 - A. we can see.
 - B. economists can't use.
 - C. can be measured.
3. *Econometrics is ...*
 - A. the maths that economists use.
 - B. a way to measure how much someone saves.
 - C. a formula to find out why people save.
4. *Panel data analysis ...*
 - A. only shows differences over time.
 - B. only shows differences between groups.
 - C. shows differences between groups and changes over time.
5. *Econometrics is ...*
 - A. only good for proving theories.
 - B. good for making practical economic decisions.
 - C. only good for academic work.

Exercise 6. Answer the questions.

1. What theories do economists make?
2. Are all theories useful?
3. What should you do to test a theory?
4. What is empirical evidence?
5. What is econometrics?
6. What do economists do with the things they can't measure?
7. What relationships does econometrics find?
8. What is a variable?
9. How many types of analysis are there in econometrics?
10. What does time-series analysis show?
11. What does cross-sectional analysis show?
12. What is panel-data analysis?
13. Who can use econometrics?
14. What practical value does econometrics have?

Exercise 7. Discuss with your partner how you spend your pocket money. Tell the group what you have found out about your partner's spending habits.

- first talk about things you spend your pocket money on;
- next give examples of things your group mate buys with their pocket money;
- finally compare your expenses by saying who spends more and why this happens.

Exercise 8. Write a survey about your group's spending habits. Write four paragraphs. In the first paragraph introduce the subject. In the second paragraph describe what and how much pocket money you spend. In the third paragraph describe your groupmates' spending habits. In the fourth paragraph make a conclusion.

Exercise 9. Translate the text from Russian into English.

Эконометрика – это наука, изучающая конкретные количественные и качественные взаимосвязи экономических объектов и процессов с помощью математических и статистических методов и моделей. Эконометрические методы – это, прежде всего, методы статистического анализа конкретных экономических данных. В настоящее время эконометрика широко использует компьютерные технологии. Именно в России создана наиболее мощная научная школа в области основы эконометрики – теории вероятности. Вместе с тем в зарубежной эконометрике активно используются альтернативные теории вероятности.

РАЗДЕЛ 2. BUSINESS ENGLISH

2.1. Тексты делового характера для изучающего чтения и пересказа

UNIT 1. Applying for a Job

Text 1. Applying for a Job, Recommending for a Job

1. *Read and translate the text using a dictionary.*

When you request employment (= apply for a job), your primary objective is to interest a prospective employer enough so that he/ she will schedule interview with you.

This can be done by sending an application form or a letter of application to the prospective employer. Applications for jobs are most often made in form provided by the commercial organization or the manufacture company to which the application is being made. For more senior appointments, however, applicants are often expected to write a letter which contains all the relevant information about the training, qualifications, reasons for applying and so on. Before you write a letter of application you will have to collect all the information you will need for your letter education, previous employment, employer, dates, etc.

Normally your letter of application presents not only your qualifications but your interest in a specific job. Include the exact job title, use a standard area titles such as 'finance', 'sales' or 'research'. Include the field you were trained in. This is especially applicable to those in technical fields. It is especially important to include the functional area of the company where you want to work. Examples of these company divisions are: 'research and development', 'production', 'marketing and sales', 'administration and finance'.

Begin your letter by stating the subject of the letter, which job you are applying for and where you heard about it – in a newspaper, in a journal, from the employment agency, from a friend. End your introduction with a statement of your ability to do the job.

The body of your letter should provide the information that will convince your reader of your qualifications. Mention any relevant courses you took and any pertinent job experience. Take care to refer to any specific information mentioned in the advertisement.

Above all, emphasize your 'strengths' (strong points). If you are applying for a sales job, for example, you'd better stress your ability to communicate effectively, not your limited experience. If you have special skills or training, such as word processing, be sure to mention it.

Conclude your letter of application by referring to your resume (curriculum vitae – BrE). State that you are available for interview, list any dates on which you cannot be available. As always, your letter must be smooth, natural and free of errors.

2. Match the following words with their meaning.

1) to request	а) главная задача/цель
---------------	------------------------

employment	
2) employer	b) опыт
3) previous employment	c) запланировать собеседование
4) relevant	d) анкета
5) standard area title	e) гладкий и естественный (о стиле письма)
6) to convince	f) значимый/значительный
7) strong points	g) руководящая должность
8) primary objective	h) работодатель
9) company division	i) иметь возможность прийти на собеседование
10) application form	j) обращаться с просьбой о приёме на работу
11) to schedule interview	k) прежнее место работы
12) body of a letter	l) стандартное название сферы деятельности
13) senior appointment	m) сильные стороны
14) experience	n) основная часть письма
15) available for interview	o) убедить
16) smooth and natural	p) подразделение компании

3. Complete the sentences with the prepositions given in the box.

3.1. Read and translate the application letter.

3.2. Fill in each blank in the application letter with a preposition from the following list:

With, in, for, at, of

Dear Sir,

I am interested 1) ... applying 2) ... the post of Marketing Manager 3) ... your company.

The vacancy was advertised in last week's 'Evening News' and I hope it is not too late to apply 4) ... the position.

I am at present working as Assistant Marketing Manager 5) ... Yorkshire Engineers, Ltd. My duties and responsibilities include all types of administrative work, drawing up marketing plans, product development, organizing and directing the presentation 6) ... goods, working 7) ... clients and solving problems that arise.

Although I enjoy working 8) ... Yorkshire Engineers and have an excellent relationship 9) ... my present employers, I feel that 10) ... this stage 11) ... my career I would like more responsibility and greater scope 12) ... putting into effect some of the up-to-date ideas that are now being developed and applied 13) ... marketing. I also feel that my prospects 14) ... promotion are limited and that there would be more scope 15) ... my skills and talents if I join a larger, more dynamic company.

I have strong communication and leadership skills, I have proven experience 16) ... leading groups and working 17) ... the public, I have all assets that are helpful 18) ... marketing management I enclose my resume 19) ... your convenience and the names of two people who are prepared to act as my referees.

If you consider that my qualifications and experience are suitable 20) ...

filling in this vacancy, I would be available 21) ... interview 22) ... any time.

Yours sincerely,

Robert Dean

4. Match the jobs and professions in list 2 to the activities in list 1. Make up sentences according to the model:

e.g. A manager is a man who conducts and controls a business.

List 1 – activity:

1. coordinating the activities of lower-level managers in promoting goods and services;
2. producing brochures and leaflets when making something for sale known to the public;
3. prescribing medicines;
4. dealing with correspondence, keeping records, making arrangements and appointments for the boss;
5. hiring and training all the people employed by a company;
6. buying and selling business shares;
7. providing safeguard against damage or loss, making contracts that promise to pay a sum of money in case of accident, injury or death;
8. designing and making bridges, buildings, roads;
9. keeping and examining business accounts.

List 2 – jobs and professions:

private secretary

doctor

personnel manager

accountant

insurance agent

marketing director

advertiser

stockbroker

construction engineer

5. Make up your own list of key-words and expressions to the text ‘Applying for a Job. Recommending for a Job’ and to the application letter of task 3. The list should include not less than 15 items. The list can be presented in the form of a table.

6. Explain the meaning of the following words and expressions.

To advertize a vacancy, administrative work, up-to-date ideas, prospects in promotion are limited, primary objective, to schedule interview, lower-level managers, referees.

Speaking Practice

1. Find the answers to the questions in the text ‘Applying for a Job, Recommending for a Job’.

1. What is your primary aim when you apply for a job/ put in a request for

employment/ make a request for a job?

2. In what cases sending a letter of application is preferable?
3. What kind of information do you have to gather before writing a letter of application?
4. In what way should you express your interest in a specific job?
5. How do you usually learn about job vacancies?
6. When you introduce yourself to a prospective employer, what information matters most/is the most important?

2. Discuss the content of the text in the form of a dialogue using the set of questions given above. Use communicative signal words (SW) and expressions for the questions and answers.

Question SW	Answer SW
First of all...	It is evident that...
Can you tell me...	We can state that...
It is interesting to know...	As for _____ we can say that...
I would like to ask you...	I am sure that...
Can I ask you...	To my mind/in my opinion...
One more question is...	It seems to me that...
Do you know...	I would like to say that...
Have you got any information ...	If I am not mistaken...
How do you think...	Above all...
To conclude...	You see...

3. Present the general ideas of the text in the form of oral retelling. Make use of the information given below.

1. Structural expressions for the introductory part of your retelling:

The article (text) is called...
The title of the article (text) is...
The article (text) is published in...
The article is printed in...
The article consists of...
The article is devoted to...
The text touches upon the problem...

In the introductory part the author points out...

2. Structural expressions for the body of your retelling:

The author raises the problem of...
The main part of the text informs about...
The article contains statistics about...

3. Structural expressions for the concluding part of your retelling:

In the concluding paragraphs it is pointed out...
Summing up the information, it is important to say that...
Generalizing the information, it is necessary to say that...

Writing Practice

1. Read and translate the following sample letters of application. Fulfill the tasks on the letters' vocabulary.

Sample Letter of Application (1)

the sender's address
the inside address

Dear Mr Bowers,

I am writing to confirm my wish to apply for the position of computer engineer with your company. I am pleased to accept your offer. Sure, I'd like to meet you to discuss some technical matters, especially concerning your computer facility.

I wonder if there is a probationary period during which the position and the salary will be reviewed.

I look forward to joining your company and to contributing to the company's work.

Signature

1.1. Find the words or phrases in Sample Letter of Application (1) that tell you the following.

1. to give support or certainty to a fact, statement – ...
2. a proposal – ...
3. in connection with – ...
4. a system that makes a particular activity possible – ...
5. the time during which the applicant is tested for the job – ...
6. to re-examine/ re-consider – ...
7. to help the company to work successfully – ...

Sample Letter of Application (2)

Flat 8, 34 River Street Gosport
Co Hampshire PO 56 BL
England
15 May 2018

Mr C Farham
Personnel Manager
Milco Ltd
26 Beacon Street
Halifax HX 57 Pt
England
Dear Mr Farham

Application for the post of Divisional Software Engineering Manager

Further to our telephone conversation last Friday, I can confirm that I wish to apply for this post. I enclose a copy of my curriculum vitae.

You will see that I have added some information about my previous experience: I worked for one year with a company in Paris called ILE as a Systems Analyst, then I came to England to work for Top Systems Co as a Client Consultant, but last November I was promoted to Senior Software Development Engineer.

I have also added the name of one of my referees, Mr John Andrews. You may contact him at any time. If you require any other references, perhaps you will be so kind as to let me know. I can come to Halifax for interview at almost any time. The only date when I am not available for interview is May 27th.

Yours sincerely,
John Tomlinson

1.2. Find the words or phrases in Sample Letter of Application (2) that tell you the following.

1. the person who is concerned with hiring and discharging employees – ...
2. position/ job/ employment – ...
3. continuing the subject of – ...
4. John was given a higher position – ...
5. a person who provides written information about someone's character, ability, skills, etc. – ...
6. a piece of written information about someone's character, ability, skills – ...

2. Imagine that you are an applicant for a job. Write your own letter of application (120-150 words) for a job in English. Choose an appropriate job title from the list below. Follow these guidelines:

1. Introduce yourself: name, age, nationality.
2. Mention the source of information about the job vacancy.
3. Describe your relevant work experience or justify your lack of experience.
4. Describe your qualifications and skills.
5. Mention the reasons for seeking employment with the company/ for joining this company.
6. Describe how you meet the requirements of the job.
7. Mention your personal qualities – ability to communicate, to deal effectively with difficult situations, to work long hours, to cope with pressure, to be part of a team, etc.
8. Say whether you are fluent in at least one foreign language.
9. Ask if the job you apply for involves a lot of travelling abroad, if it requires a lot of organizing meetings and conferences.
10. Say when you are available for interview.
11. Mention any enclosures (references, your resume (C.V.), an official letter of recommendation).

Job Titles	
financial analyst	специалист в области финансов
marketing research analyst	специалист по изучению рынка сбыта
business analyst	специалист по вопросам конъюнктуры
production engineer/ manager	инженер/менеджер по организации производства
sales manager	менеджер по продажам
securities analyst	специалист по ценным бумагам
designing engineer	инженер-конструктор
mechanical engineer	инженер-механик
software engineer	инженер-программист
software development engineer	инженер-разработчик программного обеспечения
marketing manager	менеджер по маркетингу
export sales manager	управляющий экспортными операциями
managing director	директор-распорядитель
accounting manager	главный бухгалтер

3. Write a letter (120-150 words) recommending your friend (your group-mate/your business partner) as a suitable candidate for one of the following positions: a secretary/ a teacher/ a training program participant/ a managing director/ an adman/ a sales representative. Study the information given below.

When people apply for jobs or professional training programs, the application process usually includes at least two recommendations from colleagues, professors or friends who can honestly evaluate the applicant's professional ability and potential.

Here are some important points to remember in writing the letter of recommendation:

1. How long have you known the applicant and in what capacity (as a co-worker, business partner, teacher, etc.).

2. Mention specifics, not generalizations. It is good to write that someone is hardworking and organized, but you need to support these statements with concrete examples.

3. Write about what the applicant is capable of doing, what makes him/her special.

4. Evaluate the applicant by comparing him/her with others you have observed in your work.

5. Your evaluation of the applicant may be based on the following categories, each of which can be described as 'excellent', 'very good', 'average', 'below average':

- Intellectual Ability
- Work Habits
- Business Practice
- Seriousness of Purpose

- Entrepreneurial Potential
- Managerial Skills
- Emotional Maturity
- Resourcefulness and Initiative
- Adaptability to New Situations
- Motivation
- Leadership Qualities

6. One page is sufficient. Quality, not quantity, is what is important. Do not put something in if an immediate connection cannot be made between the information you give and the applicant's ability to do the job or to participate in the training program.

UNIT 2. Resume

Text 1. Writing a Resume

1. Read and translate the text using a dictionary.

When you are looking for a new job, you must prepare a short-written account of your education and work experience. It is called 'curriculum vitae' (also C.V) in British English and resume in American English.

Many companies expect all your personal information to be entered on a standard application form. Unfortunately, no two application forms are alike, and filling in each one may present unexpected difficulties. Some personnel departments believe that the resume (CV) and application letter give a better impression of a candidate than a form.

The resume that accompanies the letter provides an overview of what you have already done. The resume should create one dominant impression: that you are a highly motivated person who has the ability and maturity to do a job well. Before you compose your resume list all of the pertinent information about your education, your job experience, your goals and your personal interests.

Then select the information that is appropriate for the job you want emphasizing the accomplishments that differentiate you from other candidates. If you have received academic honours or awards, or you have financed your own education, include this information as well.

Remember, the resume is a screening device. Big corporations get hundreds of thousands of them every year. The personnel manager or the staff officer has to read a lot of them a day. So, you have got ten, may be twenty seconds, to show him/ her that your resume is worth a second look.

There is no single correct format for a resume (curriculum vitae). Whatever its layout it should be brief – one or two pages are sufficient – easy to read, and well organized. An employer should be able to see at a glance what your qualifications are. Many resumes contain the following sections: personal information, education, languages you speak (if necessary), work experience, interests, referees.

2. Match the following words with their meaning.

1. a short-written account	a) отличия и награды за успешную учёбу
2. work experience	b) подходящий, соответствующий требованиям
3. personal information	c) стандартная форма анкеты
4. personal manager	d) опыт работы
5. personnel department	e) высокомотивированный
6. to create an impression	f) краткое описание/информация в письменном виде
7. to list	g) создать впечатление
8. appropriate	h) сотрудник отдела кадров
9. maturity	i) перечислить
10. accomplishments	j) письмо-заявка об устройстве на работу
11. academic honours/awards	k) зрелость/опыт
12. a screening device	l) отдел кадров
13. application letter	m) анкетные данные соискателя
14. highly motivated	n) средство отбора/проверки
15. standard application form	o) достижения

3. Complete the sentences with the prepositions given in the box.

3.1. Read and translate the letter of application.

3.2. **Fill** in each blank in the application letter with a preposition from the following list:

At, after, for, in, of, on, to

Dear Sir/Madam,

May I introduce myself 1) ... you? I have studied 2) ... Gottingham and Leeds Universities and now I am a final year student ... Leeds University, where I will graduate ... July 2021. I would like to spend next year improving my Russian; therefore, I would like to stay ... Russia ... some time. I have learnt Russian ... about five years ... evening classes once a week ... University.

Since I am bilingual ... both English and German I might use these language skills to teach. Would you require someone as a language and teaching assistant ... your foreign languages department?

As to my qualification and previous work experience, I will have an English law degree and I would get the TEFL (Teaching English as a Foreign Language) qualification ... a one-month course, which I intend to do over the summer. I have taught German ... foreign students in Germany and I had plenty ... opportunity to practice my communication and translation skills.

I would be very grateful if you could offer me such work, even ... a semi-voluntary basis.

Yours faithfully,

Julia Glazer

4. Make up your own list of key-words and expressions to the text ‘Writing a Resume’ and the letter of application from task 3. The list should include not less than 15 items. The list can be presented in the form of a table.

5. Explain the meaning of the following words and expressions.

Previous work experience, achievements and accomplishments, resume as a screening device, communication and translation skills, personal information, to be appropriate for a job, to improve a foreign language, to have the ability and maturity to do a job well.

Speaking Practice

1. Find the answers to the questions in the text ‘Writing a Resume’.

1. What is British English for resume?
2. What application documents are required of those who apply for a job?
3. What information should be listed in your resume?
4. What kind of impression should a resume make on the reader (the staff officer)?
5. What is the main objective of a resume?
6. Who is usually responsible for looking through resumes received by a company?
7. What kinds of sections does a resume usually consist of?
8. Why should the layout of a resume be well organized and brief?

2. Discuss the content of the text in the form of a dialogue using the set of questions given above. Use communicative signal words (SW) and expressions for the questions and answers.

Question SW	Answer SW
First of all...	It is evident that...
Can you tell me ...	We can state that...
It is interesting to know...	As for _____ we can say that...
I would like to ask you...	I am sure that...
Can I ask you...	To my mind/in my opinion...
One more question is...	It seems to me that...
Do you know...	I would like to say that...
Have you got any information ...	If I am not mistaken...
How do you think...	Above all...
To conclude...	You see...

Writing Practice: Resume Construction

1. A resume (C.V.) will be the first impression an employer has of you. Imagine that you are a job applicant. Before writing your own resume, you should:

1.1. Draw the pattern of your resume:

1. Personal information (name, nationality, date of birth, marital status,

permanent address, current address).

2. Education and languages.
3. Work experience.
4. Interests/hobbies.
5. Referees.

1.2. Translate and analyze the sample variant of the resume.

Name	Julia Glazer
nationality	German
date of birth	06/12/96
marital status	Single
current address	16, Cooking Street Leeds L52 UK
education	4. School 2004-2014 Bolz Gymnasium Rottenburg, Germany 2. University a) Sept. 2014 – Oct. 2015 – Gottingham University b) since Oct. 2015 – Leeds University law student
languages	German (mother tongue) English (advanced level) Russian (intermediate level)
work experience	4. June – Sept. 2014, Rottenburg, Position: assistant accountant in a medium-sized firm. Skills: computing skills; given tasks to work independently, I was left on my own to find my way through various computer programmes. 2. Sept. 2014- March 2016, Leeds Position: community Services volunteer, personal care assistant. Skills: I had to cope with long hours and almost no spare time for myself; the commitment and responsibility involved were a very valuable experience. 3. Sept./Dec. 2016 – German Embassy, Washington DS, USA Position: internship at press office. This involved teamwork, helping to produce press releases and to organize press conferences, answering phone calls and letters, news presentations at the morning conferences, legal research, translating. Skills: I improved my communication and presentation

	skills in public relation duties. I had to deal with vast amount of text and paperwork.
Interests	Travelling, horse-riding, river-trips
referees	Dr. H. Storey Mr W. Hinds Mrs A. Lawson Law Faculty University of Leeds, Leeds L52

1.3. Find English equivalents to the following Russian word combinations. Consult the sample (1.2.).

Помощник бухгалтера, работать самостоятельно, самостоятельно разбираться в чём-либо, доброволец местной социальной службы, помощник по уходу за инвалидом, справляться, взятые на себя обязательства и ответственность, стажировка в пресс-службе, работа в команде, поиск обоснований юридического характера, иметь дело с .../ обращаться с

1.4. Study the Language Bank below.

1. устроить, организовать (что-либо)	to arrange (meetings/ conferences/ shows) to make arrangements for (meetings/ presentations/ press conferences) to work out arrangements for ... to successfully arrange (meetings/ presentations) to be successful in arranging meetings/ conferences)
2. договориться (о чем-либо)	to arrange for (an interview/ an appointment)
3. анализировать/ изучать	to analyse/ examine
4. применять	to apply (new ideas to practice/ theory to practice/ new developments to practice)
5. заниматься (чем-либо)/ выполнять (задание/ работу по долгу службы)	to deal with to handle to do one's job to perform one's duties to be concerned with ...
6. осуществлять/ выполнять	to carry out (sales analysis/ production analysis/ one's duties)
7. проводить/ осуществлять (анализ/ исследование чего-либо)	to conduct/ to do/ to make (a survey/ marketing research)
8. управлять/ руководить	to manage

	successfully effectively efficiently (people/ money/ a business/ the company/ products)
9. разрабатывать/ проектировать	to develop (a product/ the company's marketing strategy/ plans/ programmes) to design (a machine/ a new building)
10. составлять/ разрабатывать (планы)	to draw up (marketing plans)
11. содействовать (чему-либо)	to promote (sales/ production of...)
12. заведовать/ руководить (чем-либо)/ отвечать по службе (за что-либо)	to manage (a factory) to be in charge of (a factory/ a department) to head (a team of 20 people/ a department) to be responsible for (recruiting personnel/ employing people) to be at the head of (a company/ an organization)
13. работать в качестве (кого-либо)	to work as (a consultant for a company)
14. осуществлять контроль/ наблюдать за работой (за деятельностью кого-либо)	to supervise (the work of 30 operating employees/ a team of 20 people)
15. получать/ приобретать опыт (в чем-либо)	to gain experience of presenting new products/ of conducting press conferences
16. находиться в постоянном рабочем контакте (с кем-либо)	to keep closely in touch with smb.

1.5. Translate the sentences from Russian into English using information of the Language Bank (1.4.).

1. У меня есть опыт в организации презентаций и пресс-конференций.
2. Вам необходимо разработать план организации данной встречи.
3. Есть ли у Вас опыт проведения рекламных компаний?
4. Можете ли Вы провести исследование современных тенденций на рынке сельскохозяйственной продукции?
5. У меня есть обширный опыт в составлении бизнес-планов.
6. Работая в качестве помощника руководителя, я находился в постоянном рабочем контакте с юристами и представителями различных банковских организаций.
7. Мне бы хотелось проявить свои навыки в разработке маркетинговых исследований.
8. Мне приходилось успешно осуществлять контроль за деятельностью команды из 10 человек.

9. Моя работа была связана с применением новых маркетинговых стратегий.

10. Мне бы хотелось эффективно применить свой опыт и знания, а также иметь возможность карьерного роста (to have a career opportunity).

1.6. Write a resume as if it were your own resume.

UNIT 3. Interviewing Applicants for Jobs

Text 1. Interviewing Applicants for Jobs

1. Read and translate the text using a dictionary.

In different companies and organizations, different conventions apply to the process of recruiting, selecting and hiring prospective employees.

Many companies expect all personal information of the applicant to be entered on a standard application form. Unfortunately, no two application forms are alike, and filling in each one may present unexpected difficulties. Some personnel departments believe that the CV (the resume) and application letter give a better impression of a candidate than a form. But it is well known that the applicant usually tries to make a good impression on the personnel officer in his/her application letter, the applicant may often look good on paper. In order to take the final decision staff officers or personnel managers often invite the shortlisted applicants for interview.

There are different kinds of interviews: traditional one-to-one interviews, board or panel interviews where one or more candidates (group interview) are interviewed by a panel of interviewers and even 'deep-end' interviews where applicants demonstrate how they can cope in actual business situations. The atmosphere of an interview may vary from the informal to the formal and interviewers take a friendly, neutral or hostile approach. Different interviewers use different techniques and the only rules that applicants should be aware of may be: 'Expect the unexpected' and 'Be yourself'.

The interviewers are usually interested in educational background and qualifications of the applicant, his or her previous work experience, the reasons the applicant applies for a new job, if the applicant is highly motivated or not, if he or she is good at working with people.

The applicant for the job wants to know if there are choices of promotion, if there is a probationary period, if there are transport facilities to or from work, if the job entails job-related travel, if there are some extra benefits such as company cars, company organized holidays and trips, children's holiday camps.

Although interviews have widespread use in selecting staff many problems exist:

- 1) reliability of most interviews is very questionable;
- 2) conclusions about the applicant are often made within the first 10 minutes of the interview and that is why any additional relevant information about the applicant is either overlooked or ignored;
- 3) merely having a pleasant personality does not necessarily ensure that the

person will be a good employee;

4) interviewers have personal prejudices and these prejudices may play a role in the interviewing process.

But all these disadvantages of a job interview may be rejected as insignificant against the statement that many applicants look quite good on paper.

2. Match the following words with their meaning.

1) recruiting, selecting and hiring	a) претендент, включённый в окончательный список для собеседования
2) staff officer	b) значимая информация
3) conventions	c) недостатки
4) shortlisted applicants	d) благоприятное впечатление
5) panel interview	e) сотрудник отдела кадров
6) job-related travel	f) уровень образования
7) probationary period	g) набор, отбор и наём (кандидатов на работу)
8) deep-end interview	h) групповая форма собеседования
9) educational background	i) дополнительные услуги, доступные работникам компании/фирмы/учреждения
10) questionable	j) служебный транспорт
11) favorable impression	k) нормы, сложившаяся практика
12) relevant information	l) утверждение/убеждение
13) extra benefits	m) испытательный срок
14) company cars	n) собеседование «с погружением» в реальные рабочие ситуации
15) disadvantages	o) спорный
16) statement	p) командировка

3. Re-read text 1 and answer the questions.

1. Why do personnel managers believe that inviting job applicants for interview makes selection procedure more reliable and trustworthy?

2. Are job interviews conducted on the same pattern? If not, what makes them typical in some respect?

3. What is the applicant usually interested in when interviewed?

4. Which of the disadvantages of a job interview would you mention as especially damaging?

4. Explain the meaning of the following words and expressions.

Reliable and trustworthy, personal information of an applicant, unexpected difficulties, to look good on paper, hostile approach, expect the unexpected, chances of promotion, relevant information about the applicant.

5. Read and translate the text using a dictionary.

Text 2. Interviewing, Screening and Hiring

It is not an easy task to find someone suitable for the job. Recruiting and

selecting people involves careful analysis. The candidate's abilities, attitudes and interests are matched to the requirements of the job. Interviewing, screening and hiring are done in the best interests of both parties.

Applicants for a management training program or for an internship abroad are asked a lot of questions concerning the profile of the company the applicant is currently working for. The interviewers want to know how successful his/her company, is, what sort of problems or unpleasant situations it faces. They may be interested in the company's annual output, annual turnover, number of employees in the company, its international contacts or long-term foreign partners.

Some interviewers give candidates a hard time by asking them difficult and confusing questions: What do you think are your strengths and weaknesses? Which is more important for you – status or money? How long do you think you'd stay with us if you were appointed? How would you rate your present boss? Why do you want to leave your present job?

Now it is quite common for companies to hold progress interviews (staff assessment interviews) to see how their employees are getting on in their jobs. Progress interviews are conducted at least once a year. Employees' performance and the development of their career are discussed at such interviews. Participants on training courses often take part in similar mid-course/mid-term interviews too.

Employees usually take advantage of staff assessment interviews to find out what the boss thinks of them, to discover their own weaknesses, to have the opportunity to discuss their work in detail with the boss, to find out how to work more effectively and efficiently, to discuss their future with the company or organization, to see how their careers are developing, etc.

The company and the managers take advantage of these progress interviews to find out what their employees do well and could do better, to benefit from closer contact with individual employees and create closer relationships, to find out which people should be promoted and which employees can benefit most from further training, etc.

The interview situation as such should be considered from the point of view of both interviewer and candidate/interviewee. During the interview, the interviewer makes notes on each candidate's experience or potential. The checklist for interviewers usually contains the following headings:

- Working with other people (being part of a team)

- Working under stress

- Dealing with people in English

- Working experience

- Learning something new/being able to learn new things

- Education and training

- Health

- Present job/job satisfaction

- Personality

- Being able to delegate responsibilities to subordinates

The candidate when preparing to attend the job interview should rehearse some of his/her answers at home, find out as much as possible about the company

or the training institution, prepare some questions to ask about the organization or company.

6. Find in text 2 the English equivalents for the following key words and expressions.

1. набор кадров	
2. проверка, отбор кадров	
3. наем на работу	
4. стажировка	
5. столкнуться с какой-либо проблемой	
6. причинять беспокойство/ доставлять неприятности	
7. организовать/ провести собеседование/интервью	
8. исполнение служащими своих обязанностей	
9. получить пользу от дальнейшей подготовки	
10. перечень, памятка (для проведения собеседования)	
11. индивидуальность (кандидата/ претендента)	
12. давать поручения подчиненным	

7. Make up your own list of key-words and expressions to texts ‘Applying for a Job, Recommending for a Job’ and ‘Interviewing, Screening and Hiring’. The list should include not less than 15 items. The list can be presented in the form of a table.

Writing Practice

1. Here is some advice that might be given to an inexperienced interviewer. Use the given tips in the text, in which you describe the standard interviewer’s activity.

1. Make sure you are not interrupted or phoned during the interview.
2. Read the candidate’s CV and application letter before the interview begins.
3. Ask the candidate to explain why he/she keeps changing jobs.
4. Make sure you have a clear picture of the nature of the job.
5. Ask each candidate the same questions.
6. Decide on a maximum of four key qualities required for the job.
7. Make sure the candidate has an uncomfortable, low chair.
8. Ask the candidate about his political and religious beliefs.
9. Only trust a candidate who looks you straight in the eye.

10. Trust your first impressions.

You can make use of the following modal constructions in your text:

First of all, you should...

You'd better...

It seems to me, you ought to...

You shouldn't

You may or you may not...

It is evident, that you should...

Whether you like it or not, but you have to...

Before the interview you are to...

You are allowed to...

Speaking Practice

1. Find the answers to the questions in the text 'Interviewing, Screening and Hiring'.

1. What is expected from an applicant for a training program when he/she has an interview for an internship abroad?

2. What questions would you consider difficult and confusing when interviewed? Why?

3. What are the main differences between a job interview and a staff assessment interview?

4. What kind of preparatory work does a job interview involve from the viewpoint of both parties – the interviewer and the applicant?

2. Work in pairs. Discuss the content of text 2 in the form of a dialogue using the sets of questions given above. Use communicative signal words (SW) and expressions for the questions and answers.

Question SW	Answer SW
First of all, ...	It is evident that...
Can you tell me...	We can state that...
It is interesting to know...	As for _____ we can say that...
I would like to ask you...	I am sure that...
Can I ask you...	To my mind/in my opinion...
One more question is...	It seems to me that...
Do you know...	I would like to say that...
Have you got any information ...	If I am not mistaken...
How do you think...	Above all...
To conclude...	You see....

3. Arrange the most important things for you in your future work in order of importance (the list of opinions is given below). Express your own opinion in the form of an oral essay. Make use of the relevant expressions from the box below.

Job satisfaction

- being able to learn new things
- earning plenty of money
- being part of a team
- meeting people through work
- having pleasant colleagues
- being praised by my superiors
- a pleasant working environment
- using a foreign language
- financial independence
- good chances of promotion
- professional growth
- being a boss/exercising power
- status of my organization

The most important thing for me is ...

The second important thing for me is ...

I don't consider this aspect of my job very important.

I am afraid you are mistaken/wrong when you...

I think your opinion is absolute nonsense.

It matters very little for me/very little in my job.

... is less significant than ...

... is more significant/more important than...

I don't attach too much importance to ...

4. Talk about job satisfaction or job dissatisfaction as any talk to a counselor in a job agency is centered round job satisfaction or job dissatisfaction.

Work with a partner. Make conversations in which (A) is trying to find out reasons for changing the job or job preferences while (B) is giving his/her reasons or explanations.

First make sure you are familiar with the relevant vocabulary then talk on the topic using prompts in columns (A) and (B).

Relevant vocabulary:

promotion, chances of promotion, prospects of promotion

great/heavy responsibilities, is responsible for...

independence, making independent decisions

challenging job/job is challenging

varied/exciting job/experience

demanding boss/manager

monotonous/boring job

to work long hours

exciting experience

creative abilities

interesting job

demanding job

Prompts:

A Why did you change your job? Didn't you like your job? Why? Why did you leave the company for which you worked so long? Why did you leave your job? What didn't you like in your job? Did your job become too boring, too monotonous? Were there any prospects of promotion in the company you worked for?	B I had to change my job because... there wasn't inner freedom, the salary was... the working hours were... the journey to work was... the job was too... my responsibilities were too... I was responsible for too many... I wasn't earning a good... the money wasn't good enough. I didn't have enough time. There wasn't enough... I didn't have enough responsibility.
Do you like working: in a team? Alone? Indoors/outdoors? With computers? Long hours? In a big company?	I like/don't like: being away on a business trip (at least) once a month I'd like to: start my own advertising company, do consultancy work in computers, have a lot of responsibility and a lot of freedom.
What kind of job do you think is suitable for you? What job suits you best?	I enjoy: having responsibility for... taking decisions on my own. Having more independence. Working in a small-sized company. Working with computers. Working in a team. Doing a challenging job.

5. Get ready for the job interview simulation. Make use of the model questions in A and prompts in B. Remember: this should be a step-by-step (section-by-section) discussion. You can also use the information presented in task 3 in the simulation.

(A) model questions	(B) prompts for answers
Personal information	
When were you born? Can I have your date of birth? What's your marital status? Where do you live? What's your present address?	I was ... on ... in 19... . I am married/single... . I got married in I am married with one child. I am not married yet. I am going to get married next... . My home address is ...,

	but my present address is.... I have lived in ... for ... years/ since We moved to ... in
Education	
And what about your education? – Secondary education, I mean. In how many subjects did you take secondary school diploma exams? Did you do well in your exams? What marks did you get in ...? Have you ever failed an exam? What qualifications did you get when you finished school?	I went to two secondary schools from ... to I attended ... from ... to... . I took my school-leaving exams in I did well/ badly in Yes, I have. I failed my mathematics exam in I got the high school Graduation certificate/ school-leaving certificate/ secondary school graduation certificate.
What about your further education? Did you go to university? What subjects did you specialize in? What was your major at university?	For 5 years, from ... to I was at university/ at college in I specialized in ... My major at university was I was an economics major.
Did you get a university degree? Did your studies at university lead to a degree? Did you graduate with honours? Did you get a distinction diploma?	My studies at... led to a Bachelor's/Master's degree in I got my specialization diploma in ... Yes, I did. I was good at most subjects. I graduated from ...with...
Work Experience, Abilities and Skills	
Have you ever got a job? When exactly was that? When did you start work? What posts did you hold? When were you promoted to this position?	I got a job as a ... for ... company. I worked there for ... years. I worked for ... years with a company in I held two posts there. I held a key management position in ... company. I was promoted to this position/ to this department in ...
What companies have you worked for? Have you ever worked with a volunteer organization?	I have worked for .../with... .
What jobs did you apply for, when you came to ...? What department did you work in?	When I came to ... I started work for... company.

What skills did you acquire while working for/ with ... company?	I acted as ... when he/ she was on vacation, carried out several...
What were your professional responsibilities and duties?	projects, was responsible for ..., took part in... I acquired leadership qualities, I acquired ability to communicate and work in a team, to arrange business meetings. I did the typing, the filing, the photocopying sorted out mail..., did most of the secretarial work in the office. I improved my communication skills.
Are you skilled in statistics/ using a computer/ marketing/ programming/ business accounting?	I don't think I am very skilled in ... but I am hard-working.
Are you good at dealing with difficult people?	When I worked for ... company, I was involved in a number of projects which required management skills.
Do you have the skill to cope with a difficult job?	I have got some experience at delegating some responsibilities to the members of the department/to my group-mates/ to the members of a team/
Have you ever been involved in managerial functions?	
Do you have any managerial skills?	
Are you good at delegating responsibilities to subordinates?	
Other Information and Recommendations	
Do you know how to use a PC/ how to work with PC/ how to operate a PC/ how to handle a PC?	Yes, I do. I did a two-months advanced computer course when I was at school/ at the university.
What languages do you speak?	I am fairly fluent in
Are you fluent in English/ German/ French?	My written/ spoken English/German/ French is fairly good. I can make myself understood in....
Can you provide references from at least two referees?	Yes, I can. I am sure they will confidently recommend me.

UNIT 4. Business Letters

Text 1. Writing Business Letters

1. Read and translate the text using a dictionary.

Everyone writes business letters from time to time – to request information, to order a product, to complain about something, to apply for employment or to a

training programme. Examples are: letters of application for jobs, scholarships, etc.; letters asking for information about courses, services, etc.; letters demanding money (which include complaints, a demand for a refund).

Before you sit down to write a business letter you should think carefully about your purpose. Decide in advance, why you are writing your letter.

Most businesses receive hundreds of letters each day, so your letter should be brief and to the point, it should be well organized and laid out very clearly. Important information should appear early in the letter and you should not digress from the main subject. Be concise and try to sound as natural as possible. Stilted, very formal, unnatural or flowery language very often gets in the way of clear communication.

The first paragraph of your letter should introduce your subject and mention any relevant previous correspondence or conversation. The rest of your letter should present your reader with the fact needed to understand what you are saying. Your conclusion should reinforce your message.

When typing your business letter or composing it on a computer, leave wide margins, at least an inch (=2.54 cm) all around. Type your letter single-spaced and use an acceptable format. One of the most common is the block format. The block format letter begins every line at the left-hand margin and separates paragraphs with a double space. If you use letterhead paper, supply only the date typing it two spaces below the letterhead.

The style of business letters is changing rapidly. Every year it gets simpler and less formal. Except for a few firms, business correspondents prefer simple English to express what they want to say as effectively as possible. Time is more precious than ever to a busy executive and he does not want to have to read a lot of unnecessary words. But the writer of a business letter must create a good impression, especially if he is writing a letter of application, so a few words to promote a feeling of exactness and goodwill are quite appropriate. However, compliments must not be exaggerated, as they may produce the opposite effect, and the reader may feel that the writer is being insincere. In other words, the style of a business letter need not be very formal, but on the other hand it must not be too informal and chatty.

2. Match the following words with their meaning.

1) to promote a feeling of...	a) отклоняться/ уходить в сторону от основного предмета (письма)
2) to reinforce one's message	b) фирменный бланк
3) to get in the way of...	c) запрашивать информацию, сведения
4) purpose/ aim	d) жаловаться, подавать жалобу
5) to digress from the main subject	e) ввести/ представить тему или предмет (письма)
6) to introduce one's subject	f) преувеличивать

7) letterhead paper	g) решить заранее
8) to complain	h) мешать/ препятствовать/ быть помехой
9) to exaggerate	i) стимулировать ощущение/ способствовать ощущению ...
10) to decide in advance	j) поле (страницы)
11) concise	k) точность/тщательность
12) stilted	l) представить/сообщить читателю о ...
13) margin	m) слишком официальный
14) exactness	n) усилить содержание сообщения
15) to request information	o) цель
16) to present the reader with ...	p) краткий и точный

3. Complete the sentences with the prepositions given in the box.

3.1. Read and translate the application letter.

3.2. Fill in each blank in the application letter with a preposition from the following list.

With, in, for, at, of, from

Dear Mr Foster,
 Applying _____ the post of Marketing Manager
 I noted _____ interest your advertisement in yesterday's Daily World.
 You will see _____ the enclosed resume that I have four years experience in marketing. My duties are concerned _____ sales promotion. My responsibilities have included all types _____ administrative work, product development, arranging and attending sales conferences and presentations, working _____ clients and solving problems.

Although I have an excellent relationship with my present employers, Sunshine Communication, which I joined five years ago, I feel that my prospects with them are limited and there are no opportunities _____ promotion _____ Sunshine. I am convinced that there would be more scope _____ my talents and skills with a larger, more dynamic company.

If you consider that my qualifications and experience are suitable, I would be available _____ interview _____ any time.

Yours sincerely,
 John Raser

4. Read and translate the text using a dictionary.

Text 2. Business Letter Pattern

Business Letters are usually quite formal in format and style. The different parts of a business letter are:

1. the heading (= the sender's address)
2. the recipient's name, position and address (= the inside address)
3. the salutation (= the greeting)

4. the body of the letter

5. the closing salutation (= the farewell = the complimentary close)

The Heading consists of the sender's return address and the date or the company letterhead or sometimes the company logo. When writing the heading spell out words like *street*, *avenue*, *drive*, *east*, *west* in full. (Note: in the USA abbreviations 'St' and 'Ave' for *street* and *avenue* are often used. You may, however, abbreviate the names of counties and the names of the states

e.g. Ca/CA – California, Pa/PA – Pennsylvania, in the USA).

When writing your Russian address for a foreign correspondent, do not translate street or city names into English: 'Prospect Mira' but not 'Peace Avenue'. You should write: 'dom', 'korpus', 'kvartira'.

The Dates in the heading are written and spoken in the following way:

e.g. 2 March 1998 – the second of March, nineteen ninety-eight = March the second, nineteen ninety-eight.

Be careful! Dates are sometimes written in number form only: 2.03.98. In Britain this would mean 'the second of March, nineteen ninety-eight'. In the USA, and on many computers, it would mean 'the third of February, nineteen ninety-eight'.

The Inside Address begins at the left margin, four to six lines below the heading, with an appropriate title: 'Mr' (for a man who has no other title), 'Mrs' (shortened from 'Mistress', for a married woman), 'Miss' (placed before I lie name of an unmarried woman or girl), 'Ms' [miz] (for a woman who does not wish to be called either 'Miss' or 'Mrs'), 'Dr' [dokte] (for a person holding one of the highest degrees given by a university, such as PhD – Doctor of Philosophy).

(Note, in American English after 'Mr' or 'Mrs' comes a full stop: 'Mr.', 'Mrs.', 'Mrs' or 'Mr' without a full stop at the end is British English).

e.g. Mrs. Helen Tomlinson

Personnel Manager

109 East Jones Street

Raleigh, North Carolina 27611

USA

The Greeting appears two spaces below the inside address:

e.g. Dear Mr South, Dear Sir(s), Dear Dr. Murphy, Dear Sir or Madam.

The Body of a business letter consisting of introductory, main and concluding paragraphs contains your message. If your letter takes more than one page, place the addressee's name, the date and the page number in the upper left-hand corner of the second page.

The way you begin your letter is very important. You should make the subject of your letter clear immediately:

e.g. Thank you for your letter dated 24 November.

Благодарю Вас за письмо от 24 ноября.

e.g. I was delighted to receive your letter of 20 January.

Я был очень рад получить ваше письмо от 20 января.

e.g. I am writing to tell you that I have decided to accept your offer of employment.

Сообщаю Вам, что я решил принять ваше предложение о работе.

e.g. Further to my last letter/ to our telephone conversation I am writing to tell you that...

В дополнение к моему последнему письму/ к нашему телефонному разговору сообщаю вам, что ...

e.g. We are interested in the new training programme.

Нас интересует новая учебная программа.

e.g. In reply to your letter of 9 January ...

В ответ на ваше письмо от 9 января ...

e.g. I am writing to confirm my wish to apply for the post of...

Настоящим сообщаю о своем желании подать заявление о приеме на должность.

The Concluding Paragraph is the last thing your correspondent will read, and the last impression you produced on him/her. It should also contain typical phrases of the kind:

e.g. I would appreciate any suggestions/ offers.

Я был бы признателен за любые советы/ предложения.

e.g. Thank you for your time and trouble.

Спасибо за время, которое вы мне уделили и взятые на себя хлопоты./ Спасибо за потраченное время и хлопоты/ внимание.

e.g. We would be grateful to receive a prompt reply.

Мы были бы благодарны за получение ответа в ближайшее время.

The Closing Salutation appears two spaces below the body of the letter. The most common complimentary close is 'Yours sincerely (BrE) or Sincerely yours' (AmE). More formal letters to high government officials might call for 'Respectfully yours'.

The Material Enclosed along with the letter is called 'enclosures' (usually shortened to 'enc').

5. Find in text 2 the English equivalents for the following key words and expressions.

1. структура, построение (письма)	
2. обратный адрес	
3. текст письма	
4. фирменный знак/ символ	
5. сокращения (в написании слов)	
6. получатель (письма)	
7. приветствие	
8. заключительное приветствие	
9. подпись	
10. «с уважением к вам»/ «искренне ваш»	
11. приложение (к письму)	
12. сообщение	

Speaking Practice

1. Find the answers to the questions in the texts ‘Writing Business Letters’ and ‘Business Letter Pattern’.

1.1. Questions to the text ‘Writing Business Letters’.

1. Why do people write business letters?
2. Is a business letter usually long and very formal?
3. Do you have to follow any rules while typing or composing a business letter on a computer?
4. What is the block format of a business letter?
5. What makes a business letter stylistically balanced?
6. What can create a favorable impression if you write a letter of application?

1.2. Questions to the text ‘Business Letter Pattern’.

1. What does the heading of a business letter include?
2. Is there any deference in writing dates in British and American English?
3. In what way should you write your Russian address for a foreign correspondent?
4. If the greeting at the beginning of a business letter is ‘Ms’, what does it mean?
5. How does the greeting end in business letters?
6. What does the body of a business letter consist of?
7. Do you think the beginning of a business letter is very important? Why?
8. What do you usually write in conclusion?
9. What is the most common closing salutation?
10. What is the shortened form of the word ‘enclosure(s)’?

2. Work in pairs. Discuss the content of texts 1 and 2 in the form of a dialogue using the sets of questions given below. Use communicative signal words (SW) and expressions for the questions and answers.

Question SW	Answer SW
First of all...	It is evident that...
Can you tell me...	We can state that...
It is interesting to know...	As for _____ we can say that...
I would like to ask you...	I am sure that...
Can I ask you...	To my mind/in my opinion...
One more question is...	It seems to me that...
Do you know...	I would like to say that...
Have you got any information ...	If I am not mistaken...
How do you think...	Above all...

Writing Practice

1. Translate the following sample letter concerning methods and terms of payment.

1

Metalexport Ltd
43 Ulyanova St

109189 Moscow, Russia
 2 23 January 2019
 3 Mr James Bowers
 Managing Director
 Electroscan plc.
 26 Orchard Road
 Halifax HX2 5PJ, UK
 4 Your ref. MS/SN 22/95
 Our ref. 20/2009/95
 5 Dear Mr Bowers,
 6 Much to our regret we have to inform you that so far we have not
 received a bank guarantee from you. In view of the above we would
 like to remind you of your letter of November 5, last year, in which you
 asked us to change the Letter of Credit (L/C) method as inconvenient
 owing to the difficulties and extra expenses incurred
 7 Being aware of your difficulties our firm made a concession by
 suggesting payment for collection terms. You accepted the suggested
 method of payment and undertook to submit within three weeks a first-
 class bank guarantee for 80% of the contract value. However, as we are
 still without your bank guarantee, we have had to give instructions to
 suspend shipment of sheet iron. At present over 40 tons of sheet iron are
 at the port causing storage expenses which we feel should be charged to
 your account. We enclose herewith a list of current storage prices.
 8 We would, therefore, be grateful if you could advise us at your
 earliest convenience when the bank guarantee will be submitted and
 also let us have your consent to covering the above storage expenses.
 9 Yours sincerely,
 10 Ю. Борисов
 Yu. Borisov
 11 Export and Sales Manager
 12 Enc

2. Match the numbers standing for the parts of the letter with the English equivalents choosing the words from the box below.

References, date, concluding paragraph, signature, typed signature, position/title, enclosures, salutation, sender's return address, closing salutation, introductory paragraph, reader's name, position and inside address, main paragraph

3. Find English equivalents to the following Russian word combinations. Consult the sample letter.

Закрытая (частная) компания с ограниченной ответственностью, аккредитив, принятые на себя расходы, к нашему сожалению, благодаря/по причине, открытая (публичная) компания с ограниченной ответственностью, предоставить подтверждение, расходы по хранению, условия платежа на инкассо, задержать отгрузку, в свете вышесказанного, расходы должны быть

отнесены на ваш счёт, согласие на покрытие расходов по хранению, банковские гарантии, пойти на уступку, как только вам будет удобно, стоимость контракта, к настоящему (письму) прилагается.

4. Match the common abbreviations (A) used in business letters to their longer words equivalents (B).

A	B
1) & Co	a) trademark
2) @	b) Post Office Box
3) 54scillo.	c) per annum (per year)
4) attn.	d) Incorporated
5) Corp.	e) at (a price of...)
6) dept.	f) copyright
7) enc. Or encl.	g) Public Limited Company
8) etc.	h) Managing Director
9) Inc.	i) and Company
10) incl.	j) approximately
11) Ltd.	k) for the attention of...
12) MD	l) Limited
13) p.a.	m) reference (number)
14) pic. Or p.l.c.	n) Corporation
15) POB	o) enclosures
16) ref.	p) registered trademark
17) ®	q) including/inclusive
18) ©	r) department
19) TM	s) et cetera/ and so on

5. Match the patterned business letter phrases and sentences with the content points of a business letter.

1. With regard/reference to your letter of 21/8/19...
2. If you don't pay a refund for ... I shall be obliged to take legal action.
3. I apologize for my delay in replying to your letter of 19/7/99.
4. I look forward to hearing from you soon.
5. I am writing in order to ...
6. I am writing in reply to your letter of 20/8/19.
7. We regret to inform you that your name has not been placed on our short list for the post of manager...
8. We should/would like to draw your attention to the fact that ...
9. I am writing to confirm my wish to apply for the post of...
10. I enclose my curriculum vitae (CV).
11. I would be very grateful if you would/could send me an application form.
13. We are interested in the new training programme.
14. We would be grateful to receive a prompt reply.

15. Failing this, I shall have no alternative but to refer the matter to my solicitor.
16. We apologize for any inconvenience you may have been caused ...
17. I would like to apply for ...
18. I am pleased to inform you that your application for ... has been approved.
19. Attached you will find a detailed account of what happened ...
20. Further to our conversation / my fax of 18/8/19 ...
21. Thank you in advance for your help.
22. I insist on an immediate apology ...
23. We should be glad, if you would confirm this booking as soon as possible.
24. I would like to confirm the booking made by phone today for a double room.
25. I look forward to joining your company.
26. I am pleased to accept your offer.
27. With reference to your recent letter I am instructed to inform you ...

1. Saying why the letter is being written.	
2. Referring to previous contact.	
3. Making a request.	
4. Sending something with the letter.	
5. Rejecting/accepting applications/offers.	
6. Looking forward to the reply.	
7. Threatening/expressing a threat against someone.	
8. Making an apology.	

2.2. Тексты делового характера для перевода и работы со специальной лексикой

- 1. Translate the text.***
- 2. Make up the vocabulary of specialized key-words and expressions marked in the text.***
- 3. Choose 5 specialized key-words or expressions and explain their meaning in English.***
- 4. Prepare mini presentation on the content of a text given below.***

Text 1. Contemporary Organization Theory

The literature on various contemporary theories of organization is vast. But perhaps the underlying factors most commonly found in almost all of them include the significance of external environment and its impact on organizations, the utility of managerial feedback, the importance of strategic planning and top managerial decision making, the role of technology and resource dependence, the necessity of worker cooperation, and the desire for a participative management, as well as a host of other variables representing managerial and individual employee perspectives. These theories reflected the post – World War II relative economic prosperity followed by the increasing social, political, racial, and economic conflicts, that dominated the periods of the 1950s and 1960s. Attention was shifted toward strategic, environmentally conscious, and globally motivated decisions with managerial innovations for meeting the ideological challenges of the Cold War period both politically and economically. Organizational planning was generally discouraged because of its being socialistic in nature, therefore restricting individual freedom of choice.

Text 2. Market Model of Organization Theory

The market theory of organization is derived primarily from economic theory and secondarily from sociology. Based on the neoclassical economic theory, the market theory is based on the economic, rational assumptions that man is a self-interested, rational animal seeking to maximize individual interests in the marketplace. Bargaining, exchange, and strategies to minimize transaction and exchange costs and to maximize benefits are central to the market theory of organization. Modern organizations are seen as rationalizing institutions of exchange and transactions of the free market system in which individuals trade and exchange their goods and services for something in return.

Mainly developed for application in the private sector, the market theory of organization and administration has found its way into public administration and organization theories.

Several principles form the foundations of the market theory, also called ‘public choice’ theory. These include individual choice as the basis for organizational or ‘collective actions’, individual preferences as expressions of individual choices, rules to facilitate and assure order and stability in organizations and society.

Text 3. Chaos Theory

The notion of chaos denotes crisis and disorder, a state of nonequilibrium, instability, turbulence, rapid or rupturing changes that scramble plans and cause unpredictability, with consequences of anxiety, fear of the unknown, and triggering effects of destruction and system breakdowns. A key question for social and natural scientists is how to control chaos so that its destructive effects could be eliminated or minimized. This is a notion that has until recently prevailed in traditional ways of thought and action in social science. However, as explained by chaos theory, social and natural phenomena do not exist or develop or evolve on strictly linear paths so that we can predict crises that would need to be avoided or controlled. The essence of chaos theory is that of the law of nature, as explained over a century and a half ago by Marx and Engels and long before them by earlier philosophers of the East as well as of the West. Examples of chaotic events or systems breakdowns in the world are many, and they may be found at macro and micro levels. Contemporary scientists have grouped these crises or systems breakdowns into two types: microcosmic and macrocosmic.

The microcosmic social realities of crises have worldwide impacts. Examples include financial crises, population crises, global environmental crises, world population explosion pressures, desertification of productive lands, crisis of the widening gap between rich and poor countries, and the possibility of nuclear wars, institutional crises, and a host of other crises. These crises and pressures 'drive the breakdowns of systems that lead to states of social chaos'. These so-called 'microcosmic' crises or social breakdowns are considered short-term process events, with many more micro-oriented crises that affect open system organizations and living systems.

The second type of chaos-oriented forces that are long-term with accelerated shifts are macrocosmic. Macrocosmic crises are the great changes of history and acceleration of evolutionary forces that has led to disintegration, social shifts, and longwave crises that threaten the whole global planet, a fundamental concern of the future that calls for present decision and social action.

Text 4. Power Elite Model of Organization Theory

Shared objectives, values, wealth, and educational and social backgrounds hold the power elite groups together. There are extensive positional overlaps, interlocks, and interchanges among the uppermost elites. The executive cabinet members and top political elites appear to be centrally located, with legislators and high-level politically appointed officials taking secondary seats just below the first inner circle group. The first group of uppermost elites generally sets the broad parameters and boundaries of the political and governmental system, allowing the secondary level of non-inner circle elites to interact and function on the plural model. Should the secondary level elites step beyond the boundary limit, they will be subject to sanctions, including removal from membership.

Autonomy of the first elite group from the state is expected, and the state actually is dependent on this elite. Mills (1956) calls this group the 'power elite', whereas Hunter (1953) calls it the 'power structure', which conditions the

structural parameters and their boundaries in society. This model can be applied to many countries in the developed and developing world, but it does not seem to apply to some, especially revolutionary societies such as Iran, Nicaragua under the Sandanistas, and elsewhere, where the lower middle class, including members of the peasantry and some professional groups, actually governs the society and dominates the politics and administration, although the economic elite may still hold considerable bargaining power.

Text 5. Significance of Power Elite Model

The power of organizational elite theory is significant in several ways. First, the theory is descriptive. It not only explains the organizational power structure, it also explains the external power structure that more or less sets the parameters for organizational power and functions.

Second, the theory also focuses attention on what ought to be done by making suggestions regarding elite configuration and reconfiguration, elite recruitment from masses, elite benevolence, and elite decisions on strategic choices that affect both the elites and nonelites. Therefore, the elite theory of organization contributes to the normative theory of organization not only by building on descriptive aspects of organizational power, politics, and administration (e.g., how organizations function and who is in charge). It also considers alternative modes of power structure in organizations (what ought to be done or who can or should take power, or how power should be distributed).

Furthermore, by analyzing the existing situation, the elite theory attempts to predict possible outcomes of policy choices and to recommend corrective actions at strategic levels both inside and outside of organizations.

Organizational elite theory uses a dialectical approach as a method of analyzing organizations, the relationship between the leaders and the led, management and labor, and the elites and the masses, because without one the other is inconceivable. The dialectal process is a method of analysis of interaction between masses and elites, and between elites and counter elites at all levels of organization and society. Such dialectical interactions are key ingredients of the elite theory in general and of the organizational elite in particular. As long as the relationship between organizational members and elites is not antagonistic and hostile, elites are able to manipulate smoothly the environment under their control.

Text 6. Theoretical Approaches to the Public Sector Reforms

There are at least three alternative theoretical positions useful for understanding reform and reorganization efforts in the public sector. We will describe briefly these three fundamental positions, along with the various subsets contained within each. We will also discuss how each of the approaches might be applied in the public sector and how we might decide among them as ways of understanding what has been happening in public administration. There may even be a case to be made for the ability of several of the approaches to predict what might transpire in any prospective administrative reforms.

One major weakness in most public administration literature is the inability

to predict the logical outcomes of emerging situations and opportunities in the public sector. As a consequence, most administrative analysts postdict rather than predict, outcomes in the public sector; these ex-post analyses will always be correct, but not particularly useful for the practical policymaker. The approaches which will be discussed here are by no means predictive models, but there are at least some inklings of movement in that direction.

As we discuss theories in reorganization, we will need to be extremely careful to distinguish the theories (implicit or explicit) that have guided practitioners who constructed the reorganizations from those theories that political scientists and other organizational analysts have utilized in their attempts to understand, ex post, the changes imposed. In some instances, the two bodies of theory may be synonymous, while in other cases there are marked differences. Several of the more abstract theories of the analysts may in fact be useful for informing practical reform efforts.

РАЗДЕЛ 3. БАНК ТЕКСТОВ ПРОФЕССИОНАЛЬНОЙ НАПРАВЛЕННОСТИ

3.1. Applied Computer Science

Text 1. Applied Computer Science: Bridging Theory and Practice

Source: <https://www.askhandle.com/blog/what-is-applied-computer-science>

Computer science is a vast field that encompasses the study of algorithms, programming languages, data structures, and computational theory. While theoretical computer science focuses on abstract concepts and mathematical models, applied computer science brings these theories to life by solving real-world problems using technology.

Applied computer science is the practical application of computer science principles and techniques to various domains, such as business, medicine, engineering, and social sciences. It involves utilizing computational tools, algorithms, and software engineering methodologies to design, develop, and implement solutions that address specific challenges or improve existing processes.

One important aspect of applied computer science is software development. This involves writing code in programming languages like Python, Java, or C++ to create applications, websites, or systems that serve specific purposes. Software developers apply their knowledge of algorithms, data structures, and software engineering principles to build efficient, reliable, and user-friendly software solutions. They work closely with end-users, domain experts, and stakeholders to understand requirements and design software that meets their needs.

Another crucial area within applied computer science is data science. With the exponential growth of data in today's digital world, extracting insights and making informed decisions has become increasingly important. Data scientists employ statistical analysis, machine learning, and data visualization techniques to derive meaningful information from large datasets. They develop models, algorithms, and predictive analytics tools to solve complex problems and make data-driven decisions in various fields, such as finance, healthcare, marketing, and cybersecurity.

Applied computer science also plays a significant role in solving computational problems in engineering and scientific research. For instance, computer-aided design (CAD) software is used by engineers to create and simulate designs before they are physically constructed. In the field of bioinformatics, computational biologists use algorithms and data analysis techniques to study DNA sequences, protein structures, and genetic variations, aiding in drug discovery and personalized medicine.

The application of computer science principles extends to cybersecurity as well. With the increasing threats and vulnerabilities in the digital landscape, experts in applied computer science work on developing secure systems, encryption algorithms, intrusion detection mechanisms, and techniques to protect sensitive information from unauthorized access or cyber-attacks.

In conclusion, applied computer science bridges the gap between theoretical computer science concepts and their practical applications. It involves using computational tools, algorithms, and software engineering techniques to develop solu-

tions that address real-world challenges in various domains. From software development to data science, engineering, and cybersecurity, applied computer science plays a crucial role in advancing technology and solving complex problems in today's digital era.

Text 2. Computer Science or Applied Computer Science: What's the Difference?

Source: <https://uwex.wisconsin.edu/stories-news/applied-computer-science-vs-computer-science/>

Because the IT field boasts high salaries, demand for talent, and potential for advancement, earning a computer science bachelor's degree is a smart move for any IT professional. However, now there's a new degree major, applied computer science.

These two degrees are similar, but there are differences. What are those differences? And, more importantly, which degree fits best with your career goals? The choice between computer science and applied computer science depends on the type of IT work you want or the role you hope to fill. There is no right or wrong choice – it simply depends on your professional goals.

Here are some considerations to help you decide. What are you more interested in – theory or application?

Traditionally, a computer science curriculum digs deeper into specialty areas such as compilers, graphics, artificial intelligence, and natural language processing (NLP). Students learn the theory behind topics such as programming or algorithms, as well as the skills and tools needed to do technical tasks. An employer could expect to assign a project to a computer science graduate and the result would be a computer-based system designed and implemented exactly as asked.

An applied curriculum covers technical aspects of computer science but doesn't go into as much depth with the theory behind algorithms, computer architecture, and specialty areas such as NLP, graphics, and compilers.

Applied computer science degrees are new, created in response to recent employer demand for a business-focused IT professional. This is an important difference for you to consider as you choose a program. The applied program emphasizes using computer science theories and skills in a work setting to drive business decisions and operations. For example, after being assigned a task, an applied computer science graduate will have the skill set to ask goal-oriented questions and think critically about business outcomes and how the project affects other teams and the organization as a whole. And then they'd execute the technical build.

Next question to consider is whether you want to be an IT specialist or well-rounded IT professional.

Because of the way the curriculum is designed, computer science students spend more credit hours studying computer science theories and technical skills. As described above, these students go into more depth in particular areas, such as computer architecture.

Applied computer science students, on the other hand, study IT more broadly. At the end of the program, they are likely not specialists in a specific area.

They end up as well-rounded, business-focused IT professionals, able to pursue many roles including web development, software development, and cybersecurity.

Both computer science and applied computer science programs emphasize the importance of soft skills, especially communication and the ability to function effectively on teams. However, students in applied computer science program tend to be adults with some job experience, so courses also concentrate heavily on the continued development of specific professional skills, including project and stakeholder management and problem solving.

Are you an inventor or leader? Computer science students begin college with different levels of professional experience. Those with less experience might prefer to start out in an entry-level job dedicated to backend tasks, such as programming or software development. For this reason, these students need a degree that gives them advanced knowledge about specialty areas such as developing compilers or working on graphics drivers, especially if your career aspirations include advancing the field of computer science.

An applied computer science curriculum includes coursework that prepares graduates for IT management roles focused on business strategy, communication, and decision-making in addition to technical IT skills. As a result, they might be better trained to fill the role of team lead, solve business problems, and manage budget and timeline effectively right after graduation.

And finally, you should decide if you need a graduate degree or not.

Students who want to pursue a M.S. or Ph.D. degree in computer science are better suited for a bachelor's degree in computer science since it provides more comprehensive coverage of the research fields in computer science.

Students pursuing an applied computer science degree tend to be adults with associate degrees in IT who want to advance to leadership or a business-focused position within their IT department.

Text 3. Applied Computer Science in Economics: Training Program

Source:

<https://kpfu.ru/eng/academic-units/all-institutes-and-faculties/elabuga-institute/abitur/n/090303pe>

Within the framework of the training program 09.03.03 Applied Computer Science, profile: Applied Computer Science in Economics we train specialists in the field of creation, modification and maintenance of information systems that automate organizational management tasks and business processes in organizations of various forms of ownership in order to increase the efficiency of organizations.

Specialists in this area are currently required in any organization – from laying network cables and configuring equipment to deploying software, administering databases and maintaining corporate networks. The advantages of this program include training specialists of a wide profile, who are ready to start working either immediately or after completing an abbreviated specialized training course, if necessary. Having received a fundamental education in the field of Applied Informatics in Economics, you will be able to independently choose the direction of professional activity: in economics, education, software development and communication

systems, where you can maintain existing information systems or develop new ones.

This training program meets the requirements of the National Program of Digital Economy in the Russian Federation. The direction Applied Computer Science is included in the List of in-demand professions and specialties corresponding to the priority areas for the development of the economy of the Republic of Tatarstan for 2022-2028.

Elabuga Institute of Kazan (Volga region) Federal University implements an innovative modular educational program, uses distance learning technologies, the main disciplines are taught by highly qualified specialists, candidates and doctors of sciences. The auditoriums of the institute are equipped with multimedia equipment, the informatics laboratories are equipped with modern computers. Students use the wide possibilities of educational and scientific laboratories for the development of practical competencies. Training at Elabuga Institute of KFU is also unique due to the fact that the formation and development of the competencies of a future professional takes place near future employers, located nearby – on the SEZ Alabuga, enterprises in Naberezhnye Chelny and Nizhnekamsk.

Within the framework of the training program Applied Computer Science, profile: Applied Computer Science in Economics, the following compulsory subjects are studied: mathematics and mathematical methods in applied informatics, discrete mathematics, probability and mathematics statistics, systems theory and system analysis, operations research and optimization methods, mathematical and simulation modeling, numerical methods, mathematical logics and theory of algorithms, software and hardware, computing systems, networks and telecommunications, operating system, software engineering, informatics, programming, computer architecture, theoretical foundations for creating an information society, information systems and technologies, design of information systems, applied statistical analysis, information security.

The following disciplines are studied as additional ones: internet programming, project workshop, software application development, enterprise IT infrastructure design, intelligent information systems, information resource management, information systems management, expert system modeling, physics, organization economics, corporate information systems, automatic control business processes. As to areas of professional activity, graduates who have mastered the program can carry out professional activities in the following areas:

- Communication, information and communication technologies.
- Information systems specialist.

Text 4. Applied Informatics by Industry

Source: <https://vogueindustry.com/17191548-applied-informatics-what-is-it-applied-mathematics-and-computer-science-in-what-professions-can-it-be-applied#menu-3>

We all studied computer systems in school. But the concept of applied informatics is only based on the general principles of modern informatics. This is a frontier science that combines several sectors and areas of human activity and

knowledge. Applied informatics is the engine without which it is almost impossible to solve the whole range of emerging problems. For example, economics has long been formed into a separate and independent science. But today it is simply impossible to imagine the work of a specialist in this field without a computer. Indeed, almost every task is performed using certain computing programs: 1C, Audit Expert, Risky Project, Master MRP, etc.

But an economist is simply not enough to develop such knowledge support. So, it turns out that a specialist in computer and computer technology is needed, who knows all the nuances of this profession.

Applied Informatics is the direction of science, which gives us universal IT-specialists of a wide profile. This direction prepares the best specialists for servicing computer systems and networks of various levels. Students in the learning process receive fundamental knowledge in the field of analytics, development and implementation of various business applications, economics and finance, as well as in the science of resource management.

Let's consider the fields of applied informatics use by industry:

- Economy. The specialty Applied Informatics is in demand here for data analysis and their further systematization.
- Jurisprudence. Professionals in this field are engaged in the development and maintenance of special programs for organizing high-quality and fast work.
- Management. With the help of applied informatics, data is collected and organized here for subsequent control.
- Sociology. This science has a lot of data and figures that require deep analysis and construction of illustrative examples.
- Chemistry. The development and maintenance of specialized programs that simulate the behavior of a substance greatly helps to develop the industry.
- Design. Almost everything in this industry is built on various graphics programs and editors.
- Psychology. Modeling of mental and behavioral processes helps in identifying and describing many phenomena in the industry.
- Education. The learning process is now completely impossible without information and software.

It's not a secret that professions related to finance and management are now the most in demand. Moreover, Applied Informatics in Economics is a broad specialty, covering not only knowledge in economic theory, but also the ability to model various processes.

More specifically, the main objects of activity of a graduate of this direction are:

- Special professionally oriented information systems. This can be either the banking, customs or insurance sector, or administrative management.
- Information processes in the economy.
- Development of computer support for the latest trends in the economy, preparation of a set of specialized programs.

– Detailed analysis of incoming information, on the basis of which an expert opinion is made. Based on the presented results, a specific management decision is developed.

After completing the training, each graduate receives the qualification of informatics-economist and has fundamental theoretical knowledge and practical skills in the following areas: databases; business basics; high-level methods of programming and computer science, etc.; computing systems, telecommunications and networks; designing common and intelligent information systems; management, economic analysis, accounting and auditing.

A graduate can work as a 1C programmer, economic security specialist, system administrator, computer economist, IT manager, entrepreneur, employee of various private and public institutions and enterprises, IT specialist, control manager, etc.

Text 5. Definition of Digitalization

Source: <https://innolytics.net/what-is-digitalization/#:~:text=Digitalization%20is%20the%20generic%20term,technologies%20and%20digital%20business%20innovation>

Digitalization is the generic term for the Digital Transformation of society and the economy. It describes the transition from an industrial age characterized by analogue technologies to an age of knowledge and creativity characterized by digital technologies and digital business innovation.

Alongside business innovation, digitalization – the development of digital innovations – is one of the most important business trends for the future of the economy. Companies need to develop digital strategies and focus on what are the key success factors of digital transformation. Digitalization has many different aspects, which are explained in this article. For example, the term digital transformation describes the gradual transition of existing economic and social systems into the digital age. The term digital disruption describes the radical changes triggered by innovative digital business models.

Let's consider the difference between digitalization and digitization. Digitalization is a generic term for the digital transformation of the economy. Digitization refers to the conversion of specific products – such as photos or records – from the analog to the digital format. In practice, these two terms are often confused with each other. Sometimes they are used as synonyms.

Now let's move onto fields of digitalization. In recent years – since around the year 2000 – various digital technologies (mobile Internet, artificial intelligence, Internet of Things, etc.) have been drastically further developed and have made the transition from expert application to people's everyday lives.

Just as the innovation of the steam engine and the spread of electricity have changed society, so has digitalization changed the economy and society.

Digitalization is technology-driven. Digital innovations are created on the basis of the new digital technologies: Innovative use cases driven on the one hand by established companies and on the other by start-ups and venture capital.

This leads to a digitalization of different speeds. While, for example, public administration is still often only accepting paper documents and working with files, markets are changing much faster. The music and media industries were the first to experience the effects of digitalization. The retail industry followed.

Virtually all industries are now affected by the different fields of digitalization and digital transformation.

Digitalization determines the future of the economy and society. What impact will digitalization have for the future? Digital change is a radical change in the economy and society that has occurred over a period of almost 50 years. It began in the early 1990s with the spread of the Internet and the emergence of services such as AOL and CompuServe. Digitalization was promoted by the increase in Internet connections at the end of the 1990s and the first hype around the turn of the millennium. It was further sparked by the high-speed Internet and mobile data access. In the future, an even faster mobile Internet (5G) combined with technologies of the Internet of Things and artificial intelligence will make applications such as the increased use of robotics possible. Digitalization will drastically change the future of the economy. Examples of the impact of digitalization on the future of different industries:

Text 6. Digitalization and Economy

Source: <https://innolytics.net/what-is-digitalization/#:~:text=Digitalization%20is%20the%20generic%20term,technologies%20and%20digital%20business%20innovation>

Digitalization changes economy and society. Digitalization will drastically change the future of the automotive industry through new mobility concepts. From autonomous driving to existing sharing models and completely new concepts such as the rental of electric scooters, digitalization will allow new models of usage in the future. Digitalization influences the future of the financial industry. Technologies such as the blockchain enable new forms of corporate financing and participation in addition to the applications frequently discussed in the press such as the virtual currency Bitcoin. Today, for example, company investments are made possible via so-called ICOs (Initial Coin Offerings) or STOs (Security Token Offerings). These forms are only possible through digital technologies, which will continue to spread in the future.

Digitalization is changing the future of traditional professions. In the future, physicians will be supported more and more by applications of e-health, especially in diagnostics. Services in the legal sector (today primarily provided by lawyers) will be supplemented or replaced by digital services from the Legal Tech sector.

In the future, digitalization will create new challenges for schools and education, training and further education, public administration and associations. It is the responsibility of industry, associations and politics to prepare society for the changes that can be expected in the future from digitalization.

Digitalization has implications for enterprises of all sizes. On the one hand, enterprises have to digitize their internal processes and procedures, on the other hand they have to develop new services and digital business models. This is driven

in part by digital transformation in companies that have defined a digital roadmap, and in part by start-ups. In digitalization, the challenge for companies is to identify new customer needs as a result of the growing adoption of digital services and apps.

New target groups have also emerged for companies with the so-called Digital Natives. To achieve this, a different marketing and sales strategy is often required.

- Digitalization makes it necessary for companies to focus their actions on the development of digital innovations in order to be successful in digital change. Typical fields of action are:

- Establish a culture of innovation that promotes the development of digital processes and procedures and makes it possible to develop digital services and digital business models.

- Development of digital innovation strategies, i.e., an action plan for the company's handling of digitalization.

- Training of employees to prepare them for the challenges of the digital age and to enable them to take part in digital change.

- Alignment of a company's marketing and sales activities to digitalization. Companies have to deal with this question: How do we want to reach our customers tomorrow? What role do trends such as content marketing and sales automation play? How do we deal with the ever more individual needs of our customers?

- Development of digital procedures and processes: Saying goodbye to paper files by introducing processes and procedures in the company, some of which have to be radically rethought as a result of digitalization.

- Dealing with data that arises within the company, in connection with the activities of a company or with customers. New service and business models can be developed from data.

Digitalization confronts companies with the challenge of permanently changing and adapting. Competitive advantages from the past only exist to a limited extent.

Customers today are already much better informed than at times when the Internet was only just becoming widespread. New technologies such as artificial intelligence and the blockchain will continue to radically change business models and companies until 2040. Thus, digitalization in the company is a topic for top management.

Text 7. Industrial Digitization and Digital Enablers

Source:

<https://www.plainconcepts.com/industrial-digitalization/#:~:text=Industrial%20digitization%20is%20the%20integration,and%20from%20company%20to%20company>

Market researcher IDC published in October 2021 that investments in digital transformation will constitute more than half of all ICT investments by 2024. The

pandemic demonstrated the importance of digitization in many sectors, and here we explain the technologies and benefits of this process.

Industrial digitization is the integration of technologies such as IoT or Big Data into traditional industrial processes. These technologies make it possible to collect and process data which, when analyzed, are used to make decisions. Digitization varies from industry to industry and from company to company.

Industrial digital enablers are the technological tools that contribute to the digitization of industries and companies. Thus, among these digital industrial enablers, we can find sensors, robots, cloud solutions, or cybersecurity.

Benefits and advantages of industrial digitalization and industry 4.0 include:

- Cost savings.
- Increased productivity.
- Process automation.
- Adaptation of production to needs and demand thanks to historical sales data.
- Improved process safety and ability to respond to unforeseen events.
- The collection, analysis, and processing of data allow us to discover new business opportunities or redirect the current ones.

Technologies for industrial digitalization are:

- Robots: A classic of factories and warehouses, in which tasks can be automated to be more agile and productive. The popularization of the two technologies we will talk about next, IoT and big data improves in them the automation and programming of tasks.

- Internet of Things (IoT): Devices and sensors connected to the Internet collect data sent to a central system. Thanks to this, the operation of machines or the supply chain can be known in real-time, and changes can be made if necessary. These devices and sensors are installed in machinery, household appliances, furniture, and security cameras, etc.

- Big Data: As data is collected, it must be stored, managed, and analyzed. For the latter, business intelligence tools are essential, because they allow employees to make better decisions based on these data. Moreover, as the data is stored, it creates a repository that can be very useful in the future for detecting and analyzing historical series.

- Cloud Computing: It reduces the number of physical servers while allowing workers to access corporate software or data from more locations.

- Digital Twins: Three-dimensional virtual reproduction of machines, constructions, and objects serves to make better decisions or changes to prototypes faster than on physical models.

Digitalization is not only for the production of products and services. It can be also applied in the following areas:

- Administration: The management of invoices, receipts, and delivery notes, etc. is automated. In addition, the information of these documents can be collected to prepare budgets or economic analysis.

– Logistics: The supply chain is improved, for example, by placing sensors in vehicles to optimize routes. Also, by analyzing the shipment of supplies, to check that they arrive on time or if there are any faults that can be corrected.

Industrial digitization is important for business as it benefits the company for all the reasons we have seen before: cost savings, higher productivity, new ideas to shape the company's business, etc. Since technology allows to detect usage trends (what users search for on the Internet, what they need and what they don't, etc.), the company never remains stagnant and is always active in a changing market.

In addition, digitization also benefits workers, as technology eliminates their most tedious and repetitive tasks and, therefore, they can find themselves more satisfied within the company. Learning these new tools also helps to improve their digital skills.

When considering the digitization of industrial spaces, the first thing to do is to know the current degree of digitization: spaces, and workers' skills, etc. From there, objectives are defined that can be embodied in a plan, whose actions must be measured to check that they are on the right track. It is also necessary to check what technologies are already available and how they are being used.

Text 8. Concept of Digital Manufacturing

Source: <https://solvace.com/digitalization-in-manufacturing-industry/>

It is undeniable that the coronavirus pandemic has revolutionized the way business is done and brought challenges to many sectors. In the manufacturing industry it was no different.

Technology became part of consumers' routine, increasing their expectations regarding the purchased product or service.

These consumers, in turn, became more and more demanding, wanting new, individual and high-quality products, but at the same time, with reduced cost and delivery time.

Manufacturers needed to find a solution to produce goods from increasingly scarce resources and in the most sustainable way possible.

To meet these requirements, businesses are turning to the digitization of manufacturing, where the real and virtual worlds converge in an Internet of Things, Services and Data.

The digital era brings new challenges for manufacturing. We need to remember that even before the pandemic gripped headlines around the world, we were already living in an era where the promise that Industry 4.0 technologies could transform shop floor operations was high.

Now, with years of pandemic, more than ever, the manufacturing industry is rushing to accelerate its digitization processes, paving the way for the factory of the Future, also known as Intelligent Manufacturing or Industry 4.0.

You're probably asking yourself, "but how will digital manufacturing work in the future?" However, before we delve into how digitization will work in the manufacturing industry and the challenges that come with it, we need to clarify the concept of digital manufacturing.

As its name suggests, digital manufacturing is the application of digital technologies to production processes.

The focus of this manufacturing model is the integration of software and processes along the value chain. In this way, the manufacturer is able to optimize the entire life cycle of the products – from the moment they are designed until the sale to the final consumer.

It is worth noting that we are not just talking about industrial automation. In the case of digital manufacturing, there is the use of innovative resources that transform the routine of companies, such as Artificial Intelligence and intelligent platforms.

For example, imagine a digital mockup of your production lines. In it, you can view all the details of the manufacture, such as tools, supplies, staff and deadlines to be met. In other words, digitally, it is possible to have access to everything the factory needs to keep production on track.

Digital manufacturing aims to increase the productivity and operational efficiency of companies with the help of disruptive technologies brought about by Industry 4.0.

For you to better understand this concept, it is important to know the 3 main characteristics of this model.

1. Connectivity: It is one of the foundations of digital manufacturing. This is because, for it to operate, it is necessary to ensure a good flow of information in real time so that managers can make assertive decisions. Through it, machines, operators and systems can communicate and share strategic data from the operations. In practice, a good example of this connectivity is the use of a connected worker platform.

2. Intelligence: The digital manufacturing model provides smart manufacturing. For this, resources based on Industry 4.0 technologies, such as Artificial Intelligence and Big Data, are widely used in order to make processes more efficient. Let's look into the improvement of predictive maintenance. Several tools and equipment make the analysis more accurate and faster, reducing considerable costs in the industry since repairs are carried out periodically, thus avoiding failures in machinery and, consequently, in production.

3. Automation: The third feature of digital manufacturing is industrial automation. More and more, manual processes give way to automated and standardized activities. Here, once again, technology contributes to productivity and reduction of errors in the production chain, in addition to increasing the safety of shop floor operators. An example of how this works in practice is the use of autonomous robots that assist in the assembly processes on a production line.

Text 9. Digital Transformation in Manufacturing

Source: <https://solvace.com/digitalization-in-manufacturing-industry/>

To describe digital transformation in manufacturing we need to answer the question: How is digitization changing the shopfloor? Before we go into how digitization is transforming manufacturing, let's take a step back and look at the history of manufacturing and the stages of industrial development.

The growing desire to make more things for more people is what drives the manufacturing industry.

Water and steam provided the power for the First Industrial Revolution. The Second Industrial Revolution was powered by electricity, giving rise to the modern assembly line introduced by Henry Ford to manufacture the Model T. Years later, through computers, it became possible to mass produce on a global scale, driving the Third Industrial Revolution.

Today, the digitization of virtually every stage of industrial production drives the Fourth Industrial Revolution – the famous Industry 4.0.

Currently, software and tools allow designers and consumers to create digital versions of products, regardless of their size. These products, in turn, can be viewed and tested in augmented and virtual reality. Parts for these products can also be purchased electronically around the world through e-commerce that works through cloud-based inventory management. Furthermore, all components and their usage can be tracked and monitored through the supply chain.

Imagine that a manufacturing owner wants to purchase machinery that facilitates the standardization of their products. He searches on the internet for machinery from different regions of the globe that meet his needs. Before making the purchase, he has the chance to virtually test the functionality of this product and, satisfied, checks the manufacturer's website for availability in stock and chooses to complete the purchase. Immediately, the manufacturer will be alerted in its system and will send information so that the buyer can track and monitor the entire delivery process. The same process is also possible with parts for maintenance of these products.

Given this scenario, we can say that the digitization of all manufacturing steps is perhaps the main driver of Industry 4.0. While the new models of production outpaced the industrial revolutions, the enormous amounts of data obtained during all stages of industrial production separate the Fourth Industrial Revolution from the three previous ones.

It is noteworthy that this digitization is also the main driver of digital manufacturing. Digital manufacturing is revolutionizing all phases of product development, from the way they are designed to selling to the end consumer.

However, the first thing we see as digitization transforms the manufacturing industry is the speed of manufacturing. Driven by new consumer habits and behaviors and an accelerated pace of innovation and new product introductions, manufacturing needs to figure out the best way to adapt.

Digitization gives an instant boost to productivity, allowing projects to move forward faster and manufacturers to meet more aggressive deadlines.

Thanks to additive or 3D printing, for example, it is possible to perfectly combine the design phase with the subsequent prototype and test phases. Manufacturers are able to quickly move from design to floor and back again as changes are made by the engineering team. In this way, the move to the manufacturing phase can be almost instantaneous after successful prototyping.

Another big – perhaps the most significant – change in product manufacturing is that many products are being sold on a per-use basis. For example, aircraft engines and excavators are being billed to the customer based on product usage.

When it comes to product design, you can see that computer-aided design (CAD) software tools and their capabilities will continue to grow.

As digitization progresses, the latest CAD products store the product bill of materials (BOM) and their 2D and 3D interfaces analyze product designs to provide a simulation of component behavior under multiple loads, stresses, or environmental circumstances. In this way, they help other stages of product development and testing that tend to consume a lot of time when performed manually.

Suppose the shop floor operator uses the CAD system to perform a machining task. As this software features simulation capabilities, it helps the operator visually inspect the machining process, allowing the capture of tool strokes and collisions at an early stage in production. This feature contributes to the overall productivity of a manufacturing setup, as well as helping to eliminate errors and reduce material waste.

In addition, as most CAD systems provide high speed machine tool paths, it is possible for manufacturers to minimize their cycle time, thereby reducing tool and machine wear and improving machinery productivity by more than 50%.

Text 10. Digitization in Manufacturing Processes

Source: <https://solvace.com/digitalization-in-manufacturing-industry/>

Digitization in the manufacturing industry is also significantly changing manufacturing processes.

For many years, manufacturing operations have benefited from computerized systems for planning, scheduling, and executing tasks. Manufacturing requirements planning (MRP), capacity planning, and robotics are the cornerstones of today's economy. The difference for today is in the scale, frequency and precision made possible by today's systems.

Whereas previous-generation MRP tools took a full day to complete the next day's manufacturing production schedules, current tools can be run in minutes to adjust to dynamic market conditions.

In addition to these changes, we cannot fail to mention the impacts on the sales, marketing and services sector – perhaps the segments most impacted by the manufacturing digitization process.

Tracking people's buying habits throughout the sales journey now takes up a significant part of the overall computer application landscape of the modern manufacturer. In addition, smart, connected products allow companies to know the condition of a product before it reaches the customer.

For example, imagine that when transporting a product line to the point of sale, logistics delay delivery or the truck deviates from the route. The smart app notifies the manufacturer and, through the sales code, allows it to track the products and find their location.

These applications can also notify possible production failures, allowing the manufacturer to recall defective lines before they are offered for sale and compromise the company's image, for example.

These are just some of the ways in which digital technologies are transforming manufacturing. Today's manufacturer needs to understand these tools and how they can be used to make better, more profitable products to compete in today's marketplace.

Text 11. Digital Manufacturing Future and Challenges

Source: <https://solvace.com/digitalization-in-manufacturing-industry/>

Let's answer the question: How will tomorrow's manufacturing work? In an increasingly near future – and even already made a reality by many companies – all machines, from the milling machine to the welding robot will be networked together.

In addition, each part will have its own built-in system, storing various information, such as about the customer, the desired configuration of the part and its destination.

Digital manufacturing will also allow you to uniquely identify and locate blanks. Not only will it be possible to know the necessary processing steps, these parts will also be connected to the production machines and will be able to communicate with each other to decide the exact moment when production will move to the next step.

In the future, the entire line will no longer stop when a particular station fails. Instead, the work pieces and machines will work together to re-plan the processing sequence.

The result will be an adaptable and “self-organizing” manufacturing process that will not require constant human intervention, yet remains under human control.

Now let's consider digital manufacturing challenges. When unprepared, digitization in the manufacturing industry can pose some challenges for manufacturers and shop floor workers. Examples are:

- Data overload: Processing a lot of data from different sources, and sometimes some without much relevance, can be time-consuming and there are chances of system overload.

- Lack of skilled labor: New technologies require new skills and it is not always easy to attract and retain skilled talents adapted to new technologies.

- Problems with global supply chain integration: Digitization in the manufacturing industry is already a reality and manufacturers need to adapt to new trends to remain competitive. The difficulty in keeping up with the constant changes in the market can affect the global supply chain and the competitiveness of companies in relation to others.

- Difficulty in optimizing internal logistics: Producing what is needed, when it is needed, and doing it as efficiently as possible is the ultimate goal of lean manufacturing. However, optimizing value streams from raw materials to finished products can be a challenge. Finding the right tool is the key to success.

Given the challenges presented, it is very important that everyone in manufacturing – from workers to executive leaders – prepares with complete and integrated tools and software so that the adaptation to the new market reality and the migration to digital are facilitated.

It is also worth remembering that an intuitive and agile solution can help employers in attracting, retaining and training talent.

So why go digital? Digital is here to stay. But as explained above, digitization in the manufacturing industry can be a challenging process when manufacturers and shop floor workers are not aligned with new market trends.

To understand how digital transformation can help meet the challenges of the new era, you need to understand the advantages of digital manufacturing.

Text 12. Advantages of Digital Manufacturing

Source: <https://solvace.com/digitalization-in-manufacturing-industry/>

There are some advantages of starting the digital transformation process in the manufacturing industry.

- Process optimization: If your company has problems running processes, then digital manufacturing is for you. Industry 4.0 software and technologies have features that help reduce error rates and the need to redo tasks. In practice, your factory processes will become more fluid and efficient. Plus, with everything running smoothly, your team will have more time to devote to projects that demand more attention.

- More efficient production processes: Global studies estimate that the digital transformation will increase work performance by up to 25%, without increasing the workload or working hours of employees. Simply, the digital transformation will make production processes more efficient.

- Improvement of maintenance processes (predictive maintenance): Maintenance processes are essential for the functioning of the industry. However, it is not always easy to ensure that all machines are at peak performance. By moving manufacturing to digital, monitoring machine performance becomes much easier. That's because maintenance activities are now supported by innovative tools that help track failures in advance. In practice, the intelligent platform's predictive maintenance allows connected devices to send a signal to workers to fix a particular item as its reliability declines. This process also reduces the need for an on-call maintenance team as digital manufacturing machinery will work longer with less unplanned downtime.

- Factory modernization: The modernization of the industry is one of the consequences of adopting digital manufacturing. After all, processes are now automated and based on technology. Modern factories are letting go of inefficient manual processes, thus increasing market competitiveness.

- Flexible and customized manufacturing environment: Another significant advantage in the industrial environment after starting the digital transformation process is the possibility of making it more flexible and customized. Digital manufacturing makes use of real-time logistics to meet demands as they arise, fully in line with the taste and needs of partners and consumers. This customized demand,

in addition to promoting the modernization of the factory and enhancing the consumer experience, increases competitiveness and allows the company to stand out from competitors that have not yet started the digital transformation process.

- Better use of data: The digitization of manufacturing makes managers better use the data at their disposal. After all, they have real-time access to everything that goes on in the factory and can make really safe decisions. In a scenario of high competition, making the right choices is a differentiator. Therefore, take advantage of the automation tools, evaluate the data and always pay attention to the reports.

- Failure prevention: Monitoring machines connected by Internet of Things (IoT) sensors helps to predict failures and make assertive decisions before equipment breaks down. Because data is collected in real-time, manufacturing is able to perform predictive maintenance and minimize production downtime.

- Overall equipment effectiveness (OEE): If the manufacturer knows exactly where and why it is wasting resources – which is possible thanks to Industry 4.0 technologies – it can take all necessary actions to improve the overall performance of its equipment.

- Cost reduction: Another benefit of digitization in the manufacturing industry that deserves to be highlighted is the remarkable reduction in costs. This benefit is perceived in several ways, as there is a better use of available resources. After all, if there are fewer errors, wasted time and unscheduled production stoppages, it is clear that the company saves and increases its profitability, isn't it? Through lean digital manufacturing, business resources are used more efficiently, thus reducing wasted time, labor, materials, etc. CNI predicts that by 2025 the impact of digitization will promote a 10% to 40% reduction in maintenance costs for industries. Currently, this can already be verified through the greater durability of the machines, thanks to efficient programs for detecting failures and production bottlenecks, which prevent equipment from breaking due to preventive analysis.

- Tests in the virtual environment: Digitization enables the development of digital twins, virtual models that simulate real product properties. This eliminates the need for physical prototypes, which cut costs and fixes potential flaws before the official product release.

- Time to market reduction: The integration between product engineering and production engineering reduces research and development time. Thus, the company can bring its products to market faster, as it is possible to perform all the testing steps in the virtual environment.

- Generation of new opportunities: This entire scenario of digital transformation present in industries opens the door to countless other opportunities, both for new businesses and for professions, positions and functions. For example, a 3D machine with Industry 4.0 technology requires a 3D engineer to design models for that machine, a technical engineer to design it, and a technician to perform maintenance. Not to mention that an entire team will take advantage of the facilities that the machinery offers. Furthermore, there is no doubt that new insights will be generated as manufacturing adapts to new technology and discovers all its possibilities. This favors the innovation environment as a whole, including the speed of launching new products or services offered.

– Greater security: In addition to all specific Occupational Safety legislation, the industry that begins its journey of digital transformation also offers greater safety in production processes. This enables a safer environment not only for the employee, due to the technology applied to machines and tools, but also provides safer financial and commercial negotiations for shareholders, investors and consumers.

– Makes storage smarter: The digital transformation in the industry makes storage facilities smarter. It is possible to make warehouses and document storage centers more efficient and reliable. For example, scanning paper documents protects them from disasters (such as lost and leaked information) while freeing up space. Warehouses with automated storage and retrieval systems (AS / RS) use available space more efficiently. A warehouse with AS / RS may have higher shelves and narrower aisles than a facility that relies on forklifts and humans for retrieval. In addition, automating the storage system reduces the number of trained personnel needed. This type of warehouse also keeps workers in the warehouse safer as they do not operate forklifts and other heavy item storage machines.

– Zeal for transparency in business: Intelligent machines have something special: they detect irregularities before they get in the way of the smooth running of operations. Thus, it is easier to maintain transparent management and have quick access to data and complete reports on the performance of each production component, including human performance.

– Promotion of environmental conservation and sustainability: Since the digital industry seeks to be lean to reduce costs and waste, there is greater awareness of the environment and sustainable practices.

– Improves communication with suppliers: Through real-time communications, you can find out where your supplies are at any time. This enhanced supply chain information can help you better manage your operations.

Text 13. How to Go Digital: Guide for Industries

Source: <https://solvace.com/digitalization-in-manufacturing-industry/>

Here is a guide for industries about how to go digital.

1. Identify which stage of digital transformation your business is in: The digital transformation process can be divided into four maturity levels, where the first level concerns an environment in which systems, machines and sensors are not connected and the last level is consistent with manufactures where Machine Learning and Artificial Intelligence work to identify efficiencies, generate new configurations and send instructions to the machines. Understanding the four levels of smart manufacturing and what stage your business is in will give you a clear overview of the digital transformation journey and the potential benefits each stage can offer.

2. Set goals to be achieved: Work with your team to develop your strategy. Identify the types of issues you want to solve with smart manufacturing, set a clear deadline, and set your expectations and key performance indicators (KPIs) accordingly. Define your plan in a master document so that everyone is aligned from the

start. Planning your strategy as a team will help you avoid communication issues and encourage stronger collaborative relationships.

3. Invest in automation: The smart factory is linked to investment in automation. It encompasses intelligent machines, sensors and tools to provide employees with real-time data about the processes they are running. It forms the bridge between Operations Technology (OT), which exchanges data directly with Information Technology (IT) machines, tools, systems and applications. Both are enhanced by business intelligence systems that perform in-depth analysis. This leads to real-time visibility into plant processes, optimization of process control, and insight into potential areas of performance or process improvement.

4. Train your employees: The adoption of digital manufacturing also demands investment in team training. This ranges from issues such as awareness of the importance of changes for the business to training in the use of new technologies. This is a way to guarantee that the planned strategies are put into practice and bring the expected results. Furthermore, it also involves a change in the organizational culture, in which technology takes on a more strategic role and not just as a support for operations.

5. Empower leaders: Just as training employees is essential to guarantee the effectiveness of the strategy, it is also necessary to invest in the training of leaders – as they are the bridge between the operational levels and management. They need to understand the strategy, objectives, changes and what is expected, so that they act based on these issues and lead the teams towards the expected results. Thus, everyone involved in the process comes to better understand their role within it and is able to work with a focus on the objectives.

6. Track market changes over time: It may seem obvious, but the digital dynamic is constantly changing. Many leadership teams decide where they want to be in 5 to 10 years and then forget to adjust their goals as competition, markets and technologies evolve. Successful companies monitor developments in industry and technology and set the path for their long-term vision as the world around them evolves. A quick test-and-learn approach allows these companies to add and remove elements based on what's relevant and what's not. Getting the digital manufacturing investments right is all about putting these growing mountains of data to work and staying agile.

Text 14. Digital Accounting

*Sources: <https://fullyaccountable.com/what-is-digital-accounting/>,
<https://lerablog.org/business/economy/finance/accounting/what-is-digital-accounting/>*

Digital accounting refers to the creation, representation, and transfer of financial information in an electronic format. Instead of using papers, all accounting transactions are conducted in an electronic environment.

The concept actually originated from the need to establish a more efficient taxation system. Digital accounting surfaced in 2003 as a project of the Federal Government to modernize the Tax and Customs Administration (PMATA). Then came the Electronic invoice (NF-e) and the Digital Bookkeeping System (Sped) in

2009. In 2015, the Digital Bookkeeping System Tax, Social Security, and Labor Obligations was introduced.

To clarify a misconception, digital accounting doesn't eliminate the role of an accountant or dismiss the importance of accounting routines. It rather values and empowers accounting professionals by making their work more efficient.

Computers and technology have transformed the accountancy sector. Digital accounting – carrying out financial management and reporting in an electronic format – is the new norm.

Advancements in technology mean that accountants can report on and interpret data much faster and more efficiently. This has changed the face of accountancy, allowing digital accountancy firms to enter the sector, offering a broader range of services than traditional accountants.

The cloud technology has had a significant impact on the way accountants work. Accountancy platforms now have capabilities far beyond basic bookkeeping. They can communicate with other apps to create a business platform that your organisation can use to manage your operations. The platforms can also be accessed remotely on different devices, meaning you can do accounts-related tasks in real time. For example, you can scan receipts on a smart phone and upload them straight into an expenses app.

With many organisations using accountancy software to do their own bookkeeping, it has freed up accountants to focus on advisory services such as business planning. Accountants are becoming strategic partners to their clients, offering greater value by providing insight and advice to help with business growth.

Your business may still use spreadsheets and hand-written ledger cards to record financial transactions. If so, you will have to move to a digital system as the Government introduces measures for all businesses to file their accounting information digitally.

The Making Tax Digital initiative aims to simplify the tax administration system and phase out paper record-keeping.

At the moment, VAT-registered businesses above the £85,000 threshold must submit their VAT returns electronically. The Government was going to introduce other measures in 2020, but they have been temporarily postponed because of the coronavirus pandemic.

Future measures include accounting records being kept in a digital form and tax returns will be submitted electronically from HMRC-approved accountancy software.

Text 15. Advantages of Digital Accounting

Source: <https://lerablog.org/business/economy/finance/accounting/what-is-digital-accounting/>

Digital accounting offers many advantages for your business over manual accounting methods.

- Real-time visibility: Rather than having to wait until the end of the year to see your accounts, digital systems let you see your financial position in real time.

As information is put into the system, it updates your records so you can access reports as and when you like.

- Improves planning capabilities: You can take a proactive approach to business planning thanks to the real-time visibility digital accountancy software offers. You can adjust forecasts as you need to rather than at the end of the year, reducing the chance of issues impacting your business.

- Increases productivity: Accountancy software lets you access reports with one click, significantly reducing the time it takes to produce them. It also streamlines procedures and automates routine tasks.

- Accessibility: Cloud-based accountancy software can be accessed from different locations and devices. It means you are not limited to being in the office to work on or view your accounts. Having all your financial data in one place also makes it faster and easier to find information and produce audit trails should you need them.

- Better security: Your organisation has to comply with strict regulations relating to data, such as GDPR (General Data Protection Regulation). Digital accounting software provides several layers of security to keep your data safe, such as encryption and firewalls.

Text 16. Why Your Accountant Needs to Be Digitally Savvy?

*Sources: <https://fullyaccountable.com/what-is-digital-accounting/>,
<https://lerablog.org/business/economy/finance/accounting/what-is-digital-accounting/>*

Technology has transformed the financial industry. In the past, business owners had to hire accountants that would record and process financial data manually, costing them more time, money, and effort, as well as human errors. Today, automation in digital accounting has allowed business owners and their accountants to complete functional tasks more quickly and accurately, as well as interpret and report data more efficiently. This way, business owners can focus on their strategic roles and handle complex issues, such as ensuring better cash management.

If you've bought into using a digital system for your accounting needs, you'll need an accountant who understands technology. Technology can help advance and grow your business, so your accountant needs to have a digital mindset to support your needs.

Your accountant should be able to advise on the best software and apps for your business, ensuring they meet regulatory requirements and produce valuable management information. Your accountant will also need to have the digital tools in place to scale up according to your growth requirements.

The accounting staff will need to be trained to help you meet the requirements of the Making Tax Digital initiative. They should also be able to help with upgrading your accounting systems for the new tax reporting system.

Digital accounting will continue to evolve as new technologies emerge. Accountants will adapt their working methods and offer you more enhanced services

over and above financial reporting. Make sure your business uses their experience and advice to help develop strategies to grow your business.

Text 17. Benefits of Digital Accounting. Part I

Source: <https://fullyaccountable.com/what-is-digital-accounting/>

Let's discuss the benefits of digital accounting.

- **Accurate and Scalable:** The most sought-after feature of software and machines is that they aren't prone to committing mistakes. Providing accurate results and staying free from errors, automated software and services are much more reliable than traditional accounting practices. In contrast, human error is inevitable when we compile data. Accuracy is extremely important because businesses rely on data to make critical decisions. Imagine taking a poor business decision based on inaccurate accounting data that causes the business to fail. Digital accounting solutions help avoid that.

Apart from accuracy, a digital accounting system has also proved popular among entrepreneurs due to its scalability. For a startup, managing accounts manually should be okay in the beginning but as the business grows, the accounting system will require massive upgrades to support the increase in the scale of operations. Hiring too many professionals to handle the increased accounting needs can prove costly. A digital accounting system is an inexpensive way to scale your accounting practices during the growth stage. When you have reliable accounting software, all you need is a simple software upgrade to address the growing needs of your business.

- **Remote Access:** Another major benefit of a digital accounting system is that it provides you with remote access to your company's financial data. This means that professionals need not be at the office or carry their laptops everywhere to access critical information. As cloud-based solutions, digital accounting software packages allow you and other employees to log in to the system from anywhere and at any time to track results and data.

This is particularly helpful for cash flow management. If your cash flow position is unstable, you might be going towards bankruptcy. That being said, cash flow is the lifeblood of your company. For efficient cash flow, decision-making plays a crucial role. With a cloud-based accounting solution, you can analyze your cash flow remotely and make quick decisions regarding payments, investments, etc. By monitoring cash flow online, you should develop a better relationship with your business's finances. In other words, you should have better control over the inputs and outputs of your accounting system at the end of the month, the end of the week, or even the end of a particular business day. Analyzing financial projections should then be clear and secure, and you can rest assured that the money will be available when payments are due. Real-time access to cash flows also puts you in a much better position to decide on the financial future of the company. You are likely to make accurate predictions and make rational long-term decisions.

- **Easy Invoicing and Payment Tracking:** Without keeping up with invoicing and payment tracking, there's no way to minimize delayed payments from your customers. There might be too many distractions keeping you from following up

with debtors. This can adversely impact your cash flow position. A digital accounting system happens to be the best solution to the problem as it automates the process of sending invoices and payment requests.

Text 18. Benefits of Digital Accounting. Part II

Source: <https://fullyaccountable.com/what-is-digital-accounting/>

Let's continue considering the benefits of digital accounting.

– Convenience and Improved Pace of Productivity: Ease of use is another incredible advantage of switching to a digital accounting system. As opposed to manual accounting practices, accounting software applications are super easy to operate, offering comfort and convenience to users. The underlying purpose of accounting is to maintain a record of business transactions on an annual, quarterly, or monthly basis and analyze those numbers and data to make business decisions. In a manual accounting process, an accountant may have to spend hours or even days gathering information for the past year and creating a cash flow statement and other financial statements from it.

A digital format, on the other hand, provides you with the comfort of running different automated financial tests on easily accessible data, allowing the accountant to set up the financial statements within minutes. Professionals can save a lot of time compiling and presenting the same reports and numbers, thereby accelerating the processing of online transactions. This, coupled with better decision-making, translates into high efficiency and increased productivity. By automating many of the accounting functions through digital accounting, you can dedicate more staff to other essential functions such as business development or sales. This means you should be able to generate more revenue with the same number of resources.

– Better Integration and Syncing: One of the biggest challenges associated with manual accounting systems is poor compatibility with other tools used in your business. The best digital accounting solutions offer amazing flexibility in terms of integrations with other business tools such as the point-of-sale system, payroll, website order fulfillment, and more. The cost of these integrations is often zero or negligible. These applications comprise ecosystems of hundreds of business applications that enable data sharing freely.

On top of that, integration services such as OneSaas, IFTTT, and Zapier can extend the number of programs your accounting program can connect with for some cost. When you integrate a digital accounting program with another online business application, both can update each other in real-time, daily, or on-demand by automatic syncing of data. This is an incredible replacement to the hectic export-import routine used to manually transmit data from one platform to another. That's the reason why manual accounting processes fall behind, leading to incomplete versions of data in different programs. The simplest of errors like incorrect postal addresses can result in unhappy customers and lost sales.

The automatic data syncing with digital accounting solutions means that you only need to update an address or email in one place and the change will be automatically implemented to other programs. As your business grows, these integra-

tions will become more and more important. The simplicity of future business processes will depend on them. However, not all accounting software offers high flexibility in terms of integrations and offer two-way data syncing. Some will only pull data or push data, while others will do both. So, be sure to examine these features when choosing an accounting application.

- Bank Reconciliation Made Easy: You might be doing remarkably well in manually recording the day-to-day transactions, but figures must also remain consistent with those in the bank statement. Digital accounting solutions come with good reconciliation tools that make it easy to track errors in transactions and processing as well as to detect theft and frauds.

Text 19. Benefits of Digital Accounting. Part III

Source: <https://fullyaccountable.com/what-is-digital-accounting/>

Let's have a look at some more benefits of digital accounting.

- Security and Agility: While paper-based accounting records aren't totally secure (can be stolen or destroyed by fire outbreaks or natural disasters), data security becomes a bigger concern when it comes to digital accounting. The problem with storing and managing data in-house is that unless you have solid data recovery measures in place, you can lose all your data in case of a system crash or failure. Imagine losing accounting data obtained through years of hard work in a flash. Cloud-based accounting solutions are a tremendous solution. These solutions come with cloud storage backed by multiple data centers for data backup. Many rely on SSL technology for data encryption like those used to secure financial information in banks. With a digital accounting solution, you should be able to retrieve or backup your data even if things go wrong.

- Facilitates Tax Preparation: Manual accounting practices make it extremely difficult to gather tax-related documents and prepare for the filing of the upcoming returns. It also leads to poor financial tracking, making it difficult to set aside funds for tax payments. Not preparing for the tax filing as the deadline draws nearer can put you in serious trouble. While you can't avoid the tax burden, a digital accounting system can simplify the preparation and filing process for you. With a solid financial tracking system, digital accounting not only helps you arrange and separate funds for tax payments proactively but also simplifies the calculations for tax. This should exempt you from agonizing stress associated with taxation. Poor financial tracking specific to manual accounting procedures also means you can miss out on possible tax write-offs and available deductions available for your company. To avoid overlooking payments that be used for tax deductions, consider switching to a digital bookkeeping and accounting system.

- Specialized Functions: The ever-advancing tech industry seems dedicated to creating an app for every business function. Hundreds of niche applications have been developed to cater to different industries, from farming to retail to architecture. Depending on the complexities involved in your business, you might be able to find a digital accounting solution that works better for your business than others. Online retails, for example, involve hectic inventory management. You may want to choose an accounting platform that comes with an efficient inventory manage-

ment system. In other cases, your accounting program can connect to other specialized apps.

- **Allows You to Obtain Real-Time Advice:** More and more accounting experts are breaking open from tax services and seizing the opportunities to provide real-time advice to entrepreneurs. With a digital accounting system, your data remains up to date. This puts you in a great position to seek financial advice. Using readily available data, a financial expert can analyze the numbers and offer real-time advice on the easiest and fastest way to improve them. While some accountants can charge by the minute, some require a fixed fee for quarterly or monthly consultations and phone calls to counsel you in growing your business.

Text 20. Common Features of Agriculture and Farm Accounting Software

Source: <https://www.softwareadvice.com/accounting/agriculture-software-comparison/#evaluation>

If you're a farm, ranch or other agricultural entity, you need accounting software that has more functionality than what's found in a basic system. For example, you need to be able to track inventory for perishables and livestock, including births, deaths, birth weights, weaning weights and more. You also need to be able to keep track of inventory in multiple units of measurement depending on the type of crop or commodity you're selling. If you have more than one farm or plot, these needs are magnified tenfold.

With features for things like inventory management, asset depreciation, purchase orders and budgeting, agriculture and farm accounting software is designed to cater for these specific needs. Talking about common features of agriculture and farm software one should understand that as well as the core ag modules like payroll, accounts receivable and accounts payable, farm bookkeeping software may have some or all of the following features:

- **Crop/livestock inventory management:** Agricultural software should track the additional data needed for farms and ranches, including seeds planted, fertilizers and chemicals used, livestock parents/birth weights etc. This will in turn support PTI compliance and feed into the sales and grower accounting systems.

- **Warehouse management:** Farming accounting software should also manage the inventory for fertilizers, chemicals, seeds, heavy equipment, the receiving, pallet and case labeling, re-packing and pick ticket management.

- **Ag ratio analysis:** Grower reports analyze the percentage of crops planted to yield produced, so you can price accordingly, identify best practices and increase yields for future seasons.

- **Breeding & growing calendars:** Agriculture is a highly seasonal industry, and so much depends on the time of year, the age of the animal or crop and the products used to support its growth. A farming software solution may include a calendar to track actions like planting, fertilizing, spraying for pests, harvesting, gestation, births, weaning etc.

As to Farm Accounting Software prices, it is worth mentioning that budgeting properly for farm accounting software is just as important as finding the right

system, so buyers need to ensure that they know all of the costs associated with their farm accounting software, and when they must be paid, beforehand. Here are some typical accounting software pricing models that you will run into during your research:

- Perpetual license: With these products, you pay one cost upfront and own the software for as long as you want to use it. These systems are almost always on-premise systems that you install directly onto a computer or server, which are becoming increasingly rare due to the growth in popularity of web-based products.

- Flat subscription fee: More common among smaller accounting offerings, buyers here pay a flat monthly or annual subscription fee to use the software. Some vendors have one set fee for their accounting system, while others have different tiers with a higher fee as you add more functionality.

- Contingent subscription fee: Buyers here also pay a monthly or annual subscription fee, but this fee is contingent on how many users are going to be in the system or how many employees are going to be paid through a payroll module.

Besides the license cost, there may be also be fees for implementation, maintenance, training and data migration. Be sure to ask each farm accounting software vendor about their specific pricing model.

Text 21. Electronic Human Resource Management

Source: <https://www.infobloom.com/what-is-electronic-human-resource-management.htm>

Electronic human resource management (E-HRM) is the process of a company integrating its human resource department with information technology specifically designed to help with tasks associated with human resources. By doing this, businesses can streamline its human resources, or HR, departments and become more efficient in terms of both costs and production. Different tasks that can be handled by E-HRM include staffing, training, and payroll. Software is installed which can handle various time-consuming jobs, allowing HR employees to save time on those tasks and concentrate on strategic maneuvers designed to improve the business.

Human resources departments are hugely important to companies around the world. These departments are responsible for communications between management and employees. Their efforts can make the difference between a content, satisfied group of workers and a bunch of disgruntled employees. Taking care to cater to the employees' various needs can be difficult when all of the technical tasks of HR management must be performed as well. That is why many companies have begun the process of installing various forms of electronic human resource management to help out their HR managers.

It is important to understand that, in most cases, E-HRM is not intended to replace traditional human resource departments. Instead, it is considered to be more of a supplement to the HR department, performing tasks which might be otherwise bog down HR management and prevent them from doing more strategic work. By installing E-HRM software, a business can streamline the more detailed tasks associated with the HR department.

For example, electronic human resource management can include software devoted to payroll issues, which traditionally fall under the authority of the HR department. Management of employee benefits can also be handled by E-HRM. In addition, the software can be helpful in terms of staffing. Programs designed to sift through applications or suggest internal candidates for open positions can make the time-consuming process of choosing between many alternatives for jobs much easier to handle.

By doing all of these tasks, electronic human resource management can help HR departments get back to the central focus of ensuring the best possible relationship between management and workers. As a matter of fact, E-HRM can also help out with this task through the use of intranet applications which can provide a direct channel of communication between the HR department and company employees. E-HRM also can free up human resources employees to concentrate on strategic initiatives to improve the overall health of a company.

Text 22. Human Resource Software

Source: <https://www.easytechjunkie.com/what-is-human-resource-software.htm>

In the world of business, it's important to manage human resources to ensure the strategic growth of a company. Human resource software is a tool that can be used to manage the human resource, the people aspect of a company's progress. This type of software organizes the various components of managing an effective human resource department for the betterment of the company and the employees that work there.

Human resource software is most often referred to as human resource management or HRM software. This specialized software effectively aids in the handling of the many different areas that a corporate human resource department is generally in charge of. These areas can be responsibilities like new hire processing, employee benefits, payroll and employee development, and cost management.

Human resource software can also manage more complex aspects of human capital management, such as legal compliance. The human resource software can alert users of updates and changes in employment laws. For example, HRM software can track incoming applicants for job openings to ensure equal opportunity hiring practices. Over time, the job applicant demographic information can be stored and tracked to make sure hiring practices reflect legal compliance at all times.

In addition to managing personnel legal matters, HRM software can aid in handling staff development programs. Employee records can be maintained and updated regularly as staff receives additional training or educational benefits. New employee training can be developed from the records as a need arises to ensure all employees have fair opportunities for advancement through learning.

The use of HRM software also aids in tracking employee expenses, such as earnings, benefits, and insurance claims. Careful and confidential records can be maintained for each employee to monitor and identify any areas that need improve-

ment. Insurance claims, such as worker injury, can be managed more successfully as a result of having a solid human resource software system in place.

HRM software is sometimes used to create new employee cross-learning programs, which can benefit companies and employees. For example, a company may experience shortages in staff that have a certain skill-set, so the company uses the human resource software to identify the employees that possess that particular skill. Then the company utilizes the skilled employees to train the unskilled employees.

A company may choose to have an internal human resource software system or sign up for an external web-based service. In either case, human resource software is generally secure, since privacy is always a concern. This software can aid the human resource department at any company manage the complex matters regarding human capital management.

Text 23. Types of Human Resource Management Software

Source: <https://www.wise-geek.com/what-are-the-different-types-of-human-resource-management-software.htm>

Human resource professionals are responsible for helping all employees in an organization to feel welcome and motivated to do their best work. These professionals also help develop and educate workers about policies regarding codes of conduct and cultural goals, priorities and values. It also is common for human resource professionals to participate in recruiting processes, collect and organize employee data and perform employee negotiations. Some of the most common types of human resource management software are programs that enable professionals to track hours that employees have worked for payroll purposes, to organize applications and special needs or requests of workers and to track employee performance and development. Some kinds of human resource management software are suites that contain multiple functions, and other programs are focused on specific operations.

When human resource management software is used for payroll purposes, it often contains an interface that all employees use. For instance, one common model might include an interface into which employees record the time when they come into work and the time when they leave. After they enter this information, it is uploaded to a human resource database. When it is time for human resource professionals to submit payroll data, they can access information from the software or upload information from a database directly to the company's payroll department.

Some human resource management software is used for recruitment purposes. In some cases, professionals might choose software that includes an online user interface that job candidates can use to fill out and submit applications that are uploaded directly into a human resource database. Many programs have functions on the human resource end that allow professionals to sort applications based on position and levels of promise.

In many instances, human resource professionals require more than just applications. This software might also enable applicants to submit résumés, cover letters and letters of reference. Programs also might allow candidates to record spe-

cial needs, such as disabilities, which human resource professionals can record for future reference.

Employee evaluation is a common function of human resource professionals. They might use human resource management software that enables them to record all data regarding employee performance. For example, each time a worker is reprimanded for tardiness, a human resource professional might record this information in his or her program. Likewise, he or she might also record all awards and honors that employees receive. This information might be useful when employees are up for promotions or raises.

Text 24. Different Types of Personnel Management Software

Source: <https://www.wise-geek.com/what-are-the-different-types-of-personnel-management-software.htm>

Professionals who practice personnel management are responsible for seeing that all employees under their supervision perform their duties effectively, efficiently and safely. In a business office, for instance, a professional who is responsible for personnel management might write schedules, perform employee evaluations and collect and analyze important statistics. Personnel management software essentially is any computer program that helps managers track important and sometimes sensitive employee data in a way that might save time and money. Some of the most common kinds of personnel management software are programs that enable managers to schedule employees; store and organize contact and personal data; and keep track of tasks, skills, certifications and other information that is required for effectively running an operation.

Personnel management software often varies by industry. In the medical or healthcare industry, for example, this kind of software enables managers to see with which patients their staff members are working, for which shifts their staff members are scheduled and which duties the staff members performed on their shifts. For instance, medical personnel management software might allow a manager to see which treatments were administered during a shift and which patients might need special treatment.

When a fleet manager uses personnel management software, on the other hand, it normally is to track the location of his or her fleet vehicles. This kind of manager might also use a global positioning system (GPS) to learn where employees are traveling with their fleet vehicles. If a driver is lost or taking a route that might make him or her late or which might result in extra fuel costs, a manager can use personnel management software to contact the driver.

Professionals such as human resource managers might use personnel management software to store and organize employee data. They might use these programs to form employee profiles or accounts, which can include documents such as applications, résumés, cover letters, letters of reference and academic transcripts. Human resource managers also can use this software to keep track of employee records, such as meetings, complaints and awards.

Individuals who use personnel management software tend to use either software that they purchase and install into their computers and business network sys-

tems or software that they use as a service. When they buy and install software, they normally have information technology (IT) departments that are responsible for performing performance and security upgrades. Professionals, who use software as a service (SaaS), on the other hand, usually pay a subscription fee to a software host that is responsible for updating programs. When professionals use software as a service, they often have access to it from almost any computer or device that has an Internet connection.

Text 25. Network Economy

Source: <https://www.wise-geek.com/what-is-a-network-economy.htm>

Network economy is the economic order within the framework of the technological information society. Unlike economies inspired by the Industrial Revolution, the network economy utilizes technological advances like the information market and social networking platforms to establish the value of goods and services. There are several chief aspects of the network economy: its inherent structural differences from industrial economies, the role of the digital revolution, value networks, and intellectual property rights.

One element of the information revolution was the creation of new forms of economy and technology in the post-Industrial Revolution years. Combined with changes in cultural and social styles, the information revolution initiated a change in how business was conducted. The importance of business administration and boardroom decision-making was lessened by consumers' ability to share knowledge on a large scale via the information highway. This caused a significant shift in business transactions; the advent of electronic commerce and a largely digital economy restructured how many businesses operate. Where once the value of a product or service was set solely by the company, now, through the sharing of information by digital means, it was now fundamentally determined by consumers.

Value networks were revolutionized by the onset of the internet economy. Large-scale information sharing through social networks could make or break the success of a product or service. With more power in the hands of consumers, businesses also found they were being held more accountable for their actions. At the same time, however, they saw financial benefits of this new network economy. Suddenly, sales were not limited to certain demographic areas but were able to reach all corners of the globe.

There are complicated issues of intellectual property rights associated with a mainly virtual economy. Intellectual property laws grant owners exclusive rights to assets deemed intangible, such as works of art. In the context of the network economy, a business is charged with protecting its intellectual property by ensuring that competitors do not steal its ideas, products, or pricing structures – a very real possibility in the information age.

Despite the onslaught of changes brought about the network economy and the popularity of electronic business, basic economic laws remain unchanged. Creating quality products, setting value-maximizing pricing structures, utilizing positive consumer criticism, and maintaining customer-focused business models are timeless economic laws. With or without technology, these facts help maintain and

grow any economic configuration, and, as evidenced by the network economy, can take the field in exciting new directions.

3.2. Business Informatics

Text 1. Business Informatics

Source: <https://www.smartcapitalmind.com/what-is-business-informatics.htm>

Business Informatics is the interdisciplinary field where information technology merges with business operations, enhancing efficiency and driving innovation. It's where data analysis meets strategic decision-making, empowering organizations to navigate the digital landscape effectively. By integrating IT solutions with business processes, companies can unlock new opportunities. Ready to see how this fusion can revolutionize your business strategy? Keep reading to explore the transformative power of Business Informatics.

Business informatics is an emerging discipline that combines various aspects of business management, information technology, and informatics. The goal of it is to fully integrate computer science and business administration into one field. This particular discipline began in Germany, and its popularity has spread throughout central Europe with many institutions of higher learning offer four-year degrees in the field. It is a discipline that changes and develops rapidly, and its teaching must therefore be constantly revised and reconsidered.

A field like business informatics is interdisciplinary in nature, meaning that it combines several areas of study and expertise into one. To fully understand what it is, it is helpful to understand its components. The first of these, informatics, is broadly defined as the science of processing information. Increasingly, it involves processing and analyzing information digitally, with the aid of computers. Informatics is often used synonymously with the term *computer science*, although the latter has a somewhat more specific meaning. Medicine and biology, as well as the social sciences, can use informatics to advance their work.

Information technology, also called IT for short, is the second component of business informatics, and this varies slightly from informatics. IT usually refers to the setup, configuration, and maintenance of computer systems, including hardware and software applications. Students of business informatics are taught not only to understand and explain IT-related problems, but also to propose and work through solutions, possibly by applying new strategies and technologies. Business management or administration constitutes the third component of the field, and those who study this discipline learn and develop attributes such as leadership and strategic thinking, which are important abilities for anyone in management to have.

Someone who is properly trained in business informatics can act as a go-between or a bridge to connect management with the information side of a company. By understanding both sides, qualified experts will ideally be able to help both those who build and those who use computers and information systems. It is speculated by many that companies structured around this discipline will increasingly become the norm. This is particularly the case with businesses in the life sciences industries, which need large amounts of data storage, and need it to work flawlessly. As business becomes more driven by quality of information, most compa-

nies will likely see the need to apply business informatics to some degree, in order to remain competitive.

Text 2. Types of Informatics Disciplines

Source: <https://healthanalyticinsights.com/?p=1185#:~:text=Informatics%20is%20a%20diverse%20field,Pharmacy%20Informatics%20and%20Nursing%20Informatics>

Informatics is a diverse field with many different disciplines given that this is the Health Analytic Insights site, in this blog post I am going to focus on four types of informatics disciplines: Health Informatics, Bioinformatics, Pharmacy Informatics and Nursing Informatics. These disciplines have overlapping skills and interests but do have some differences between them.

- Health Informatics: This field can be described as the use of health and clinical data to drive and support patient health outcomes. There are several case studies that fall under the realm of Health Informatics, for instance, transferring patient data securely within the hospital to various Electronic Health Records. Another example is analyzing patient data from patients who are readmitted back into the hospital and designing a clinical dashboard to track this. Health Informatics can be described as the merging of skills from Information Technology and Healthcare. Health Informatics has subspecialties such as Pharmacy Informatics and Nursing Informatics.

- Bioinformatics: It can be described as the use of biological data to model and solve problems in fields such as genomics, proteomics and pharmacology. The field of bioinformatics is responsible for the fast development of mRNA vaccines and the work involved with processing large amounts of data from biological experiments. Another example of the work done in this field is the human genome project, the mapping of all the genes that make up human DNA.

- Pharmacy Informatics: As stated above, Pharmacy Informatics can be considered a subspecialty within Health Informatics. Individuals in this field generally have a registered pharmacy designation or are a registered pharmacy technician. It is important to have experience working as a pharmacist or pharmacy technician to be able to apply technological solutions to improve medication use process and clinical workflow amongst pharmacists within your organization. Therefore, you will often find many of these roles looking for this prior experience.

- Nursing Informatics: Similar to the Pharmacy Informaticist, the Nursing Informatics role is a specialized role. The definition of nursing informatics provided by the American Nurses Association and recommended by Healthcare Information and Management System Society “is the specialty that integrates nursing science with multiple information and analytical sciences to identify, define, manage and communicate data, information, knowledge and wisdom in nursing practice”. Therefore, employers are often looking for individuals who have a degree in nursing or who have experience as a registered nurse. Also, these individuals will have experience working with the EHR system to improve clinician workflow.

Text 3. Industrial Digitalization: Definition

Source: <https://idapgroup.com/blog/industrial-digitalization/>

The digitalization of industrial organizations has long been lagging behind retailers and B2B companies. But the recent 2020 pandemic has, in a way, forced many industries to adopt more digital solutions to reach customers and continue delivering services without compromising safety. In the 2020 survey, as many as 97% of the respondents stated the pandemics sped up the industrial digitalization in their organizations.

In the end, those who do not evolve, get out of the business. Therefore, digitalization has become an imperative for all organizations in order to stay ahead of new customer demands and technology trends. So, let's talk about industrial digitalization in more detail and find out why it is important more than ever and how different industrial sectors are leveraging digital technologies.

What is digitalization in industries? Industrial digitalization, also called digital transformation, digitalization, or digitization, is the process of integrating digital tools, workflows, and approaches into every aspect of the business within an organization. Organizations from every industry and vertical can adopt this process to become more agile, efficient, and value-driven.

Digital transformation is often aligned with Industry 4.0, Industrial IoT (Internet of Things), smart manufacturing, Artificial Intelligence (AI), Augmented and Virtual Reality, Big Data, robotics, and machine learning (ML). However, digitalization goes beyond the plain adoption of digital tools. This process also affects other aspects of the business, including the people, processes, and technologies.

That is why industrial digitalization can be regarded as a radical rethinking of how the people work in every department; a shift that transcends traditional roles and causes everyone to accept continuous changes and to work in a more connected way across the entire organization. The goal is to introduce a fundamental change in how an organization functions and how it interacts with its customers. While the result is a significant improvement in business performance.

The digital future of industry poses a number of challenges, but also opens up many opportunities for companies. Investing in digitalization is key to maintaining competitiveness and long-term growth. Companies that can adapt to changing market realities and leverage technological potential will be able to succeed in an increasingly globalized and digital industrial world.

Text 4. Main Areas of Industrial Digitalization Project

Source: <https://idapgroup.com/blog/industrial-digitalization/>

If your organization is planning to launch an industrial digitalization project, then there are four main areas to consider.

1. Business process transformation: Process transformation focuses on the “how” of getting things done. Therefore, with regards to digitalization, it involves the use of digital technologies to automate and improve existing business processes. It could improve such business processes as data entry through automation; decision making with the help of the AI; and manual operations (e.g., HR operations, procurement, supply chain, and sales) with the business process automation.

2. Business model transformation: Business model transformation is similar to business process transformation but aims to introduce changes on a much bigger scale than just processes – the whole business model. The business model transformation process requires leaders to rethink how the digital tools of today can help them reshape the model of how their organizations create and deliver value for their companies. Business model transformation can take brick and mortar businesses online; get closer to customers with mobile apps; replace snail mail with email automation; or change the way consumers order and have delivered their food.

3. Cultural transformation: Cultural transformation can be the most challenging business transformation activity. That is because the change in corporate culture is typically driven by the personalities of leaders and how employees are rewarded and recognized. It also takes longer than any other type of transformation, partly because it is more difficult to translate cultural transformation concepts into action.

4. Domain transformation: Domain transformation takes place when one organization manages to effectively transition from one industry domain into another. Amazon, for example, has expanded services by launching its own streaming platform (Amazon Prime) and Amazon Web Services (AWS) – both of which belong to two different domains.

Let's consider the benefits of the industrial digitalization. What is so special about industrial digitalization that makes it so valuable to the industrial and manufacturing sectors? The key benefits of this rapidly-evolving cluster of digital technologies include the following:

- It increases cross-organizational cohesion by facilitating communication between departments.
- It decentralizes production through the facilitation of mobility and remote communication.
- It builds a better employer brand that attracts new talent, and fosters recognition and interest among the specialists.
- It creates greater operational efficiency through the use of data and automation.
- It reduces operational costs as a result of time and staff reduction.
- It enables better use of data thanks to AI, analytics, and machine learning.
- It opens the door to new business opportunities and revenue streams and thus makes the companies more competitive.
- It speeds up the response rate to changes in demand in the market.

Text 5. Most Affected by Digitalization Industries

Source: <https://idapgroup.com/blog/industrial-digitalization/>

There are countless opportunities in many industries for implementing new technologies to radically improve everything ranging from products to production systems. The industries that are most prone to industrial digitalization include:

- Education: Education was already moving toward digitalization before Covid-19. But it really picked up the pace after the pandemic broke out and mil-

lions of children around the world were left out of the classroom. Industrial digitalization in this particular domain could make better use of data collected from tests to enable help teachers to create more personalized lesson plans for each student. Other technologies, such as AR/VR (Augmented Reality/ Virtual Reality) would allow schools and other educational institutions to take students on virtual class trips to every corner of Earth and space.

- Healthcare: Healthcare is one of the leading domains when it comes to industrial digitalization. Hospitals and medical facilities are becoming smarter by incorporating AI to diagnose conditions and assist with surgeries. Some of them are adopting blockchain technology to promote better medical file access and security. Moreover, wearable devices along with the expansion of telemedicine services are significantly changing the way that patients receive care. There is also a significant increase in mental health startups that provide support to people suffering from anxiety, depression, and other mental disorders. Additionally, a wide range of mobile apps and workout streaming platforms provide users with personalized exercises and meal plans to help them stay healthy.

- Transportation: Data is crucial for the digital transformation of the transportation industry. Drivers can use it to determine the most efficient shipping routes and the transportation companies to monitor potential safety hazards. Other technologies, such as 3D scanners are essential for shipping companies that want to track packages in transit. The next decades will likely turn autonomous vehicles and deliveries by drone into a reality making the transportation sector much different than it is today. There are many other industrial digitalization initiatives on the rise. A relatively new approach called MaaS (Mobility as a Service) proved to be very helpful during the pandemic outbreak. For example, aggregator apps to help plan journeys that would comply with the social distancing requirements. Moreover, mobility systems such as ride-hailing and bike-sharing highly increase people's mobility within cities.

- Manufacturing: Digital transformation has taken over the entire manufacturing industry. Such concepts as IoT (Internet of Things) and AI enabled many factories to become “smart factories”. Smart factories automate tasks that otherwise would need to be done manually, thus increasing efficiency and reducing the number of errors. The IoT devices collect data which is later on analyzed and fed to the system to speed up the production process and increase the production output. The latest manufacturing trends utilize 3D printing which allows companies to scale up the need for critical equipment (e.g., medical equipment like respirators and face masks) with the increased demand.

- Finances: With regard to industrial digitalization in financial services, mobile-based payments are only the beginning. The broad implementation of Artificial Intelligence in this sector helps to provide fast and accurate customer service; conduct wealth management; and detect financial fraud. Some institutions also utilize blockchain technology for additional monetary security. In general, the sheer rise of the FinTech sector proves that the adoption of digital technology is progressing well in the financial industry.

– Retail: Although the brick-and-mortar stores still exist and attract many consumers, shopping activities have largely moved online. Even grocery stores have joined the eCommerce ranks. Nowadays, there are more than a handful of leading shopping platforms available enabling new small business owners to open their online stores in no time. With such platforms virtually anyone can become a seller and reach global customers with their goods. These platforms are reliable and efficient to manage your online store and serve your customers. Furthermore, similarly to other industries undergoing digitalization, physical stores are also getting smarter. The IoT technology, mobile apps, and a smart customer management system, enable consumers to buy their groceries without the need for traditional check-out through the cashier or self-service machines. There are also fashion retailers experimenting with 3D scanning technologies to provide bespoke clothing to their customers.

To sum up, the adoption of modern technology has triggered numerous industries to evolve through industrial digitalization. Thanks to this, they became more efficient and competitive in the marketplace.

Text 6. Key Technologies in Industry Digitalization

Source: <https://firmbee.com/digitalization-in-industry>

According to PwC's report "Industry 4.0: Building the digital enterprise", investing in industry 4.0 returns after about 3.5 years. Optimizing processes, increasing productivity and improving competitiveness at relatively low implementation costs create opportunities that allow companies to adapt to changing market realities. The digital industry differs from the traditional industry mainly in its use of modern technologies, which contribute to automating processes, better data management, and greater work efficiency. In today's article we will outline the key aspects of digitalization in industry and how companies can prepare for it.

Digitalization in industry is driving changes in the work environment, making employees acquire new skills and become more flexible. In a survey by PwC, 64% of respondents believe that a key challenge of digitalization in industry is to increase employees' skills.

Digitizing industry can be a challenge, but at the same time it is an opportunity for long-term growth and gaining a competitive advantage. The key to success lies in developing the right strategy, engaging management, and acquiring adequate financial resources. To overcome these challenges, companies should rely on innovation, collaboration and long-term planning.

The digitalization in industry relies on the use of a number of key technologies that affect the way companies work. These include:

– Internet of things (IoT): It allows you to connect devices and machines into intelligent networks that communicate with each other and exchange data in real time. With IoT, it is possible to monitor and control production processes, as well as to predict machine failures and maintenance needs. Today, entrepreneurs can use ready-made systems of modular solutions that can be connected together on the Azure Industrial IoT Platform.

- Artificial intelligence (AI): It makes it possible to analyze vast amounts of data and make decisions based on the collected information. AI can also support process automation and help drive innovation. According to PwC, 94% of companies believe that data analysis through AI will be crucial to the future of their business,

- Big data: Analyzing big data sets allows you to better understand not only a company's business needs, but also to optimize processes, for example, by analyzing data taken from digital twins,

- Smart machines: They are also known as intelligent machines. Smart machines are devices that can communicate with each other, exchanging data to optimize production processes. They use machine-to-machine (M2M) technology and artificial intelligence, machine learning or deep learning,

- Hiper-automation: That is a comprehensive process of modular combination of various technologies such as artificial intelligence (AI), machine learning (ML), robotics, and natural language processing (NLP). Modularity of systems allows for easy scaling and integration of new solutions, which contributes to greater flexibility and efficiency of the enterprise. Hyper-automation can be applied in manufacturing, where robots use AI and ML to optimize the assembly line, and the modularity of the system helps introduce changes to the process easily in response to changing market needs.

- Robotics: Using robots in industry allows for the automation of many tasks, which results in greater efficiency and lower production costs.

Text 7. Strategies and Financial Resource for Implementing Digitalization in Industry

Source: <https://firmbee.com/digitalization-in-industry>

Digitalization in industry is an irreversible process that is affecting the way modern businesses work. Implementing key technologies, such as the Internet of Things (IoT), artificial intelligence (AI), big data or robotics, allows companies to optimize processes, increase efficiency and gain a competitive advantage in the market. To successfully implement digitalization, companies should develop appropriate strategies, invest in employee development and acquire the necessary financial resources.

In order to successfully digitize industry, enterprises must develop and implement proper strategies. Key aspects of this process include:

- Developing a vision and setting goals: Companies should clearly define their vision and goals related to industrial digitalization. At this stage, it is important to consider the customers' needs, competitors and technological capabilities.

- Engaging management: The success of industrial digitalization depends to a great extent on the commitment of management. Owners and managers should be open to change, invest in innovation, and support their employees in the digital transformation process.

- Employee training and development: To address the challenges posed by industrial digitalization, employees need to acquire new skills. Companies should

invest in employee training and development so that they are prepared for changes in the work environment.

As to financing industry digitalization, to digitize industrial equipment, companies have a variety of options to choose from, such as:

- Own resources: The use of one's own financial resources gives full freedom in the way funds are spent on industrial digitalization, but is a relatively rarely chosen path due to the great availability of external financing options,

- Grants and subsidies: Many government and public institutions offer financial support to companies that want to invest in industry digitalization. A report by PwC shows that as many as 43% of companies use government subsidies to finance their investments in digitalization.

- Loans and credits: Companies can apply for bank loans or external loans to finance investments in digitalization.

- Strategic partnerships: Cooperation with technology partners lets them jointly finance the digitalization process and share the costs associated with implementing innovations.

Implementing digitalization in industry usually involves significant financial outlays. However, due to the rapid growth and promising future forecasts, investing in industry 4.0 can really pay off.

Text 8. Key Elements of Business Digitalization

Source: <https://firmbee.com/what-is-business-digitalization-1>

Business digitalization is the process where companies are integrating digital tools into their practices: sales, marketing, document workflow, or management. In contrast, in the process of digital transformation, from traditional businesses, they become digital companies at a deeper level. In this way, they step into the realm of digital transformation (DX), boosting their technological and digital progress. In practice, this means incorporating new technologies into the company's processes, such as artificial intelligence, data analytics, and cloud computing, to optimize the organization's operations and maximize its competitive advantage. Does digitalization always mean transformation? And what does it take to win in the digital age? Read our article and find out.

Business digitalization is gaining weight in the world of modern enterprises. Optimizing processes, increasing efficiency, and improving customer relations at relatively low implementation costs, give companies an edge that can let them turn a crisis into an opportune time to improve operations and streamline traditional solutions.

According to a report prepared by the SAP Center for Business Insights in collaboration with Oxford Economics:

- As many as 80% of organizations that have completed a digital transformation have significantly boosted their revenues, 85% of them have increased their market share.

- They expect 23% higher revenue growth than their competitors who have not implemented digital solutions.

So, what benefits can a company get from transforming into a digital business? And how to make replacing analog tools with their digital counterparts the beginning of an organization's transformation?

As to the key elements of business digitalization, digitalization embraces several basic areas. Some of them, such as replacing paper documents with digital ones, and letters with e-mails, seem so obvious that they barely spring to mind. However, many companies in the 20s of the 21st century are still using the former just fine. Here are some more examples of business digitalization:

- Automating processes: Using technology to automate routine tasks so employees can focus on more creative and more challenging assignments.
- Digital analytics: Using data collected within the company to better understand customers, the market, and its own processes.
- Cloud computing: Storing data and using services in a cloud-based model, which allows for flexibility, scalability, and easy access to resources.
- Implementing mobile technologies: Using smartphones, tablets, and other mobile devices for corporate purposes to manage business, sales, or customer service more easily.

Business digitalization can bring a number of benefits, for instance:

- Greater efficiency: by automating processes and making better use of data.
- Improved customer relations: through easier access to information, providing faster and partially automated service, and personalizing offers.
- Innovation: as it makes it easier to develop new products, services, or business models.
- Increased competitive edge: by making it faster and cheaper to adapt to changing market conditions and customer expectations.

Text 9. Digital Solutions for Small Business

Source: <https://firmbee.com/what-is-business-digitalization-1>

Implementing digital solutions is especially important if you run a small business. After all, with software, automation, and artificial intelligence, you can do much more on your own or with a small team than in the pre-digital era. Let's take a closer look at some good examples:

- E-commerce: A company with two employees invested in a customer relationship management system (CRM) to gain a better understanding of customer needs and optimize its sales process.
- A freelance web designer: By using project management tools, they have improved client collaboration and streamlined order processing.
- A local restaurant: It has introduced a mobile app for ordering takeaway food, helping it boost sales and win new regular customers.

To digitize your business, follow these steps to successfully implement digitalization in your business:

1. Set goals and priorities: Decide what areas of your business can benefit most from digitalization. It could be improving processes, increasing sales, or providing better customer service. Set goals and create an action plan.

2. Choose relevant tools and technologies: There are a number of various digital technologies and tools available in the market. Choose the ones that best suit your business needs. For example, software for managing your company's projects and finances or tools for data analysis.

3. Take care of cybersecurity: Business digitalization involves collecting and processing data. Make sure it is stored and handled in compliance with applicable regulations, as well as protected against potential threats.

4. Introduce changes: Business digitalization can consume a lot of time and resources. Introduce changes bit by bit, monitor the results, and adapt your strategy as needed.

5. Train and support your employees: If you hire employees, business digitalization may involve training them to use new technologies. Make sure to provide them with the right support so they can use the implemented solutions effectively.

Text 10. Difference Between Business Digitalization and Digital Transformation

Source: <https://firmbee.com/what-is-business-digitalization-1>

As the importance of business digitalization continues to grow in the modern world, companies are looking for ways to implement digital tools and technologies to optimize processes and increase their competitive advantage. Business digitalization usually encompasses process automation, digital data analytics, as well as the use of cloud computing and mobile technologies.

It yields several benefits, such as improved efficiency, stronger customer relations, innovation, and greater competitiveness. Digitizing a business entails setting goals and priorities, selecting the right technologies, addressing data security, rolling out changes gradually, as well as supporting and training employees while these changes are taking place.

But what is the difference between business digitalization and digital transformation?

Business digitalization is the process of incorporating digital technologies into an organization's existing systems and processes to automate and streamline its operations. It applies to specific areas of business, such as:

- marketing,
- sales,
- customer service,
- resource management.

Business digitalization focuses on implementing tools and technologies that help the company become more efficient and improve its bottom line. Digital transformation, in turn, is a holistic approach to managing change and innovation in an organization that goes beyond the introduction of new technologies.

It involves both organizational and cultural changes, allowing a company to fully exploit the potential of digital technologies to create new business value. Digital transformation requires a shift in mindset and organizational culture that supports innovation and openness to change, as well as strives for constant improve-

ment. To spell it out, business digitalization may be one of the stages of digital transformation, but it is not the same thing.

Text 11. Digital Mindset: Definition and Key Components

Source: <https://firmbee.com/what-is-a-digital-mindset>

Some companies are successful in today's digital world, while others are falling behind. Why is this happening? The secret may be their digital mindset. What does this term mean, and how to develop a digital mindset in your organization? Read on to find out more.

In the era of digitalization and global competition, the ability to adapt and innovate is becoming a key success factor for contemporary enterprises. This is where the concept of a digital mindset comes into play, an approach that allows individuals and organizations to deal with the challenges of technological change effectively.

The importance of this challenge is evident in the priority set by the European Union within the Path to the Digital Decade program. With this initiative, the EU seeks to enhance digital skills so that at least 80% of European adults possess basic digital competencies. Furthermore, the program strives to ensure that all households have access to high-speed Internet and that cities, major roads, and railway lines are covered by 5G networks.

The program also aims to speed up the digital transformation of businesses. By 2030, at least 75% of businesses should be using cloud services, artificial intelligence, and big data, while at least 90% of small and medium-sized enterprises should be present online. However, what role does a digital mindset play in driving this transformation process?

Let's consider the definition of a digital mindset. The digital mindset is a way of thinking and acting that uses digital technologies to generate value, solve problems, foster personal development, and achieve business goals. People with a digital mindset embrace lifelong learning. They are open to change, willing to experiment, able to use the latest technologies, and aware of their benefits. It helps them to adapt to the dynamic and complex digital world.

Now let's move onto the key components of a digital mindset. In a business context, there are three main components of a digital mindset. These are:

- Adaptation to change: the ability to adapt quickly to a changing environment and innovate in response to market challenges.

Amazon is a perfect example of a company that constantly adapts to shifting market conditions. Initially, it focused on selling books online. Over time, it broadened its range of products to include virtually anything you can buy, including subscriptions and cloud services.

- Innovation: flexibility and willingness to experiment in the search for new solutions, products, and services.

A good example of an organization that focuses on innovation is CD Projekt. This company not only creates world-class computer games, such as the Witcher series and Cyberpunk 2077, but also conducts innovative research in the fields of computer graphics, artificial intelligence, and network technologies.

– Using the latest technologies: understanding the opportunities offered by digital technologies and how to use them effectively.

Asseco is a great example of a company that uses new technologies successfully. Starting with software for banks, they branched out into other sectors, such as telecommunications, energy, and even public administration.

The companies mentioned above serve as evidence of how changing your approach can lead to success in the digital world. By adopting a digital mindset, organizations can effectively adjust to the rapidly evolving tech landscape and market conditions.

A digital mindset is an integral part of the digital transformation process. This is what helps companies successfully implement new technologies, change business models and adapt to evolving customer expectations.

Text 12. Developing Digital Mindset in Workplace

Source: <https://firmbee.com/what-is-a-digital-mindset>

Adopting a digital mindset within an organization isn't easy. However, the success stories presented above show that it is not only possible, but also gives great results. To develop it in your business, it's worth pursuing the following strategies:

1. Introduce regular training related to digital technologies and encourage learning and knowledge sharing.
2. Promote collaboration between departments, share experiences, and work together on innovative projects.
3. Create a space for testing new ideas, where mistakes are treated as a valuable source of knowledge.

There are some benefits and drawbacks of adopting a digital mindset. Organizations that embrace a digital mindset can benefit from it in various ways. Let's talk about them:

– Adapt to market changes easily: Employees and companies with a digital mindset pay attention to changes in their environment. This helps them react to shifting conditions promptly and seize opportunities to gain a competitive advantage.

– Innovate: Staying up-to-date makes it easier to create products and services that respond to evolving market needs, which enhances the value of the company's offer.

– Increase efficiency: Watching trends and optimizing processes with the latest solutions, such as automation, mean reducing costs and improving the quality of services.

However, there are also various challenges that organizations may face. Some of them include:

– Resistance to change: Employees are often wary of new things and find it difficult to change their way of working, especially when it involves grasping new technologies.

– Lack of skills: Introducing new technologies may require companies to invest in developing employees' skills so that they could embrace a digital mindset.

– Change management: To successfully embrace a digital mindset, organizations need to implement effective change management strategies at the organizational level.

To deal with these challenges, focus on education, communication, and nurturing an innovation culture within the company.

Summing up, it should be noted that a digital mindset is a key element in achieving success in today's world, where digital technologies play an increasingly important role. Embracing and developing it within an organization enables effective digital transformation, improves innovation, and enhances the company's ability to adapt to market changes.

Are you ready to adopt a digital mindset in your company and take advantage of its numerous benefits? Remember that it's essential to be open to change, collaborate, and invest in improving your employees' competencies. Don't be afraid to experiment and learn from your mistakes – they can become a source of valuable knowledge. Developing can be a challenge, but it is an investment that can bring tangible benefits to your organization, both now and in the future.

Text 13. Digital Financial Management and Online Accounting: Tools and Software

Source: <https://firmbee.com/digital-financial-management-and-online-accounting>

Digital financial management and online accounting have become increasingly popular in business. According to a report by Sage (2020), 67% of small and medium-sized enterprises already use such solutions. Let's take a closer look at why it's worth implementing digital financial management and how online accounting can benefit your company. Read on to find out more.

Automating accounting processes, such as issuing invoices or settling taxes, can significantly increase your company's efficiency. For example, it can reduce the amount of time needed to issue invoices by 73%. What is more, integrating online accounting systems with other devices used in a company, such as CRM software, project management systems, payment management systems, and HRMS, allows you to centralize your data and control your finances more easily. Additionally, the ability to conduct online payments streamlines the cash management process and collaboration with suppliers and customers.

Let's have a look at digital financial tools and software. Accounting software offers many features. Before you choose specific software, it's a good idea to check if it's certified. It ensures that the tool complies with the regulations of the country where you do business, and is secure for the entrepreneur. To incorporate online accounting into your business, it is essential to choose the right provider. Some of the most popular tools include:

1. Xero: It is an easy-to-use tool that lets you quickly issue invoices and integrate with various payment systems. Unfortunately, its price can be quite high for small businesses, especially if they want to use extra features.

2. QuickBooks: It provides a wide variety of functions, such as inventory management and time tracking, which makes it a versatile solution for a variety of

industries. Its biggest drawback, however, is the program's interface, which can be problematic for those without accounting experience.

3. Wave: It offers free access to handle basic accounting functions, such as invoicing and expense tracking. However, it has fewer features than other paid tools, which may limit its usefulness for more demanding businesses.

4. Firmbee: This free tool allows you to do many time-consuming tasks in an automated and significantly simplified way. It offers such features as:

- Employee cost control: This allows you to monitor personnel expenses, apply individual employee rates and generate costs based on logged time.
- Partial payments: They allow customers to make payments in installments, keeping control over how much they still have to pay back.
- Personalized invoices: They make it possible to use the Financial Management System to create a variety of invoices with non-standard currencies and tax rates.

The software also offers easy migration of data from the existing accounting systems and support for different types of business. Registration on the platform is simple and fast, and the intuitive interface makes it easy to use, even for novice entrepreneurs.

Text 14. Key Aspects of Implementing Digital Financial Services

Source: <https://firmbee.com/digital-financial-management-and-online-accounting>

The process of implementing online accounting can be demanding. However, at the same time, it brings huge benefits. However, it's worth remembering about a few key aspects that may help in its implementation. First of all, it is advisable to engage an experienced accountant to support the implementation and provide advice at every stage.

Another important aspect is choosing the right time to introduce changes. For example, it will be much easier at the beginning of the fiscal year than in the middle of the year. This will help you avoid problems with transferring data between systems.

As to data security and threats in online accounting, apart from numerous advantages of online accounting, there are also several risks associated with data security. Entrepreneurs should be aware of potential problems and take appropriate steps to minimize risks:

- Data loss: You need to remember to back up your financial data regularly to avoid losing information due to system failures, operator errors or hacking attacks. It's a good idea to choose software that automatically creates backups on secure servers.
- Data encryption: It is worth choosing software that uses advanced encryption techniques to protect information from unauthorized access.
- Education and training: The security of financial data stored and processed digitally is threatened not only by hardware and software failures, but also by inept use of online accounting. Therefore, employees with access to online accounting

software should be aware of cyber security risks. Regular training and updating their knowledge on the subject is an important part of a risk management strategy.

The future of digital financial management and online accounting appears to be very promising. The development of technologies, such as artificial intelligence and machine learning, makes it possible to automate processes. Creating an automated workflow in a company is becoming easier thanks to tools like Zapier or Make.com. They can be used for building customized processes, making it easier to handle complex financial operations and manage finances. With the development of AI and the declining popularity of cash settlements, we can expect an exponential growth of modern tools and software in the next few years, which will allow for even better control over the company's finances.

To sum up, it is important to say that online accounting is becoming an increasingly popular solution for managing business finances. Despite its several benefits, there are also many risks associated with data security. To fully benefit from the advantages of online accounting, it's worthwhile to choose the right software, secure the system against cyber threats and regularly train employees. The future of this field seems very promising, which could lead to further evolution and innovation.

Text 15. Digital Economy

Source: <https://www.techtarget.com/searchcio/definition/digital-economy>

The digital economy refers to the economic activities that emerge from connecting individuals, businesses, devices, data and operations through digital technology. It encompasses the online connections and transactions that take place across multiple sectors and technologies, such as the internet, mobile technology, big data and information and communications technology.

The digital economy differs from a traditional economy because of its reliance on digital technology, online transactions and its transformative effect on traditional industries. Digital innovations such as the internet of things (IoT), artificial intelligence (AI), virtual reality, blockchain and autonomous vehicles all play a part in creating a digital economy.

How did the digital economy begin? Don Tapscott first coined the term digital economy in his 1995 bestselling book *The Digital Economy: Promise and Peril in the Age of Networked Intelligence*.

In its earliest days, the digital economy was sometimes called the internet economy, the new economy or the web economy because of its reliance on internet connectivity. However, economists and business leaders assert that the digital economy is more advanced and complex than the internet economy. Under one definition, it simply means economic value derived from the internet.

The digital economy reflects the move from the third industrial revolution to the fourth industrial revolution. The third industrial revolution – sometimes called the *digital revolution* – refers to the changes that took place in the late 20th century with the transition from analog electronic and mechanical devices to digital technologies. The fourth industrial revolution builds on the digital revolution as technologies today continue to bridge the physical world and cyberworld.

The COVID-19 pandemic further accelerated digital economic growth as remote work, online shopping, telemedicine and digital entertainment became essential during lockdowns and social distancing. The digital economy continues to evolve and expand rapidly, with emerging technologies and innovations shaping its trajectory.

Why is the digital economy important for businesses? Businesses that make digital transformation a priority can streamline processes, reduce costs and create new revenue streams. But the digital economy is more than just using a computer to perform tasks traditionally done manually or on analog devices. It's about finding ways for organizations to make their systems and people work more effectively together.

The digital economy highlights the opportunity and need for organizations and individuals to use technologies to execute those tasks better, faster and often differently than before. Such opportunities for existing entities to do better, do more, do things differently and do new things is encompassed in the related concept of digital transformation.

Numerous entrepreneurs seized on the technologies that fuel the digital economy to create new companies and new business models that couldn't have existed or existed at the size and scale they do today, in past generations. Examples include the ride-sharing platforms Uber and Lyft; the home rental platform Airbnb; and content-on-demand services, such as Netflix and Spotify.

Text 16. Major Examples of Digital Economy's Evolution

Source: <https://www.techtarget.com/searchcio/definition/digital-economy>

The digital economy has evolved significantly since its inception. There are numerous examples of traditional companies transforming to succeed in the digital economy.

The following are some notable examples of the digital economy's evolution:

- Inception of digital trade and e-commerce: The surge of e-commerce – where platforms such as Amazon, Alibaba and eBay have transformed online buying and selling – has reshaped retail and created new technologies and business models.

- Social media: The emergence of social networking platforms such as Facebook, Twitter, Instagram and LinkedIn has changed how people communicate, connect and promote their products.

- Increased remote work adoption: The pandemic caused a change in workplace culture as more people accepted remote work and began using apps such as Zoom, Slack and Microsoft Teams to promote online collaboration. The digital economy has evolved as a result of this trend, which has reshaped how businesses function and manage their workforce.

- Omni channel approach to sales: Many retailers reach and serve customers through multiple channels such as online sales and mobile apps. This lets them identify buyers, whether they're shopping via the internet or in person. They can collect and analyze each customer's browsing and sales data to better understand

their interests and use that data to reach out to customers via social media, enabling better service and ultimately higher sales and increased brand loyalty.

- AI and automation: Automation and AI have significantly shaped the digital economy. Virtual assistants, chatbots and recommendation algorithms powered by AI improve consumer experiences and provide more personalized services.

- Digital payments and cryptocurrencies: Digital payment systems such as PayPal, Venmo and mobile wallets have changed how people conduct financial transactions.

- Digital entertainment: The entertainment industry has undergone significant changes due to the rise of streaming services such as Netflix, Spotify and YouTube. These platforms have revolutionized media consumption by providing instant access to an array of content.

- Telemedicine: The COVID-19 pandemic accelerated the spread of telemedicine and made remote medical care possible through digital platforms. Today, telehealth is a crucial component in providing healthcare.

- Sharing economy: The sharing economy has transformed how people share resources such as cars, lodging and services, as exemplified by the Uber, Airbnb and TaskRabbit platforms. Peer-to-peer sharing has reshaped traditional industries and made possible new business opportunities.

Text 17. Technologies Accelerating Digital Economy

Source: <https://www.techtarget.com/searchcio/definition/digital-economy>

The digital economy is expanding rapidly with the use of new technologies that improve connectivity, enable automation, advance data analysis and create new business prospects.

Common technologies that are accelerating the digital economy include the following:

- Artificial intelligence: AI technologies, including generative AI, machine learning and natural language processing, facilitate automation, data analysis and decision-making for organizations across various industries. Businesses can analyze large amounts of data, improve customer experiences, automate activities and increase operational efficiency with the help of AI-powered systems.

- 5G: 5G technology enables rapid downloads, low latency and a wide range of device connections. 5G offers many advantages, including facilitating smooth data transfers, enhancing mobile experiences and fostering the development of innovative applications and services.

- Wi-Fi 6: In comparison to earlier Wi-Fi standards, Wi-Fi 6, also known as 802.11ax, provides faster data transfer rates, decreased latency and increased network efficiency. It also accommodates the increasing number of connected devices and the demand for high-bandwidth applications, making connections faster and more dependable, especially in congested areas.

- Augmented reality and virtual reality: Augmented reality and virtual reality technologies are revolutionizing gaming, education, healthcare and training through the development of immersive experiences and simulations.

- Blockchain: Blockchain technology enables decentralized and secure recording and verification of transactions. It eliminates the need for intermediaries and secures the transparency, immutability and trustworthiness of digital transactions. This technology is transforming Industries, including finance, supply chain management and healthcare.

- Internet of Things: IoT is a system of networked sensors and devices used for data collection and exchange. By enabling the fusion of physical items with the digital world, this technology creates new possibilities for automation, real-time monitoring and data-driven insights. Smart homes, smart cities, agriculture and industrial automation are just a few of the areas where IoT applications are improving efficiency, productivity and convenience.

- Quantum computing: While still in its early stages, quantum computing can tackle difficult problems at previously unheard-of speeds. It has applications in cryptography, materials science and optimization.

Text 18. Advantages and Disadvantages of Digital Economy

Source: <https://www.techtargert.com/searchcio/definition/digital-economy>

The digital economy provides numerous benefits, which have contributed to its rapid expansion and positive effect on a variety of industries:

- Increased productivity: Businesses can improve their productivity and efficiency by using digital technology to automate their operations and processes.

- Reduced costs: Cloud computing and digital frameworks eliminate the need for substantial physical infrastructure and capital expenditures, enabling organizations to scale up and down as needed.

- Extended reach: Businesses can foster a global economy and presence through online platforms and technologies, thus expanding their customer bases and market opportunities.

- Access to more data: The digital economy produces large amounts of data that can be analyzed for insights, trends and data-driven decision-making. Businesses can use this data access to better understand customer behavior, customize experiences and increase operational effectiveness.

- Greater convenience: Consumers can purchase digital goods and services from the convenience of their homes. E-commerce and mobile commerce let customers purchase products whenever and wherever they want.

- Improved customer experience: Businesses can deliver faster and more responsive customer service through digital channels and chatbots.

- Personalization: By using data analytics and AI, businesses can customize products, services and marketing campaigns, ultimately improving customer satisfaction.

While the digital economy provides many advantages, it also presents the following challenges:

- Privacy and security concerns: The digital economy is significantly dependent on the acquisition and storage of personal data, which can create data privacy and security issues. Events such as data breaches, cyber-attacks and unauthorized

access to private records can lead to financial losses, identity theft and various adverse outcomes.

- Waves of disruption: The digital economy has created new companies and new ways of interacting. However, many companies and industries that didn't or couldn't capitalize on the technologies to change their operations have faced declining sales, falling market share and even complete collapse. For example, Blockbuster and other content rental shops that didn't adopt streaming technologies quickly enough shuttered their operations. The taxi industry is also another example, as it struggles to compete for customers who find Uber and Lyft easier to use.

- Job displacement: Automation and digitalization can displace jobs, rendering some roles obsolete. Individuals might need to acquire new skills for ongoing employability, which can cause temporary unemployment and economic disruption.

- Monopoly: The digitalization of the economy has resulted in a small number of large providers such as Apple, Amazon and Google gaining substantial power, resulting in monopolistic conditions in certain sectors.

- Digital divide: The existence of a digital divide, which refers to the disparity between those who have access to technology and those who don't, is a prominent disadvantage of the digital economy. This division can result in inequalities concerning access to information, education, employment prospects and economic advancement.

- Environmental footprint: The digital economy's energy use in data centers and electronic device production has environmental consequences, with rising demand for digital services leading to greater carbon emissions, e-waste and a bigger environmental footprint.

Text 19. Future of Digital Economy

Source: <https://www.techtargget.com/searchcio/definition/digital-economy>

The World Economic Forum predicts that over the next 10 years, business models built on digitally enabled platforms will account for 70% of all new value created. This proves that the digital economy is rapidly evolving and shaping how people live, work and interact.

The following key trends and technologies are expected to shape the future of the digital economy:

- AI and machine learning: AI, including machine learning, deep learning and neural networks, is advancing and will have a growing role in the digital economy. AI is essential for extracting insights from big data, automating complex tasks, making predictions and managing autonomous systems and robots.

- Transformation of traditional sectors: The digital economy is also changing traditional industrial industries such as agriculture. For instance, farmers can get real-time updates on crop quality, soil conditions and irrigation with the help of smartphone apps.

- Digital connectivity: Strong broadband connectivity and infrastructure are crucial to the success of the digital economy. Technologies such as 5G are pre-

dicted to play a key role in enhancing digital connectivity, resulting in quicker and more reliable communication while supporting the growth of the digital economy.

- The metaverse: Immersive technologies such as the metaverse can create entirely new experiences for consumers and open up innovative business applications. These digital environments have the power to revolutionize entire sectors, and in the future, a parallel universe with a distinct financial and economic system might also come into existence.

- Healthcare transformation: The integration of telemedicine and digital health tools and applications is expected to improve healthcare delivery and accessibility.

- Cybersecurity advancements: The rapid adoption of a digital economy is evolving cybersecurity measures to address increasingly sophisticated cyber threats, including AI-powered attacks. By applying machine learning algorithms, AI-powered cybersecurity systems can detect anomalous behavior, identify potential vulnerabilities and proactively lower the risk factors.

Text 20. Digital Technologies Transforming Agriculture

Source: <https://www.forbes.com/sites/forbestechcouncil/2022/04/26/10-digital-technologies-that-are-transforming-agriculture/?sh=1109e2917baf>

Described as the world's least digitized industry by McKinsey analysts (joint last position with hunting), the food producers of the world could only agree that agriculture has struggled to avail of the breakthroughs in technology that have transformed other industries. Uber has disrupted transportation, Netflix the movies, Airbnb the hotel business, online money movers who hold no cash now dominate banking and we purchase apps from companies who don't make them. Yet, farming seems to have changed little in the 10,000 years since the first animals were domesticated, and many believe that it will change little in the coming decades.

However, I contend that this view is myopic and fails to recognize the degree of disruption already happening in farming. Sean Moffitt, managing director of Futureproofing, listed the 30 new technologies that both are currently seeing the greatest dollar investments and that industries will require to futureproof themselves for the next decade. Here's a look at the 10 digital technologies from that list that I see as the most relevant to food and farming.

1. Robotics: Those who associate farming with bucolic country living might not realize that the new generation of farmworkers doesn't aspire to pick fruit, pick up animals or do many of the common backbreaking tasks associated with farming. Robots now milk cows, pick strawberries and cut up carcasses in processing plants. Robotics in farming represents a global market of over \$5 billion and is projected to double in the next five years.

2. IoT And Sensors: The ability to track produce and live animals, detect health issues and evaluate the environment inside the farm or the uptake of moisture from the soil in real time is of huge value in addressing the major challenges of climate/sustainability, animal welfare and tracking in the food supply chain. The explosion of IoT devices in other industries (46 billion devices are connected)

could pale in comparison to the opportunities represented in agriculture, already an \$11.4 billion market.

3. Artificial Intelligence (AI): Many careers in food and farming rely upon learning by doing, rather than explicit knowledge transfer. This creates real challenges, such as how to avoid human error, misunderstandings and cognitive bias. AI may sound the death knell for extension agents, farming experts, consultants and professional expertise, but, more likely, it will alter how those professions function. More accurate data will be available faster but will still need interpretation. As an example, consider how AI has changed the healthcare industry. Jobs have been changed but not replaced.



4. Drones: Already surveying 20 million hectares of China's cotton crop, the ability of drones to go where humans can't and see things not readily observed from the ground creates real insights into pest protection, fertilizer and herbicide application, irrigation and harvest timing.

5. 3-D Printers: The ability of 3-D printers to repair machinery, print food or even make a prosthetic for a valuable animal provides a clear advantage to farms worldwide. It's even clearer in times of disrupted supply chains (e.g., Covid-19) or in regions of the world with their own distribution challenges (e.g., Africa). 3-D printing on the farm and in the food supply chain creates real efficiencies and savings.

6. Extended Reality and the Metaverse: In my last Forbes article, I noted the potential for extended reality (XR), as human vision is limited to visible light, and XR can let us see a broader spectrum. This can be valuable in managing crops, animals and food production and has the potential for improving health and food safety practices.

7. Virtual Reality (VR): The ability of VR to teach students about the inner workings of animals (without vivisection) and how plants grow – or simply to be able to visit farms – is an extraordinary opportunity for students and consumers alike to engage with farming. Successful examples include the use of VR in Glasgow University for cows, the Australian poultry industry, North Carolina swine farmers and even McDonald's U.K. consumers.

8. Blockchain: Both the most exciting and the most misunderstood technology (using the same technology as Bitcoin), blockchain can create transparency in a sector that's often failed to capture consumer confidence. Blockchain represents an opportunity for the food industry to regain its high ground. For example, Canadian companies in the beer supply chain, Walmart's global food chain and the FDA see blockchain as a tool to address consumer concerns about provenance and food safety.

9. Data Analytics: The world will store 175 zettabytes of data by 2025. Data is often described as the "new oil", which is ironic, as many countries that are rich in oil haven't necessarily become wealthy as a result. It's assumed that the future capturing, controlling (or protecting) and processing of data will justify the high valuations of agtech startups. Believing that data will be the savior of farming is a pipedream, but the power of data analytics can unleash meaningful new insights for farmers and food producers.

10. Cloud Connectivity: Cloud-based computing services use real-time connections to the internet to offer more flexible resources and economies of scale than available with conventional server-based or even edge options. The requirement for connectivity – especially 5G – represents a genuine challenge when many farms aren't connected at all yet. Governments understand that if farming is to be revolutionized, addressing connectivity is essential. Without it, the rural-urban divide will be exacerbated.

The consequences of leaving agriculture undigitized are stark. If the world is to realistically face up to a transformed food chain, delivering what consumers say they want (sustainability and welfare-friendly, abundant, affordable food), it can't be achieved without digital disruption. The imaginary farm of our childhood story-books masked the many problems of farm life, from physically grueling work to limited control and understanding of the natural processes of animal health and weather, as well as isolation. Technological transformation offers the possibility that those in the farming and food sectors can have our cake, bread, meat and milk – and eat it, too!

Text 21. Digital Independence of Industrial Russia

Source: <http://government.ru/en/news/48625/>

The Prime Minister Mikhail Mishustin took part in the plenary session, *Digital Independence of Industrial Russia*, and visited an exhibition of the latest developments by Russian companies. Here is a part of his speech.

"The role of digital solutions has become invaluable in the world. They have become an integral part of all spheres of human endeavour and are playing a vital role in the industrial sector. Ideas can only take the form of highly competitive

products through powerful platform solutions ranging from computer-assisted design to robot software. There is no future without our own software. This has been proved by the sanctions, when large international companies left the Russian market after promoting their technological solutions here for years, and our enterprises lost access to foreign solutions overnight, solutions they had come to rely on. There is relentless competition for high technology in the world. In fact, it is a matter of national security.

A number of special instruments such as the tax manoeuvre, targeted support packages, low-interest loan programmes and special grants have been created to stimulate the creation and manufacturing of novel products. They are provided on instructions from the President. To date, the provision of substantial subsidies has been digitised and has become more accessible for businesses. We intend to simplify our designers' access to contracts with state-run companies that are major industrial contractors. This involves receiving the system-relevant status, which will help such designers receive contracts without a tender. We are also considering the idea of obligatory deductions for the use of foreign software to be made until a given company transitions to national solutions. Half of the funds could be used to issue grants to Russian IT companies. The other half will be used as collateral for the issuance of low-interest loans to them.

Our industry is well on the path towards using Russian software. According to experts, the demand for individual Russian software products increased by 10 to 12 times last year. There is no doubt that it will continue to grow. This is a serious challenge for software designers. Over 22,000 of them have been accredited in Russia, and they are actively revising their operations with due regard for the current realities. As for programmers, their number has increased by 13 percent compared to last year. There are over 740,000 of them now. A good example of the situation in the industry is the sale of their own solutions and services, which has increased by nearly 25 percent to approximately 2.2 trillion roubles. It is a very positive trend.

When we met here last year, we held in-depth discussions on the industry's requirements for innovations and end-to-end technologies, including in artificial intelligence and big data cybersecurity. I would like to note that we have managed to launch and streamline the operation of industrial competence centres (ICC), a new mechanism of interaction between sectors and companies in the IT sphere. It comes down to joining the efforts of large clients and experienced designers. It was the first and, so far, the largest example of public-private partnership.

Overall, there are 33 such consortiums comprising over 300 industry leaders and 700 experts. They have been created in all the main sectors, such as automobile, aircraft and rolling stock manufacturing, metallurgy, oil and gas sector, and petrochemistry. Their main task is to identify sectors with critical dependence on foreign digital products and to formulate clear priorities for creating and implementing Russian software.

Overall, we have identified over a thousand foreign solutions which have a direct bearing on the manufacturing processes in terms of their sustainability. However, only one in six of them lacked a Russian equivalent. Of course, it is es-

sential that we come up with an adequate replacement without delay. We launched the effort to develop universal software solutions in the key technological sectors, primarily in product life cycle management, digital design and virtual testing. By the way, we have seen quite a few great examples of these solutions at the exhibition stands. Over 160 projects of this kind worth over 210 billion roubles in total received the green light.

Let me note that since the creation of the competence centres, some of them, as well as their customers have already emerged as the frontrunners. There are also those falling behind. What sectors am I referring to? Pharmaceuticals, trade, food and processing, and crop farming. We supported their projects back in 2022, but have yet to see them implemented. In fact, they never got off the ground. Moreover, the agreements to award grants to these organisations have not been signed. Some major manufacturers adopted a passive attitude, which is utterly puzzling. Maybe they believe that the foreign solutions will last them many years.

We need to shape an up-to-date IT product landscape, and start ranking projects and companies in terms of their readiness and the results they achieve. The transition to Russian hardware will be the next major milestone, and a very challenging one at that. It is obvious that this kind of hardware will not work unless we have Russian software to run it.”

Text 22. Smart Uses of IoT Apps in Manufacturing. Part 1

Source: <https://idapgroup.com/blog/iot-apps-in-manufacturing/>

Since its very first integration into various business processes, the Internet of Things has been known for its potential to streamline the manufacturing industry. There are numerous digital transformation possibilities related to IoT in manufacturing – from sensors and wearable devices to cloud software.

The adoption levels are so substantial, that McKinsey even predicts the economic impact of the Internet of Things in manufacturing to be as high as \$3.7 trillion by 2025. If you're intrigued, let's delve into extremely smart and promising IoT solutions for manufacturing that you can potentially use for your business.

1. **Keep Production Uninterrupted with Predictive Maintenance:** With this manufacturing IoT solution, there's no need to repeatedly interrupt the production process to manually scan for potential defects or irregularities in the manufacturing equipment anymore. Predictive maintenance in the form of embedded devices and sensors in the machinery can continuously monitor the performance and alert operators when the anomaly triggers the pre-set indicators and parameters. The potential anomalies can be either faulty components, equipment deterioration, rapid temperature drops or rises, pressure and vibration fluctuations, or voltage abnormalities. Without timely detection, these flaws can result in serious and quite costly damage that cannot be quickly repaired especially when dealing with sensitive materials.



This IoT manufacturing tool can also help with technical support anticipation and automated supervision if you directly integrate devices connected to the Internet of Things with advanced data analysis software or AI. You can also connect these devices to similar manufacturing devices, old systems, IFTTT programs, or Cloud Application Programming Interfaces. Besides reducing maintenance costs, predictive or conditions-based maintenance can increase the service life of parts and reduce the need for a large stock of spare ones, as well as boost efficiency by reducing the inactive periods in manufacturing due to repairs and minimize the production delays.

2. Improve Process Efficiency with Real-Time Asset Tracking: Next in our list of Internet of Things manufacturing examples comes real-time asset tracking. In this case, the Internet of Things seamlessly blends into native or web applications during development to enable comprehensive asset monitoring and process visibility. Multiple tracking devices are being attached to the moving equipment to follow every single move they're making across the facility. IoT trackers work with almost any type of operating equipment – containers, inventory, carts, rolling stocks, small tools, and even workers. Received data can be presented in reports, diagrams, or key performance indicators.

Manufacturers can then keep an eye on all their assets' locations and conditions and control the product's lifecycle to increase efficiency in everything, including task assignment. You can detect unusual and inefficient routes or inactive equipment. Besides, by adding AI or machine learning to this IoT in manufacturing, you can transform asset management to further automate existing workflows, up to the final product delivery. The efficiency upgrade mainly comes from the thorough supervising and organization of the supply chain and all its elements, which is particularly doable with asset tracking. By receiving real-time alerts, data, and important insights, companies can optimize their logistics, monitor their stocks, discover and predict fraudulent behavior from partners or employees.

3. Improve Employee Engagement with Real-Time Tracking: Real-time tracking IoT in manufacturing can also aid in improving employee engagement.

This time, the tracking software is focused solely on employees and their performance on the production floor. While it may seem like a violation of trust and personal boundaries, usually, it's not. When done correctly, RTLS is extra helpful in analyzing work achievements and continuous performance and productivity for better management.

Sometimes, when a few workers start performing poorly and fall behind on the schedule, it can set back the whole production. Such a decrease in operational efficiency can easily be avoided with the Internet of Things manufacturing tracking software. Besides predicting the slowdown periods in manufacturing, real-time tracking can also help further improve productivity by focusing on each worker and their individual styles, avoid churn, and lower the business costs. Employee tracking generally involves monitoring the workers' time in specific areas and analyzing standard movement across the facility for more accurate task assignments. It may include light, pretty unnoticeable easy-to-wear tags that won't hinder the person's range of motion. These tags can also be used as card keys to grant and track access to different parts of the production and warehouses in real-time for faster employee location.

Text 23. Smart Uses of IoT Apps in Manufacturing. Part 2

Source: <https://idapgroup.com/blog/iot-apps-in-manufacturing/>

Out of all major industries, the integration of the currently trending Internet of Things into manufacturing infrastructure seemed inevitable to begin with. IoT in manufacturing presents a wide variety of opportunities for production optimization, more agile organization of the company's internal processes, cost reduction, and many other benefits. Let's talk about two more smart and promising IoT solutions for manufacturing that you can potentially use for your business.

1. Monitor WIP with Asset Tracking: With the same manufacturing Internet of Things tracking solution, you can monitor and optimize the Work-in-Progress system's movements as well. This can help identify inefficiencies and avoid excesses in numerous parts of the manufacturing process. For example, too much inventory of parts can essentially lead to slower performance down the line, or even worse, cause overproduction.

Usually, when the manufacturing process is stable enough, there's little to no overproduction due to highly organized production flow. There can be limited variations in the process, but nothing too overboard. However, if multiple errors and lapses in judgment stack on each other, there's a higher chance of making a lot more products than required, which is often called the most hazardous type of waste in manufacturing.

Asset tracking can make sure this doesn't happen. To efficiently track the progress of WIP and oversee the application of all available, companies need consistent and already proved information. The IoT in manufacturing solution called real-time location systems (RTLS) is able to make the manufacturing process more predictable and manageable.



RTLS is usually a mixture of both software and hardware. Analytical software helps visualize and present the collected data, while location tags and services that connect all IT systems gather and adapt the data flow.

2. Enhance Safety and Compliance with IoT Sensors: The last combination of IoT and manufacturing in our list are IoT devices used for accident prevention. These devices range from standard sensors and cameras to thermostats or even door locks. It may seem that accidents in the workplace are not that common and are usually caused by negligence or ignorance.

In reality, even the slightest hardware malfunction can potentially be hazardous. As claimed by the National Safety Council, every seven seconds there's a work injury in the USA, which comes to 4.7 million injured employees per year. Even something seemingly harmless as an email can serve as a distraction and carelessness or loss of focus would ensue.

The embedded IoT for manufacturing purposes can scan every available equipment for potential risks to workers' health and wellbeing. Being proactive and not reactive can save many lives and subsequently lower the compensation expenses that will surely be better off spent on salaries, new equipment, and software upgrades.

It even came to such wearable IoT innovations that can monitor the employee's health and alert of the sudden changes in pressure, temperature, heart rate, or blood oxygen to prevent fatigue or more serious diseases. It can be useful while working with potentially unsafe materials, unstable conditions, or harsh and unusual environments.

Text 24. Artificial Intelligence in Financial Services. Part 1

Source: <https://idapgroup.com/blog/artificial-intelligence-in-financial-services/>

Artificial Intelligence in its current form surprises, amazes, and even scares a bit. It opens wide horizons hiding some significant facts about itself. It attracts millions of enthusiasts who, however, have barely a full picture of how much AI can be useful. Nevertheless, it is one of the greatest technologies created by mankind. It is an engineering miracle. The main point is to learn how to implement and improve it properly.

A particular role belongs to artificial intelligence in financial services. AI transforms the industry. It changes the way financial institutions have been operating for ages. And at the same time, it attracts more attention and investors to fintech. The forecasts about the amount of money the AI applications attract are impressive.

Great banking leaders, such as Black Rock and Charles Schwab work on implementing AI in financial services. This is one more push for those who don't believe in AI just yet. Inspired by the frontrunners' success, more and more fintech specialists are interested in upgrading their business with AI. Some of them have a pure vision of what and how to implement to get the desired results; the others simply follow the hype and desperately look for the development partner to bring their ideas to life.

At this stage of the AI concept development, it is significant to understand what it can bring you. With a clear vision of the upcoming improvements, it is much easier to save yourself and your business from pitfalls. In this article, we will tell you how the business will benefit from the combination of artificial intelligence and finance.

Let's turn our attention to improvements AI brings to financial industry. The IT age places greater requirements on banks and financial institutions. At the same time, modern customers demand more attention, special opportunities, better conditions etc. Each fintech company strives to follow modern trends and provide the best services possible to keep head and shoulders above the water. Artificial Intelligence in banking industry can automatically solve routine tasks, provide improved solutions and bring new values to the industry. Let's have a glance at the main types of related applications you may find fascinating:

1. Virtual Assistants: Intense competition in the financial world takes too much time. Most of the specialists are busy with routine tasks although they may devote precious time to more serious, important things. With an AI-powered virtual assistant, it gets quite possible.

Let's talk about a well-known example. An H&M application collects the information about previous purchases made by a particular shopper and recommends outfits based on this data. This approach helps to demonstrate professionalism, boosts trust and increases sales. Banks know far more intimate details about their customers. A thorough analysis allows finding a special approach to every single customer. Thanks to it, you may know for sure what loyalty program is interesting

for a customer. You can also offer some special opportunities at the right time. In such a way, you provide great support for a customer, enhance your experience, and increase profit. All that is impossible without a high-quality AI chatbot collecting data, making predictions, providing relevant information at the best time etc. Implementing this type of technology, you get a one-of-a-kind opportunity to properly inform an interested customer, answer frequently asked questions, and build a basis for a successful deal. This requires no human participation: chatbot handles it all.

Besides, these technical solutions are good at forecasting. Smart algorithms help detect potential issues before they are revealed. The technologies can also react accordingly and save tons of time for customer service agents, recruitment teams etc. And in case you suffer from the constant employee turnover, AI chatbot may be the answer, too.

2. Increased Personalization: The human-centered approach is the only chance for any business to keep in touch with former customers and find new ones. With a single mouse click, a person can easily switch to your competitors. This may be not so important when it is about one person only, but when tens or hundreds of customers leave your bank weekly, it is damaging.

The answer is improved personalization. You as a business owner should work hard on the loyalty increase. Fruitful customer relations is something more than just business; it's about the quality of human communication as well.

A powerful AI system can recognize each particular customer during a conversation, in a matter of millisecond implement a personal approach, and highlight the fact that you care about your customers.

3. Mobile Expansion: People love their smartphones. The mobile apps market helps us to handle everything we need without rush and panic. A powerful mobile app can be helpful with personal finance management, too.

No longer excel tables you painfully try to track your costs in; no more costs you have no idea what you have spent on. Customers can gain control over their finances with a simple AI help. Thanks to improved functionality, the tool can provide analytics with the most unreasonable purchases, recommend some ways for saving money, remind of the dates of making some mandatory credit card payments etc.

AI apps is a win for financial institutions, too. A simple mobile solution powered by the AI technologies can help your customers start using your services, answer basic questions, etc. And the most important thing is that a mobile assistant is always available in your customer's pocket. So, they don't have to waste time trying to get to your office for a brief consultation.

Text 25. Artificial Intelligence in Financial Services. Part 2

Source: <https://idapgroup.com/blog/artificial-intelligence-in-financial-services/>

Let's continue discussing the improvements AI brings to financial industry.

1. Reputation Management: Positive feedback is the first thing that brings new customers to your financial institution. A great review can attract attention. A

great review is a critical thing a consumer pays attention to when deciding on a bank or lender. An AI-powered software solution can deal with the following tasks: creating quick but informative customized surveys; collecting reviews; providing personalized summaries; fixing small issues that negatively impact user experience, etc. Thus, an AI solution can provide you with quite a reliable assistance.

2. Data Security: Financial fraud remains one of the most difficult and problematic challenges to overcome. Starting from the ancient era, when the Roman Empire was sold and until these days, when people on Wall Street lose thousands of dollars daily, financial fraud has been a question that bothers society a lot. Financial organizations operate with big data. Mostly, the data is unstructured, randomly added, and unsafe. Fortunately, with the rise of AI solutions, it is possible to analyze data much faster, reveal weak spots and prevent it from being hacked. A powerful new technology in finance industry is a few steps ahead of the traditional fraud detection system. Neither human nor algorithm-based script can protect your money from being stolen better than an AI solution does.

3. Finding New Solutions: The accelerated growth of the fintech can hardly be overestimated. A number of cutting-edge useful solutions grows daily. And business owners must do their best to follow trends and keep their positions in the market. This task may be hard and exhaustive. Daily brainstorming and important meetings may lead to nowhere. In this case, you need some breath of fresh air to enlighten the way you see your business. A trained AI system may suggest new solutions based on the input data you provide. Besides, this is a way to find new methods of making money.

There is an alternative point of view on AI applications in finance. Some say that AI technologies could have saved mankind from the 2007-2008 world financial crisis. However, the technology wasn't mature enough at that time. Besides, AI has its own disadvantages one should be aware of:

- Emotional Intellect: An intelligent machine is still only a machine. So, in cases that require emotional analysis of the situation, AI solutions are useless. They break down or just perform incorrectly, but cannot replace the human input.

- No Creativity: Some solutions require creativity. An AI app cannot fully replicate the human brain. Particularly, they cannot apply design thinking or creativity to their tasks.

- Unemployment Disaster: Hundreds of thousands of people worldwide work in the financial industry. In the case of active AI solutions implementation, it is very likely that they will lose their job (it all may lead to great socially undesirable changes).

- Huge Costs: Powerful AI applications in finance require huge investments. App development and maintenance is expensive. The price may start at several thousand dollars. So before starting a project, make sure you are able to afford it.

Lack of Experience: And even if you are OK with the above-mentioned solutions, it is necessary to find a competent development team to get your system up and running. However, the statistics shows that the majority of companies are only at the start of their AI development journeys. Yes, 40% of respondents only learn

about AI, and 31% build the real solutions. Only 1% answered that they have a fully functioning center for AI development. So, on the current stage, the most important thing is to find a skilled IT partner with reasonable service prices.

Summing up, artificial intelligence opens a new chapter in global fintech chronicles. It provides great opportunities for banks, insurance companies, financial advisory agencies, and other organizations. AI-based tools serve well as personal assistants. Chatbots improve the customer experience considerably. AI solutions extend the functionality of a traditional mobile app. Technologies are able to process big volumes of data, as well as help to structure it. They suggest new ways of information security improvement. They help with routine actions, daily tasks, new solutions, etc.

However, there is a different point of view. AI technologies are still rather young and really expensive. Their impact is yet unpredictable. If you still hesitate if an AI system is exactly what you need to improve your business, try to contact AI app development professionals and get an expert advice.

3.3. Digital Technologies in Agriculture

Text 1. Global Datasphere Expansion

Source:

<https://www.seagate.com/files/www-content/our-story/trends/files/idc-seagate-dataage-whitepaper.pdf>

The focus of the digitization is anything and everything that intersects our business workflows and personal streams of life. This process of digitization is often referred to as digital transformation, and it is profoundly changing the shape of business today, impacting companies in every industry and consumers around the world. Digital transformation is not about the evolution of devices (though they will evolve), it is about the integration of intelligent data into everything that we do.

The data-driven world will be always on, always tracking, always monitoring, always listening, and always watching – because it will be always learning. What we perceive to be randomness will be bounded into patterns of normality by sophisticated artificial intelligence algorithms that will deliver the future in new and personalized ways. Artificial intelligence will drive even more automation into businesses and feed processes and engagements that will deliver new levels of efficiency and products that are tailored to business outcomes and individual customer preferences.

Traditional paradigms will be redefined (like vehicle or white goods ownership) and ethical, moral and societal norms will be challenged as genomics and advanced DNA profiling influence healthcare directives, insurance premiums, and spousal choices. Entertainment will literally be transformed before our eyes as virtual reality technologies transport us into new digital realities and augmented reality will dramatically change the service industry as we know it today.

Data is at the heart of digital transformation, the lifeblood of this digitization process. Today, companies are leveraging data to improve customer experiences, open new markets, make employees and processes more productive, and create new sources of competitive advantage – working toward the future of tomorrow.

Global Datasphere expansion is never-ending. International Data Corporation (IDC) has defined three primary locations where digitization is happening and where digital content is created: the core (traditional and cloud datacenters), the edge (enterprise-hardened infrastructure like cell towers and branch offices), and the endpoints (PCs, smart phones, and IoT devices). The summation of all this data, whether it is created, captured, or replicated, is called the Global Datasphere, and it is experiencing tremendous growth. IDC predicts that the Global Datasphere will grow from 33 Zettabytes (ZB) in 2018 to 175 ZB by 2025. To keep up with the storage demands stemming from all this data creation, IDC forecasts that over 22 ZB of storage capacity must ship across all media types from 2018 to 2025, with nearly 59% of that capacity supplied from the HDD industry.

An enterprise renaissance is on the horizon. The enterprise is fast becoming the world's data steward...again. In the recent past, consumers were responsible for much of their own data, but their reliance on and trust of today's cloud services,

especially from connectivity, performance, and convenience perspectives, continues to increase while the need to store and manage data locally continues to decrease. Moreover, businesses are looking to centralize data management and delivery (e.g., online video streaming, data analytics, data security, and privacy) as well as to leverage data to control their businesses and the user experience (e.g., machine-to-machine communication, IoT, persistent personalization profiling). The responsibility to maintain and manage all this consumer and business data supports the growth in cloud provider datacenters. As a result, the enterprise's role as a data steward continues to grow, and consumers are not just allowing this, but expecting it. Beginning in 2019, more data will be stored in the enterprise core than in all the world's existing endpoints.

Text 2. Cloud as New Core

Source:

<https://www.seagate.com/files/www-content/our-story/trends/files/idc-seagate-dataage-whitepaper.pdf>

One of the key drivers of growth in the core is the shift to the cloud from traditional datacenters. As companies continue to pursue the cloud (both public and private) for data processing needs, cloud datacenters are becoming the new enterprise data repository. In essence, the cloud is becoming the new core. In 2025 International Data Corporation (IDC) predicts that 49% of the world's stored data will reside in public cloud environments.

As to introducing the world's first data readiness condition (DATCON) index, not all industries are prepared for their digitally transformed future. So, to help companies understand their level of data readiness, IDC developed a DATCON (DATA readiness CONdition) index, designed to analyze various industries regarding their own Datasphere, level of data management, usage, leadership, and monetization capabilities. IDC examined four industries as part of its DATCON analysis: financial services, manufacturing, healthcare, and media and entertainment. Manufacturing's Datasphere is by far the largest given its maturity, investment in IoT, and 24x7 operations, and we found that manufacturing and financial services are the leading industries in terms of maturity, with media and entertainment most in need of a jump start.

China's Datasphere on pace to becoming the largest in the world. Every geographic region has its own Datasphere size and trajectories that are impacted by population, digital transformation progress, IT spend and maturity, and many other metrics. For example, China's Datasphere is expected to grow 30% on average over the next 7 years and will be the largest Datasphere of all regions by 2025 (compared to EMEA, APJxC, U.S., and Rest of World) as its connected population grows and its video surveillance infrastructure proliferates. (APJxC includes Asia-Pacific countries, including Japan, but not China.)

Consumers are addicted to data, and more of it in real-time. As companies increase the digitization of their business and drive consistent and better customer experiences, consumers are embracing these personalized real-time engagements and resetting their expectations for data delivery. As their digital world overlaps

with their physical realities, they expect to access products and services wherever they are, over whatever connection they have, and on any device. They want data in the moment, on the go, and personalized. This places greater demand on both the edge and the core to be able to produce the precise data consumers require, often in real-time. IDC predicts that due to the infusion of data into our business workflows and personal streams of life, that nearly 30% of the Global Datasphere will be real-time by 2025. Enterprises looking to provide superior customer experience and grow share must have data infrastructures that can meet this growth in real-time data.

Today, more than 5 billion consumers interact with data every day – by 2025, that number will be 6 billion, or 75% of the world's population. In 2025, each connected person will have at least one data interaction every 18 seconds. Many of these interactions are because of the billions of IoT devices connected across the globe, which are expected to create over 90ZB of data in 2025.

Text 3. IDC Guidance to Digital Transformation

Source:

<https://www.seagate.com/files/www-content/our-story/trends/files/idc-seagate-dataage-whitepaper.pdf>

Let's talk about IDC (International Data Corporation) Guidance to digital transformation.

- Enterprises must rise to the data guardianship challenge: As data is shifting from a consumer-centric model to an enterprise-centric model, this increases the burden on enterprises to provide an excellent experience. Enterprises are responsible for providing correct insights and excellent customer experience, even storing customers' digital lives. Ensure your data model provides secure, ubiquitous, real-time access to services and data. As consumers become more demanding of the experience in their digital lives, companies must ensure that they are providing data and services that are real-time, on the go via any network, and are personalized.

- Cloud migration is strategic: Cloud providers have emerged as a serious contender for enterprise data storage and services. The largest providers have resources, scale, security, and performance that few enterprises can match. Their global reach enables businesses to provide services to global geographies, and their centralized access enables company resources to tap into all of a company's data to drive analytics today and artificial intelligence in the future.

- Take a global approach to your data: It is increasingly important for companies to take a global approach to their data to provide low-latency, better customer experience and to address regulatory and compliance pressures requiring operators to locate data in regions in which customers are located. Whether in their own datacenters or via cloud providers, companies need to consider which data needs to be located as close as possible to their customers and where in the network it should be located (core vs. edge, cloud vs. own datacenters).

- Invest in the edge: Intelligent data is being sought to drive our businesses and lives in real time and on-the-go. Many times, data has no time to travel from an endpoint to the core and back when informing real-time decisions. The enter-

prise edge helps to bridge this gap. Whether taking on data analytics or simply storing analyzed and intelligent data, the edge will play an increasing role in enabling a real-time world.

- Ensure your organization is data-ready: IDC developed the DATCON index to characterize the readiness level of different industries, and to enable individual companies to assess their level of readiness across a number of metrics. When it comes to improving data readiness, it is important for executives to lead corporate initiatives, make certain that budgets exist, and ensure that data-savvy workers are hired and empowered to execute.

- Ready your IT organization for digital transformation: Organizations born of the days when IT departments dealt with back-office file-and-record processing are now facing a deluge of real-time, interrupt-driven bits and bytes from field organizations. Many IT organizations are finding themselves being given responsibility for physical security as well as data security, for operational data that was once sequestered on the factory floor, the grid, or the operating room, and for integrating data repositories previously kept in separate silos. Dealing with digital transformation will require not just new technology, but also new skills, political savvy, and relationships with top management.

Text 4. 3D Printing in Agriculture

Source: <https://manufactur3dmag.com/can-3d-printing-revolutionise-the-agriculture-industry/#:~:text=3D%20printing%20technology%20has%20several%20useful%20applications%20in,systems.%20The%20technology%20also%20saves%20time%20and%20money>

Agriculture is the biggest industry in the world employing over a billion people and producing more than \$1.3 trillion worth of food per year. As demand for agri products increases in parallel to the rapidly growing population, the industry is facing challenges to cope with increasing demand. But the good news is, using 3D printing in the agriculture industry can enhance production and marketing of the produce to improve the scale of economies and outputs.

As to application of 3D printing in agriculture, it should be noted that technology plays a major role in agriculture simplifying a lot of processes from food production to transportation to marketing. By employing 3D printing in the agriculture industry can significantly enhance the way operations/day-to-day activities are carried out by the farmers. In the area of planting crops, 3D printed tools can be used to adapt to specific activities. It also allows users such as farmers to produce or print on the spot so that they can create quality tools and improve planting processes quickly. Hence, remote locations benefit from the ability to print devices on demand saving energy and money.

Machineries are also vital components in food production from tractors and harvesters to seeders and fertilizer spreaders. It is not only important that they are running well, the machines must also be fitted with good tires. According to experts at Skid Heaven, traction matters to farmers because it will increase productivity and reduce fuel consumption. It also improves safety, preventing slips and slides that could endanger the operator or destroy fields.

Let's consider innovative applications. One of the most creative ways to apply 3D printing in agriculture industry is to make special parts. Farming equipment is not only massive, but also very expensive. Replacing a part can become pricey. In addition, if the machine is outdated, parts might not exist anymore or they are difficult to locate. Meanwhile, the machinery stays unused disrupting the production process. This is where 3D can help in replicating spare parts through additive manufacturing. Like the automotive industry, it is possible to print replacement parts for agricultural machineries. Some companies are already manufacturing agri machinery parts such as wear points, high end guards, and dust diverters, to name some.

Small-scale farming and even indoor gardening benefit as well from 3D printing. It enables anyone who wishes to start a farm to do so without incurring huge expenses because they can use additive manufacturing to create some parts of their project. Plus, thanks to the technology, tools and components needed in agricultural or gardening activities can be adapted and customized to fit the requirements of users.

Summing up, it is important to say that 3D printing technology has several useful applications in the agricultural industry. It allows farmers and would-be farmers to develop customised tools and equipment, replace broken parts, and test the efficacy of farming systems. The technology also saves time and money.

Text 5. Crop Spraying Drones

Source: <https://www.suasnews.com/2019/09/chinese-agri-tech-giant-xag-defended-20-million-hectare-farmlands-with-crop-spraying-drones/>

Chinese agri-tech giant XAG defended 20-million-hectare farmlands with crop spraying drones.



XAG announces that its Unmanned Aerial System (UAS) crop protection services have covered accumulated farmland of 20 million hectares, amid a large-

scale cotton defoliation operation in Xinjiang, China. Among the first to introduce fully autonomous drones to transform the way crops are grown, XAG has become one of the world's largest agriculture drone manufacturers and service providers. Its crop-spraying drones have operated in 38 countries including South Korea, Japan, Australia, Vietnam, Brazil, Mexico, Zambia, etc.

According to XAG Flight Information System (XFIS), up to September 11, 2019, the company's total drone service record has exceeded 20 million hectares, which is 400% higher than that of a year ago. Particularly, this August, XAG conducted a record-breaking, single-day operation on as many as 140,000 hectares of farmlands, marking a milestone in the global UAS crop protection industry.

The 20-million-hectare service record indicates XAG's enriched experience in drone-based crop protection as well as farmers' strengthened trust on the new technology. The precision spraying solutions have been applied to sustainably safeguard a wide range of crops, including maize, cotton, rice, wheat and fruit trees, from harmful weeds and pest diseases.

Closing Yield Gap for Maize and Cotton: In a series of recent drone attacks on the 'crop devouring' fall armyworm, XAG has demonstrated that its aerial spraying solutions are highly effective in controlling the spread of these prolific, fast-spreading pests on maize fields. This April, XAG teamed up with Bayer Crop Science to launch a joint emergency control operation in China's Guangxi Province, where a swarm of crop spraying drones were deployed to kill the pests with a larval mortality rate of 98%.

Following the defeat over fall armyworm, XAG has initiated a large-scale cotton defoliation operation 'Take off for Harvest Time' in China for the third consecutive year. Over 1000 professional crop protection teams with an estimated 3000 sets of P Series Plant Protection UASs have gathered in Xinjiang Uygur Autonomous Region to meet the ever-increasing market demands from local cotton growers.

Up to mid-September, XAG's regional service record in Xinjiang alone has reached approximately 4.8 million hectares. Compared to the same period of last year, 49% more cotton fields have been precisely sprayed and effectively defoliated by XAG's agriculture drones.

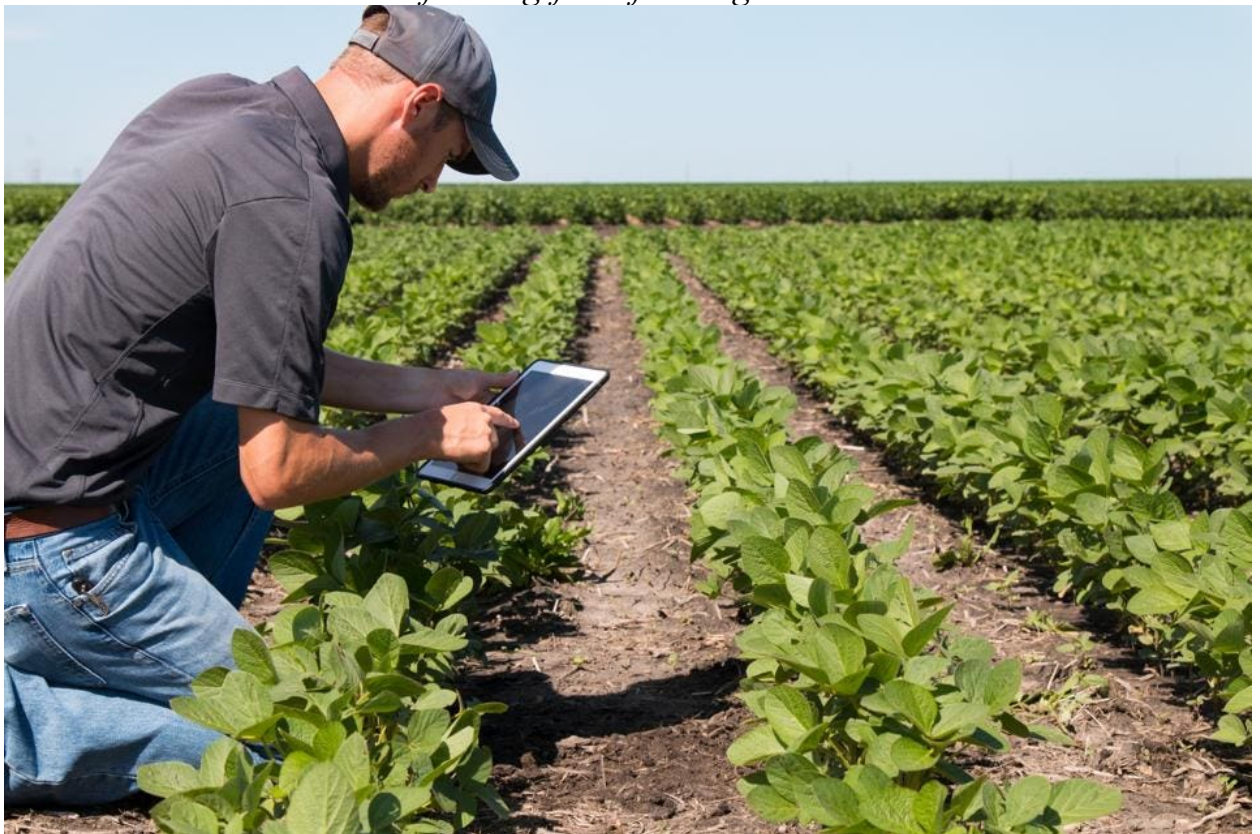
Xinjiang accounts for 80% of the nation's cotton production, where 2.6 million hectares of cotton have been planted this year. To ensure a high-quality machine harvest, farmers need to spray defoliant to remove all the cotton leaves. Compared with hand sprayers or tractors, XAG's crop spraying drones precisely apply demanded dosage of defoliant to reduce cotton impurities and improve fiber quality, while minimising the use of chemicals and agricultural water. The UAS precision spraying technology is making cotton production more in line with environmentally sustainable standards.

Solving Local Problem in a Global Scale: Founded in 2007, XAG is a Chinese-based agriculture technology company and one of the world's largest industrial UAS (unmanned aircraft system) manufacturers. Through empowering farmers with precision technologies such as drones, artificial intelligence (AI) and Internet-of-Things (IoT), XAG has been committed to improving the productivity,

quality and sustainability of agricultural production. Currently, it has established global partnerships with industry leaders and research institutions, such as Bayer, Alibaba, Huawei, Harper Adams University and Sydney University, to promote digital farming and enhance food safety. Having transformed crop protection approach on 20 million hectares of lands, XAG's smart agriculture solutions have been introduced into 38 overseas markets and adapted to the local agricultural landscape, such as bee pollination and weed control in Australia, the fall armyworm plague in Zambia and the aging rural population in Japan.

Text 6. XR Tools to Transform Food Farming

Source: <https://www.forbes.com/sites/forbestechcouncil/2022/02/15/how-xr-tools-are-transforming-food-farming/?sh=2eb4302c2ce7>



Is the metaverse really the next big thing in the digital world? Will we really be wearing XR (extended reality) headsets to view the world as part of “enhanced” experiences? I think that reality is struggling to catch up with the hype. Facebook (Oculus), Microsoft (Hololens), Nvidia, Google and Apple are betting big on the metaverse, but what about the essential, though less glamorous, agri-food sector? Is XR ready for food suppliers, restaurants and retail?

Popularized in science fiction, metaverse (“meta” + “universe”) now describes the integration of digital technologies with the physical world: overlaying 3D virtual environments onto physical environments through devices. Remember the *Pokemon Go* craze of 2016, when people used smartphones to “catch” Pokemon around town? *Second Life* and *Fortnite* are metaverses in gaming environments. The metaverse can also integrate virtual, physical spaces and virtual economies. There are challenges, including the technological limitations of pro-

gaming, hardware (headset) development and the costs of creating and running XR systems. In particular, so far people have not taken to wearing goggles, glasses or headsets for extended periods of time, and some even many find them nausea-inducing.

Most of what you hear about the metaverse is hype at this point, but here are five areas where XR tools are starting to make a real difference in agri-food.

1. Observation/Visualization: XR enables farmers to augment what they see with their (human) eyes to visualize soil fertility, production quality, pests and diseases across an entire farm and use that data to select optimal crops and management practices. For indoor livestock facilities, AR (monitoring ventilation/air quality/temperature), IoT (animal sensors) and AI (camera vision) can be combined to allow farmers to monitor animal health and well-being in real time. Outdoors, AR applications can track and adjust digital boundaries for grazing. Some metaverse-type initiatives in agri-food include:

- Sparkle (EU) demonstrates XR applications for agriculture, including monitoring farms, student and worker training, and tool/equipment assessment.

- CSIRO (Australia) adapts popular gaming platforms with high-tech sensor technologies and data analytics, creating wearable, hands-free technologies for real-time pond-side information on water quality and system monitoring for prawn farmers.

- Bareburger burger chains use Snapchat's AR technology to show hyper-realistic food images. Hololamp is a hands-free, glasses-free AR projection machine that projects a menu's food items (with images/video) on a table.

2. Origin of Food/Ingredients: QR codes are increasingly popular. Enhanced by AR, your smartphone can yield information on nutrition, product composition and provenance. AR enhanced QR codes allow shoppers to “visit” source farms, learn cooking techniques and more. Examples include:

- ABP Food Group and ASDA in the U.K. used Aircards to build an interactive, immersive AR experience, demonstrating cooking a perfect steak as part of a larger consumer education campaign.

- Farm VR combines GeoAR, geolocation, 3D modeling, data visualization and virtual farm tours to create an interactive environment to inform consumers about where their food comes from.

- NexTech AR shows consumers how their seafood got from the ocean to their plates through an AR tour of the fishing boat.

- Patrón Tequila's AR-enhanced app experience shows where Patrón comes from and how perfect tequila is made.

- Queppelin AR smart glasses integrate visual observations with virtual information in a hands-free platform for farmers to facilitate decision making and to give consumers “eye-witness” information about their food sources.

3. Staff Training: Immersive e-learning experiences transform staff training, bringing advanced precision methods and techniques to geographically dispersed farms. Examples include:

– Vaderstad has an app that allows farmers to calibrate their machinery from their smartphone while making training and equipment familiarization easy and fast.

– Cornell University’s veterinary school uses VR to teach anatomy, allowing students to experience new techniques before trying them on live animals. The University of Liverpool uses interactive fiberglass animal models with VR to teach equine or cattle veterinarian students what to expect when operating.

– A VR system is being developed to enable remote post-mortem pig inspection.

4. Enhance Efficiency and Safety: AR tools can help select optimal tools and equipment for specific tasks. For example, Nedap CowControl uses Microsoft’s HoloLens so that farmers can integrate digital information with real-world information. Using actions, hand gestures and voice commands, farmers can interact with the technology naturally, efficiently and successfully. Yeppar utilizes AR, VR and MR for field inspections, weather updates and simulated agricultural training.

XR can also improve farm safety (including dealing with hazardous materials stored on-farm) and can alleviate the challenges of limited emergency response capabilities. The University of Nebraska’s AR system identifies on-farm hazards during emergencies and notifies first responders. Georgia Tech is developing AR systems that project instructional graphics onto chickens on a processing line, helping worker safety, improving efficiency and improving food safety.

5. Improving the Consumer Experience: Consumer-focused AR is largely about storytelling. For example, Augmania’s AR system combines interactive print, live demos and AR experience to tell consumers their food story and lets customers build their own AR experience (no coding skills needed).

Boursin Sensorium’s 360 VR Experience takes customers on a journey through the cheese production process. Innis & Gunn’s virtual reality headset transports customers to landscapes “inspired by” their two main brews. Coca-Cola cans have had a variety of polar bear adventures to enjoy while drinking. In a cross-promotion, Nestle cereal boxes had a QR code linked to the movie *Rio*, through which consumers could play an augmented reality game with Blu, the main character of the film.

So, while the hype of the metaverse is entertaining, the agri-food sector is already exploring the practical applications of AR. Agricultural AR is helping farmers better understand and manage land resources, enhance productivity, improve time management, streamline training and improve safety.

Text 7. Biosecurity Virtual Reality Tool in Poultry Industry

Source: <http://poultrynews.com.au/2021/03/31/biosecurity-vr-tool-improving-skill-levels/>

The industry has launched two game-changers for Australian farmers – a farm sustainability dashboard and a biosecurity virtual reality tool – to help egg farmers to continue to improve on-farm and business practices. These two tools are announced in the third sustainability framework report. The Australian Eggs sustainability framework report examines the relationship between the Australian

community and the egg industry, using insights from annual CSIRO community research.



In direct response to key issues raised by the community and industry as part of the sustainability framework process, Australian Eggs has developed the tools. Days Eggs, a family-managed egg business located in South Australia that has been producing and delivering eggs for over 30 years, are the state's largest egg producer. Days Eggs poultry welfare manager Jess Spencer believes the biosecurity virtual reality tool, launched through the sustainability framework report of 2021, improves efficiency in training and allows farm managers to raise the initial skill set of new members, as well as providing additional training to help raise the skill set of current team members who may learn better through this type of training delivery.

Australian Eggs world-leading agritech tools will help farmers improve sustainability and biosecurity practices. Ms. Spencer explains a key benefit of delivering biosecurity training virtually is that it allows complete induction training in a controlled environment without the need to be on farm.

"This in turn increases safety and mitigates welfare risks by reducing the chance of any issues arising from new staff learning on farm, who aren't competent in biosecurity yet," she said.

"The content of the VR program is based on current biosecurity measures and will provide a great tool for basic induction biosecurity training of new staff, as well as refresher training for other staff.

"It encourages the user to seek out biosecurity issues and gives them feedback on their answers as well as tips." The world-leading agritech, part of Australian Eggs sustainability framework process, supports learning by not allowing the user to progress to other areas until they have answered all questions within an area correctly. With the display screen, the program allows managers to view how the user fared with their answers, giving an idea of their understanding of biosecurity and what their training needs are.

“It makes the person using it actively think about what the risks are and what they must do to mitigate them,” Ms. Spencer said.

Australian Eggs managing director Rowan McMonnies said, “Our new biosecurity VR tool allows new and existing staff to be trained in a close to real-life environment, driving efficiencies and improving training outcomes.”

“It’s great to know the initiatives we developed in response to community issues raised through our sustainability framework are making an impact, with Australians’ trust in our industry continuing to grow.”

Text 8. Virtual Reality Pig Farms

Source: <https://www.thepigsite.com/news/2019/10/virtual-reality-pig-farms-help-us-producers-connect-with-consumers>

Virtual reality pig farms help US producers connect with consumers. A new cutting-edge video series from the National Pork Board creates opportunities for farmers and others involved in pork production to share with consumers a firsthand view inside today’s modern farms.

The virtual reality (VR) videos enable viewers to virtually tour gestation, farrowing, nursery and finishing barns. The video series show how pig farmers and their teams use the latest technology and tools to provide a safe, secure and healthy environment for pigs following the We CareSM ethical principles.

“The new videos let viewers step into a barn, take a guided tour and look around through a virtual reality platform in much the same way as if they were actually inside a barn,” said David Newman, president of the National Pork Board and a pig farmer representing Arkansas. “We think this platform will go a long way toward sharing our We Care story with consumers and the lengths farmers go to in order to provide a safe, sustainable and nutritious product.”

Pork Checkoff leaders will showcase the videos and highlight the nutritional benefits of pork at the 2019 Food and Nutrition Conference and Expo (FNCE) held 26 to 29 October in Philadelphia, Pennsylvania.

“The videos will help us share the story of today’s pig farming and demonstrate that what we do – day in and day out – is based on the utmost concern for human health, nutrition and sustainability,” said Adria Huseh, RDN, LD, CPT, and manager of nutrition communication and research for the Pork Checkoff. “The videos will showcase our industry to key audiences, including health and nutrition professionals from around the world.”

The Food & Nutrition Conference & Expo is the world’s largest gathering of food and nutrition experts, with more than 10,000 registered dietitians, nutrition science researchers, policy makers, health care providers and industry leaders in attendance. At FNCE, they will discuss and act on issues of high importance to the health and well-being of American food consumers.

“It’s the right platform for showcasing the efforts of everyone involved in pork production to ensure product quality, safety and sustainability,” Huseh said.

The videos use VR technology to offer a firsthand view inside different types of pig barns. The videos can be viewed on YouTube, Facebook or through a VR headset. “The high-tech platform is a fitting way to illustrate the cutting-edge

tools and processes pig farmers use to provide a safe, secure environment for the well-being of every animal on farms across the United States,” said Newman.

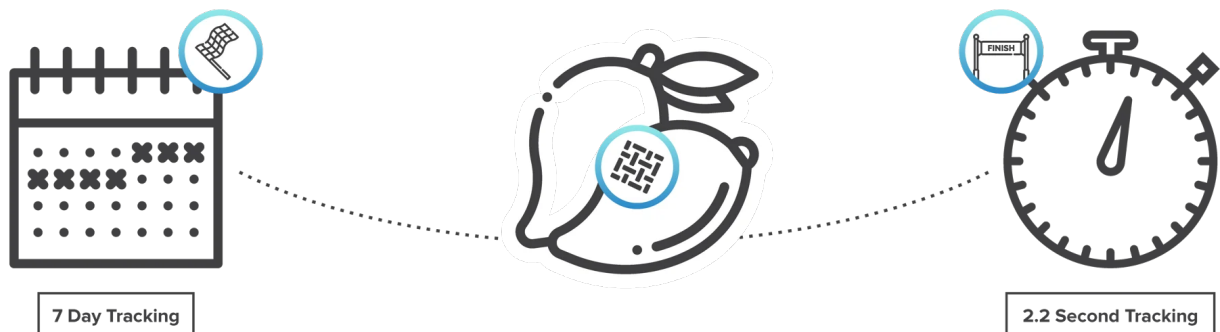
The videos were filmed in partnership with the Minnesota Pork Board and Christensen Farms located in Sleepy Eye, Minnesota.

Text 9. Blockchain-based Food Traceability System

Source: <https://www.hyperledger.org/case-studies/walmart-case-study>

Challenge: When an outbreak of a food-borne disease happens, it can take days, if not weeks, to find its source. Better traceability could help save lives by allowing companies to act faster and protect the livelihoods of farmers by only discarding produce from the affected farms.

Approach: Walmart Inc. thought that blockchain technology might be a good fit for the decentralized food supply ecosystem. To test this hypothesis, the company created a food traceability system based on Hyperledger Fabric. Walmart, together with its technology partner IBM, ran two proof of concept projects to test the system. One project was about tracing mangos sold in Walmart’s US stores and the other aimed to trace pork sold in its China stores. The Hyperledger Fabric blockchain-based food traceability system built for the two products worked. For pork in China, it allowed uploading certificates of authenticity to the blockchain, bringing more trust to a system where that used to be a serious issue. And for mangoes in the US, the time needed to trace their provenance went from 7 days to... 2.2 seconds!



Results: Walmart can now trace the origin of over 25 products from 5 different suppliers using a system powered by Hyperledger Fabric. The company plans to roll out the system to more products and categories in the near future. In fact, it has recently announced that it will start requiring all of its suppliers of fresh leafy greens (like lettuce and spinach) to trace their products using the system.

Walmart has always been interested in enhancing transparency and traceability in the food system. Mr. Yiannas explains that the company has tried many systems and approaches to solving this problem over the years; none had brought them the kind of results they were after. When Yiannas first heard about blockchain and the idea of using it to trace food in the supply chain, he was skeptical.

Karl Bedwell, Senior Director at Walmart Technology, explains, “Creating a (traceability) system for the entire food supply ecosystem has been a challenge for

years, and no one had figured it out. We thought that blockchain technology might be a good fit for this problem, because of its focus on trust, immutability, and transparency.” Bedwell and his team introduced Yiannas to the possibilities of blockchain technologies for enterprise solutions. Yiannas said, “I really had an “aha” moment once I deeply understood the technology. I had been hesitant about creating yet another traceability system – the ones we had tried in the past never scaled. Now I understand that was because they were centralized databases. Blockchain, with its decentralized, shared ledger felt like it was made for the food system!” With the business interest in blockchain technology confirmed, Walmart started working on two proof of concept (POC) projects with their technology partner IBM.

Walmart Technology considered several blockchain technologies but ultimately decided to go for Hyperledger Fabric. “IBM brought Hyperledger Fabric to us. We looked into Ethereum, Burrow project and others. Ultimately, we decided to go with Hyperledger Fabric because it met most of our needs for a blockchain technology,” Bedwell said. “We felt that it best met our needs. It is an enterprise-grade blockchain technology, and it is permissioned.” The team also found it important to work with an open-source, vendor-neutral blockchain. Since the food traceability system was meant to be used by many parties, including Walmart’s suppliers and even direct competitors, the technology ecosystem underlying it needed to be open. Hyperledger Fabric is a blockchain framework implementation and one of the Hyperledger projects hosted by The Linux Foundation. Intended as a foundation for developing applications or solutions with a modular architecture, Hyperledger Fabric allows components, such as consensus and membership services, to be plug-and-play. Hyperledger Fabric leverages container technology to host smart contracts called “chain code” that comprise the application logic of the system.

For the mango POC, Yiannas started by creating a benchmark. He bought a packet of sliced mangoes at a nearby Walmart store and asked his team to identify which farm they had come from – as fast as possible. The team started calling and emailing distributors and suppliers, and eventually had an answer almost seven days later. This was not bad by industry standards, but Walmart wanted to do much better. So together with IBM, they got to work building a blockchain-based food traceability system. The Walmart Technology team looked at their own processes as well as those of their suppliers to design the application. Suppliers used new labels and uploaded their data through a web-based interface.

Once Walmart saw that the system worked, they wanted to expand it – and not just within Walmart. Given the interconnected nature of the food system and the company’s negative experience with closed systems, Walmart wanted to make sure that this time, many players were involved. Yiannas said, “(Walmart’s) CEO was reaching out to other food companies the next day, including other retailers!” Wal-Mart collaborated with IBM and others to set up IBM Food Trust, involving prominent players in the food industry, like Nestle and Unilever.

Here are some tips from Frank Yiannas on implementing your blockchain project:

1. Let the business lead the project, not the IT department.
2. Understand the business case deeply. Make sure that you know and can explain why blockchain is the right solution.
3. In a large organization, you need to bring a lot of people along. Think about all the different departments that will be affected by the projects. Meet with these stakeholders early on and explain what you are trying to do.
4. Have your soundbite! People don't get inspired by technology, but by a vision. For us, it was the story of mangoes – 7 days vs. 2.2 seconds with blockchain.
5. Participate in forums that allow you to speak to other companies who have launched similar projects successfully. It helps if you help an expert in the field who's willing to come in and educate fellow members.
6. Start small, with a POC. And when you've run your pilots and are convinced about the business value, go ahead and scale. After all, Yiannas said, "Walmart is a pretty big lab! If it can scale at Walmart, it can scale anywhere!"

Text 10. College-designed AR App for Veterinary Students

Source: <https://www.vet.cornell.edu/news/20190508/college-designed-ar-app-sparks-new-level-learning-veterinary-students>

College-designed Augmented Reality (AR) app sparks new level of learning for veterinary students. Cornell veterinary students can now get a leg up in learning equine anatomy, thanks to a custom-designed app created at the college. Students of VTMED 6101 (Anatomy of the Horse) were the first to practice taking radiographs of a horse's carpus – equivalent to the human wrist – with the Equine X-Ray Positioning Simulator this spring. Developed by a team in CVM's Educational Support Services (ESS), the augmented reality app superimposes a digital image of a horse limb onto the surroundings seen through an iPad.

"The students were so excited and seemed to really enjoy the technology," said Allison Miller '03, D.V.M. '07, lecturer in the Department of Biomedical Sciences and the Department of Clinical Sciences, who teaches the eight-week equine anatomy distribution course.

The app was funded by an internal Educational Technology Innovation Grant and is part of the larger equine carpus modules project Miller created with the support of ESS to help D.V.M. students study parts of the equine musculoskeletal system – a subject students often find challenging.

"We try really hard not to teach anatomy as memorization," Miller said. Instead, in a "flipped classroom" approach, she first had students complete out-of-class modules, such as dragging and dropping bone labels onto parts of a horse's body in a series of online interactive exercises. "The idea is to better prepare them for more meaningful and in-depth classroom discussions," she explained.

In class, students applied their new knowledge of equine anatomy to two real-life case scenarios. "The app came in at this point, as it allowed them to practice their radiographic positioning for the views that they would take as part of one of the case workups," Miller said.



In the open space of the CVM atrium in front of the lecture hall, the twenty students each used an iPad to project a 3D model of full-size equine thoracic limbs onto the floor. They could walk around the simulation, slide back the skin to reveal the underlying bone structure, position a light beam on the image, and capture a series of required radiographic views, which Miller later graded.

“Students can hear a lecture on how to take certain oblique radiographic views, but actually positioning yourself to take them might prove more challenging,” Miller said. Working with the app, she hopes, will give them the opportunity to practice and gain mastery and confidence without the need for innumerable live animals or the risks associated – for both practitioners and patients – with repeated exposure to x-ray beams. Thereby the augmented reality app bridges pre-clinical and clinical content and shows students early in the curriculum why the anatomy they are studying will be important in the field.

Tech teamwork: Getting to this point, however, took months of experimental work. “This was a fantastic project that brought together our full ESS team,” said lead instructional designer and project manager Andrea Beukema. After considering an online, computer-based 3D simulation, the team decided to try to create an augmented reality app to make the radiograph exercise more physical and realistic.

At the heart of the app is a 3D model of the equine carpus and the underlying skeleton built by medical illustrator and animator Allie Buck. “Normally, veterinarians have to crouch down to radiograph the distal equine limbs, so I made my model life-size, hoping that students would naturally feel the need to kneel or crouch down to take their radiographs,” Buck said. “And they did.”

Julie Powell, ESS courseware programmer, then wrote the module with the Unity gaming software – a completely new challenge, despite using it to create on-

line interactive games for other courses. “There is a steep learning curve for developing augmented reality (AR) applications; because this is such a new technology, there is little documentation or code sharing available on the internet,” Powell said. “It took me several months just to be able to display the equine carpus on the floor in front of the iPad.”

A new teaching tool: In the end, the team’s gamble paid off. “The app was amazing,” said Tyler Olson, D.V.M. ’22, a student in the class who had previous experience with augmented reality devices outside of the educational context. “I found it to be pretty self-explanatory and user-friendly.” This sentiment was shared by most of his classmates, who in course evaluations overwhelmingly responded that they found the app and out-of-class exercises to be helpful in learning the material.

“I had never used any augmented reality device, so I was blown away by how realistic it was,” said Stephanie Bandoski, D.V.M. ’22. “It was a lot of fun taking x-rays with instant gratification, since you knew immediately if you were angled at the right position. I’m very thankful Dr. Miller and the ESS team put in the effort to make this happen.”

Considering such positive feedback, the augmented reality app will likely become a fixture in Miller’s teaching. In fact, “I would like to integrate more of these type of experiences into the pre-clinical curriculum,” she said.

“I would have loved to have had this app when I was a student, first learning about positioning for equine oblique radiographs and learning the anatomy,” Miller said. “I’m so jealous of the technology the veterinary students have available to them now to enhance their learning. While nothing can fully prepare you for an emergency where you have primary case responsibility and emotions are running high, I think we are doing our absolute best to prepare our students while they are here.”

РАЗДЕЛ 4. ИНСТРУКЦИЯ ДЛЯ ПОДГОТОВКИ УСТНОЙ ПРЕЗЕНТАЦИИ ТЕКСТОВОГО МАТЕРИАЛА НА АНГЛИЙСКОМ ЯЗЫКЕ

4.1. Поэтапная инструкция по подготовке презентации текстового материала

Presentation Preparing Guide

STEPS

Step 1. Know the context of the presentation: Who are the audience, and what are their interests? How big will the audience be? How long is the presentation to be? What facilities are available for visual aids? What about time for questions?

Step 2. Decide on your topic. Think carefully about the main point or points that you want to communicate. You should be able to write these clearly in one or two sentences.

Step 3. Structure the content. Most people begin with an unordered collection of ideas and then put them into sequence. Then decide on the relative weight of each section of the talk.

Step 4. Think of ways of catching the listeners' interest: examples, anecdotes, impressive statistics, and interesting quotations.

Step 5. It is useful to 'rough-draft' visual aids at this stage because they can help you make the sequence of points clearer and more logical. Think about whether some information should be put into handouts.

Step 6. Check overall length, and the relative weight of sections. A little too short is better than even a little too long. As a rough guide, allow about 1 minute for every 100 words, plus time, if necessary, for changing transparencies. One A4 page, double-spaced, takes about 3 minutes of speaking time.

Step 7. Finish preparation of visual aids. If you are using PowerPoint data projection, having slides or transparencies is a useful back-up in case of last-minute technical problems.

Step 8. Prepare handouts, if you want them. Make copies.

Step 9. Plan the exact words you will use for the opening, the transition points, and the conclusion. Practice them again and again. If you are anxious, write on cards the introductory and concluding sentences. Make more notes if you need them.

Step 10. REHEARSE your presentation, as often as necessary. Do not omit this step! You can practice alone, or ask a friend or colleagues to listen to you. With practice, you will become more fluent and at ease. Make sure you speak simply, but in academic not conversational style. Project your voice across the room. You will find this slows your speech. Check the timing carefully and make adjustments if necessary. Mark a time reference at one or two points in the presentation.

Step 11. Think about the questions the audience may want to ask you. Plan how you will answer them.

Step 12. On the day of your presentation, be calm and organized. If you are unfamiliar with the location, go beforehand to plan where you will stand and where

you will put your papers and to see how the projection works. Arrive in good time for your presentation. Remember to take all your visual aids, notes and papers.

If you feel nervous, do not worry. That's normal. Breathe slowly and deeply for a few minutes beforehand, and try to relax the muscles of your face, mouth and neck. This will make you look relaxed, and will improve the quality of your voice. Then remind yourself how well prepared you are, and enjoy it. Concentrate not on yourself or your notes, but on the audience and making clear to them what you have to say.

Visual aids

If you are using an **overhead projector**, follow steps 1–4 below.

1. Before your presentation, check that the equipment works. Decide on the best place to stand, so that you do not obscure the view of the audience; decide where to put transparencies before and after use; decide whether you will point at the transparency or at the screen (or not at all).

2. If you point at the transparency, use a pen as a pointer.

3. Detach the transparencies from their backing paper to make things easier during your presentation. Interleave them with plain paper.

4. Number the transparencies in case you drop them.

If you are using **Power Point** data projection, follow steps 1–6 below.

1. Check beforehand whether you should bring your presentation on diskette or CD or DVD. If you are bringing a computer, check on the type of connection required for the data projector.

2. If possible, set up your presentation before your talk. This can take several minutes, even if all goes well.

3. Have a blank slide at the start and end of your presentation. This makes your start and finish smooth.

4. Power Point has an excellent online tutorial and help system. Use it when you are preparing your presentation so that you can make full use of its facilities (such as time monitoring, handouts and notes).

5. Don't be tempted, because of Power Point's capabilities, to make your slides too 'busy'. That will distract the audience's attention.

6. Even if you are giving your presentation in a well-equipped room, technology can go wrong. Print out your PowerPoint slides on to transparencies, so that you have an alternative.

Handouts

Handouts are useful in **three ways**.

1. They show data that are too detailed for a visual aid, such as transcript data from interviews, or mathematical calculations. If there is a lot of detail, the points you want to refer to in your presentation should be clearly highlighted in the handout. The handout is given immediately before the presentation, and then referred to.

2. They provide a 'signposting' framework to guide the audience through your talk. In this case, the handout will be a note-frame, which is given out before the presentation. Don't put too much into it, or the audience will read the handout instead of listening to you.

3. They act as a record of your presentation, which the audience can take away. This could be either a note-frame or a fuller text. For this 'record' type of handout, it's common practice to add your address and email address, so that people working in the same field can contact you later. Some presenters like to give out this type of handout at the end of their talk, so that the audience listens with full attention. Others give it out at the start, as a support to listening.

Keep your handout short – one page if possible.

Notes

Visual aids often provide sufficient support for your presentation. If you feel you need notes as well, remember that they will be more to cope with during the presentation: you will have to deal with the visual aids, the notes, and the audience.

1. Cards or A5 paper are often recommended because they are neater in the hand than big pages. Make sure you number them clearly!

2. A good alternative is to use photocopies of your visual aids, with notes written on them. It is then easier to coordinate your progress through notes and visual aids.

3. Write very large and clear, with plenty of space.

4. Use colour, so that you can quickly locate key points or words.

4.2. Технология создания электронной презентации текстового материала

4.2.1. Облако слов

«Облако слов» представляет собой визуальное представление ключевых слов текста. Это – графическая визуализация текста.

1. Зарегистрироваться на сайте <http://tagul.com/>

2. Нажать клавишу My clouds, затем клавишу CREATE NEW CLOUD и зайти во вкладку Tags source (Теги: источник) → URL (вводим адрес веб-страницы) и текст загружается в буфер.

3. Нажать клавишу Visualize, таким образом, текст появится справа.

4. Придать облаку желаемый вид с помощью меню:

Appearance – внешний вид

Font – шрифт

Color – цвет, раскраска слов в облаке

Background color – цвет фона (на экране)

Animation speed – скорость анимации

Roll over text color – развернуть цвет текста

Roll over box color – развернуть цвет рамки

Roll over stroke color – развернуть цвет шрифта

Grab and share – сохранить и поделиться

Save to local computer – сохранить на своем компьютере

Save graphic image – сохранить графическое изображение

Place on a web-page – разместить на веб-странице

Send link to a friend – отправить ссылку другу

5. Сохранить созданное облако, нажав на клавишу Save graphic image. После нажатия появляется окошко «Сохранить как», и вы выбираете место сохранения.

6. Отправить ссылку своим коллегам.

ИЛИ

1. Используя сайт <http://www.tagxedo.com/>, создать **облако слов** из текста.

2. Придать облаку желаемый вид с помощью меню:

Color – цвет

Theme – тема

Font – шрифт

Orientation – ориентация

Layout – расположение слов в облаке

All – всевозможный вариант

Shape – очертание/форма

Hide History – история выполненных действий

3. Сохранить, нажав клавишу Save, и выбрать необходимые параметры сохранения: размер и расширение. После нажатия клавиши сохранить изображение в любом месте на вашем компьютере.

4.2.2. Диаграмма связей / ассоциативная карта

«Диаграмма связей», известная также как «Интеллект-карта», «Карта мыслей» (англ. Mind map), «Ассоциативная карта», – способ изображения процесса общего системного мышления с помощью схем. Также может рассматриваться как удобная техника альтернативной записи.

1. Зайти на сайт <http://freemind.sourceforge.net/>. В пункте **See Download** нажать на **Download** (загрузка). Вы автоматически попадаете на страницу **Download**, где спускаетесь в пункт **Installing Free Mind**.

2. Если компонент Java уже установлен, то нужно нажать на **You can find a Free Mind installer including java here**. После чего начинается автоматическая загрузка файла Free Mind-Windows на ваш компьютер.

3. Установить программу в обычном режиме на компьютер.

4. На рабочем столе появляется значок, который вы запускаете как программу.

5. В центре поля щелкнуть на **Free Mind** / Новая карта и написать центральное понятие, например: «статья о программе Free Mind».

6. Нажать клавишу **Insert** / Вставка для вставки пункта первого уровня (например, «Введение»).

7. Нажать клавишу **Enter** для вставки второго пункта первого уровня (например, «Установка приложения»).

8. Основное редактирование необходимо производить с помощью клавиш **Insert** / Вставка, **Enter** / Ввод, **Escape** / Выход и **Delete** / Удаление.

9. Для редактирования текста внутри выбранного узла можно воспользоваться клавишей **F2**.

10. Можно перемещать карту целиком в любое место рабочего пространства методом обычного **drag'n'drop** / перетаскивание – нужно зажать мышью рисунок и перетаскивать его, не отпуская, в нужное место.

11. Попробуйте изменить размеры узлов. Все возможные формы работы с узлом вы найдете, щелкнув по узлу правой кнопкой мыши, в пункте «Формат».

12. Нажатием сочетания клавиш **Alt+I** откройте каталог с предустановленными иконками («Выберите пиктограмму»). Вы можете выбрать любую из них для добавления к узлу на вашей карте. Добавление иконок делает ее более читаемой и интуитивно понятной.

4.2.3. Шаги по созданию и работе с узлами ассоциативной карты

1. Щелчок мышью по «**Новой карте**» дает возможность внести ключевое слово. Нажав клавишу **Enter**, вы закрепляете данное ключевое слово.

2. «**Вставка → Новый смежный узел после текущего**» дает возможность создать узел с правой стороны.

3. «**Вставка → Новый смежный узел перед текущим**» дает возможность создать узел с левой стороны.

4. Щелчок **левой** кнопкой мыши по «**Новому смежному узлу**» дает возможность внести название для созданного узла.

5. Выполнение щелчка **правой** кнопкой мыши обычно приводит к отображению **списка доступных действий для работы с узлом**:

Редактировать F2	Изменение названия узла
Изменить текст в редакторе	Форматирование шрифта: цвет, курсив, жирный шрифт, подчеркивание, выравнивание, вставка таблицы, создание списка, создание нумерации
Редактировать атрибуты	Создание таблицы с атрибутами под названием узла
Удалить узел	Удаление узла
Вырезать	Удаление узла из данного места и вставка в другом месте
Копировать	Копирование узла и вставка в другом месте
Копировать только этот узел	Копирование только этого узла и вставка в другом месте
Вставить	Вставка узла
Новый подчиненный узел	Создание нового узла, подчиненного заданному узлу
Новый смежный узел после текущего	Создание нового смежного узла под существующим узлом
Новый смежный узел перед текущим	Создание нового смежного узла над существующим узлом

Развернуть/свернуть	Развёртывание и свёртывание подчиненного узла
Пиктограммы <i>здесь же:</i>	Вставка пиктограмм из предложенного списка
Удаление последней пиктограммы	Удаление последней пиктограммы в данном узле
Удаление всех пиктограмм	Удаление всех пиктограмм в данном узле
Экспортировать ветвь как новую карту Alt+Shift+A	Экспорт данной ветви в новую карту, т. е. перенос в новое окно, где с ней можно отдельно работать (в главной карте появляется ссылка на этот элемент ассоциогаммы)
Формат	Работа с узлом Тип узла – овал, кривая Увеличить шрифт узла Уменьшить шрифт узла Курсив Жирный Цвет узла Высветлить узел Фоновый цвет узла Убрать фоновый цвет узла Цвет облака (облако создается в вставке) Цвет ребра (прямая, кривая, заостренная прямая, заостренная кривая) Толщина ребра (как у родительского узла, тонкое ребро, 1, 2, 4, 8)
Вставка	Облако Изображение из файла (Alt+K) Ссылка (выбор файла) – вставка файла через ссылку Ссылка (текстовое поле) Создать связь (выделив минимум два узла) / между узлами
Стиль	Изменение стиля текста в рамках узла

6. Если подвести курсор к узлу – появится значок на повороте узла, и узел можно **перенести** в другое место, потянув в нужном направлении.

7. Файл – экспортировать – как... (выбираем формат, в нашем случае PDF). Сохранить созданную ассоциативную карту связей.

4.2.4. Ментальная карта

1. Зайти на сайт <http://www.spiderscribe.net/> (предварительно зарегистрировавшись).
2. Создать новую ментальную карту – **Create New Map**.
3. Задать имя папки – **Map name**.
4. Добавить описание данной папки – **Description**.
5. Кликнуть по иконке «Текст» и, удерживая кнопкой мыши, перетащить на поле. Ввести текст.
6. Отформатировать текст по желанию: справа на экране панель форматирования текста. Изменить фон окна, шрифт, кегль текста (размер шрифта).
7. Щелкнуть по знаку «+» и создать новую ветвь.
8. Кликнуть по иконке «Изображение» и, удерживая кнопкой мыши, перетащить на поле.
9. Щелкнуть на кнопку загрузки **Upload image** и загрузить изображение. Отформатировать изображение по желанию: справа на экране панель форматирования изображения.
10. Прodelать похожие шаги с картой, календарем, документом Word.
11. Внести дополнительные изменения в работу с ментальной картой: в верхней части экрана находится **Панель инструментов**: отмена последнего действия, центрирование карты, изменение размера, печать, экспортирование карты, удаление карты.
12. После окончания работы с картой нажать на **Share** (поделиться) – в правом верхнем углу экрана.

Private – Частные (по умолчанию) – карта видна только владельцу и тем, с кем автор поделился (указать электронные адреса).

Public with the link – Общедоступная со ссылкой – карта видна всем, кто имеет ссылку. Вход в аккаунт SpiderScribe.net не требуется.

Public on Internet – Опубликованная в Интернете – карта видна и доступна всем.

При выборе режима **Private** в левом поле ввести список людей, которым разрешен доступ к карте. Выбрать формат доступа: **readers** – только чтение, **editors** – редактирование. Нажать кнопку **Save** (сохранить). Сохранить. Предоставить доступ одному из участников. **Или:** выбрать режим **Public on Internet**, скопировать адрес карты и сохранить в отдельном документе. Нажать кнопку **Save** (сохранить).

Нажать в верхней части экрана на **Export Map** (экспортировать карту) и выбрать формат JPG.

РАЗДЕЛ 5. МЕТОДИЧЕСКИЕ РЕКОМЕНДАЦИИ ПО ОРГАНИЗАЦИИ САМОСТОЯТЕЛЬНОЙ РАБОТЫ INDEPENDENT WORK GUIDE

Рекомендации по организации работы с текстами для чтения

Чтобы научиться понимать и переводить иноязычный текст, необходимо в первую очередь научить студента выделять и понимать содержание на уровне *текста*, *абзаца* и *предложения*, а также дифференцировать основную и второстепенную информацию.

Основные признаки текста: 1) *связность*; 2) *тематичность* (все предложения объединены какой-либо одной темой); 3) *цельность* (использование средств связи между предложениями).

Тема текста. Текст представляет собой сложное суждение, в котором есть текстовый субъект (о чем говорится в тексте?) и текстовый предикат (что говорится в тексте?).

Текстовым *субъектом* является тема текста, которая находит словесное выражение чаще всего в заголовке или в самом начале текста.

Текстовый *предикат* представляет собой группу суждений, раскрывающих тему текста, т. е. сам текст.

Главное содержание текста. Понять содержание текста – значит уяснить его тему и идею.

Тема текста – это предмет данного описания, т. е. предмет, явление, событие, о которых идет речь в тексте.

Идея текста – это главная мысль о данном предмете, авторское отношение к описываемому предмету. Идея текста – это вывод, к которому должен прийти читающий после ознакомления с содержанием текста.

Тема часто сообщается в заголовке или в первом предложении текста. Понять идею можно лишь после прочтения всего текста. Иногда она не имеет словесного выражения, тогда читающий должен сам сделать определенные выводы.

Основное содержание текста. Для этой цели выделяются элементы, в которых заключена основная смысловая информация текста. Они называются «ключевыми фрагментами» (слово, словосочетание, предложение, группа предложений). Каждый абзац имеет ключевое предложение – «абзацную фразу», если их объединить, то можно получить основное содержание текста.

Ключевое предложение может находиться: а) в верхней части абзаца (*дедуктивная* структура – изложение мысли от общего к частному); б) в нижней части абзаца (*индуктивная* структура – изложение мысли от частного к общему); в) в верхней и в нижней части (*рамочная* логическая структура).

Другие предложения текста представляют собой способ логического развития мысли в абзаце.

Формы передачи информации. Существуют следующие формы передачи информации: *сообщение*, *описание*, *повествование* и *рассуждение*. Так, ядро самого простого типа информации – сообщения – составляют

ответы на следующие вопросы: кто, что, когда, где, как, почему.

В текстах психолого-педагогического профиля преобладает тип информации о ситуации или положении дел, а также комбинированный тип информации (сообщение, передача высказывания, информация о событии или факте, о ситуации или положении дел, рассуждение).

Основные виды текстов для чтения

- 1) учебный;
- 2) художественный (*story* – рассказ, *play* – пьеса, *novel* – роман);
- 3) научный и научно-популярный (*research work* – научный труд, *theses* – диссертация; *monograph* – монография; *reference* – статья из справочной литературы; *article* – журнальная статья; *notes* – сообщение).

Методические рекомендации для студентов

Чтение с полным пониманием прочитанного

Цель – полностью понять содержание текста, выделить главную информацию, передать содержание, оценить его, сравнить с уже известным ранее.

Алгоритм

1. Перед чтением спрогнозируйте по заголовку содержание текста.
2. Читайте текст с полным пониманием, т. е. старайтесь как можно точнее понять содержание и смысл читаемого. При этом догадаться о значении слов вам помогут:
3. Проверьте, насколько хорошо вы поняли содержание и смысл текста. Для этого необходимо:
 - ответить на вопросы к тексту, позволяющие выделить детали;
 - самостоятельно поставить вопросы к тексту;
 - составить развернутый план прочитанного.
4. Для подготовки *пересказа* текста необходимо:
 - найти в тексте и выписать основные ключевые слова и выражения;
 - составить последовательность фактов и событий;
 - изложить содержание текста с опорой на ключевые слова и выражения.
5. Для *характеристики* какого-либо объекта текста необходимо:
 - определить объект характеристики;
 - выписать слова и выражения, относящиеся к определяемому объекту;
 - описать объект;
 - высказать свое мнение о нем.
6. Для подготовки *высказывания* по проблеме текста следует:
 - определить исходный тезис;
 - определить основной материал для аргументирования;
 - выписать ключевые слова и словосочетания;
 - аргументировать тезис;
 - привести примеры.
7. Для *обсуждения проблемы* текста следует:
 - выделить предмет обсуждения;
 - выделить информацию о предмете;
 - выписать ключевые слова и словосочетания;

- выразить свое отношение к предмету;
- аргументировать свою точку зрения.
- 8. Для *реферирования* текста необходимо:
 - зафиксировать основные опорные пункты;
 - распределить информацию по степени важности.
- 9. Для *аннотирования* текста следует:
 - зафиксировать тему и главную мысль;
 - выразить свое отношение.

Чтение с пониманием основного содержания

Цель – получить общую информацию о содержании текста, выделить главную мысль, высказать свое отношение к прочитанному.

Алгоритм

1. Перед чтением спрогнозируйте по заголовку содержание текста.
2. Читайте текст с пониманием основного содержания, то есть: сконцентрируйтесь на основных фактах текста, опуская второстепенную информацию;
3. Старайтесь охватить взглядом все предложение или его часть;
4. Старайтесь догадаться о значении незнакомых слов или обратитесь к словарю;
5. Старайтесь догадаться о значении незнакомых слов или обратитесь к словарю;
6. Во время чтения подчеркивайте или выписывайте словосочетания и предложения, несущие основную информацию.
7. Проверьте, поняли ли вы основные факты текста, определите его основную мысль. Для этого необходимо:
 - выбрать заголовок из предлагаемых вариантов или сформулировать самому;
 - разделить текст на смысловые отрезки;
 - ответить на вопросы, выделяющие основную информацию.
8. Для подготовки высказывания следует:
 - сформулировать главную мысль текста;
 - сказать, что вы узнали нового;
 - кратко изложить основные идеи текста;

Рекомендации для написания рефератов, аннотаций

Реферат, составленный по одному источнику, называется *монографическим*. Структура реферата строго установлена. Он состоит из двух частей: *заголовочной* и *собственно реферативной*. В заголовочной части отражается название первоисточника, фамилия автора и библиографические данные (место издания, издательство, год издания).

Текст собственно реферативной части строится на основе выделенных при чтении ключевых слов и ключевых фрагментов, большинство из которых могут быть терминами в данной специальной области.

Реферат, составленный по нескольким работам на одну тему,

называется *обзорным*.

Рекомендуемые клише для оформления реферата на английском языке

The Paper is called = The title of the Paper is... – Название реферата...

The theme of the Paper is... – Тема реферата...

It is spoken about... – Говорится о...

It is said in brief that... – Кратко говорится о...

Reader's attention is drawn to... – Внимание читателей привлекает...

The text gives information about... – Текст дает информацию о...

The following facts are stressed in the article... – В статье подчеркиваются следующие факты...

The content of the text includes... – Содержание текста охватывает...

The text is devoted to the problem... – Текст посвящен проблеме...

The articles are taken from... – Статьи взяты из...

In the article it is analyzed... – В статье анализируется...

The author characterises... – Автор характеризует...

The author emphasizes ... – Автор подчеркивает, что...

The author suggests... – Автор предлагает...

The author considers that... – Автор считает, что...

The main (sufficient) part of the research work contains... – Главная часть исследования содержит...

The text contains statistics about... – Текст содержит статистику о...

In the introductory part the author touches upon... – Во вступительной части автор касается...

At first it is depicted that... – Во-первых, изображается...

Secondly it is revealed that... – Во-вторых, обнаруживается, что...

First of all, it is stressed that... – Вначале ударение делается на...

The author underlines that... – Автор подчеркивает, что...

In concluding paragraphs, it is pointed out... – В заключительных параграфах указывается на...

Summing up the information... – Подводя итог...

Алгоритм составления реферата

1. Оформите заголовочную часть: запишите название первоисточника, фамилию и инициалы автора (авторов) и библиографические данные.
2. Пронумеруйте абзацы текста.
3. Просмотрите текст и определите его главную тему.
4. Внимательно читая текст по абзацам, определите тему и подтемы каждого абзаца и запишите их вместе с номером абзаца в виде ключевых слов и выражений.
5. Таким образом вы составите логический план текста.
6. Обдумайте последовательность расположения пунктов плана.

7. Выберите из каждого абзаца ключевые фрагменты (отдельные слова или словосочетания), которые характеризуют выделенные вами темы и подтемы, запишите их. Так выявляются смысловые ряды.

8. На материале смысловых рядов составьте текст реферата, используя связующие специфические выражения и языковые клише.

9. Прочитайте составленный текст реферата и отредактируйте его.

10. Укажите свою фамилию и инициалы, факультет, курс, номер группы и дату.

Клише для обсуждения реферата

To my mind the Paper is... – По моему мнению, реферат...

From my point of view... – С моей точки зрения...

It seems to me that... – Мне кажется, что...

I would like to express my own opinion on the problem... – Хотелось бы высказать свое мнение по проблеме...

I would like to clarify... – Я хотел бы кое-что прояснить...

I would like to tell something else... – Я хотел бы сказать следующее...

I would like to add... – Я хотел бы добавить...

An example of this would be... – Примером этого будет...

For example, ... – Например...

The point is that... – Смысл в том, что...

Обсуждение

I disagree with the position of the author. – Я не согласен с позицией автора.

I do not share the author's point of view. – Я не разделяю точку зрения автора.

I have just the opposite idea. – У меня противоположное мнение.

I can't agree with the author's opinion. – Я не могу разделить мнение автора.

Согласие

I do share the author's opinion that... – Я разделяю мнение автора в том, что...

I agree with your point of view that... – Я согласен с вашей точкой зрения, что...

You are definitely right that... – Несомненно, вы правы, что...

I find this Paper interesting / important. – Я нахожу данный реферат интересным / важным.

There is no doubt that... – Нет сомнений в том, что...

It goes without saying... – Без сомнений, ...

Сомнение

I am not quite sure that... – Я не вполне уверен, в том что...

It seems to me doubtless because... – Это кажется мне сомнительным, потому что...

I agree to the point but... – Я согласен с этим, но...

I suppose you are right but... – Предполагаю, что вы правы, но...

I would like to mention that... – Хотелось бы упомянуть, что...

Требование, просьба

I would like to ask a question... – Я хотел бы задать вопрос...

Could you tell me more about... – Не могли бы вы рассказать о...

Do you know anything else about... – Знаете ли вы еще что-нибудь о...

Can you confirm the fact? – Вы можете подтвердить... ?

I would like to ask you to tell your opinion about... – Я хотел бы вас попросить высказать свое мнение о...

Аннотирование текста

Аннотация – короткая справка о печатном произведении, излагающая содержание в виде перечня его основных вопросов. Аннотация дает представление только о характере оригинала (книга, статья и т. д.), о его строении (перечень вопросов), о его назначении (на кого оригинал рассчитан), а также об объеме оригинала (количество страниц). Аннотации пишутся как на языке оригинала, так и на родном языке. При составлении аннотации используются языковые клише. Объем аннотации составляет 0,5 страницы.

Структура аннотации стабильна. Она состоит из заголовочной части (название оригинала, фамилия автора, издательство, место и дата издания и др.). Написание собственно аннотации начинается с чтения текста и нумерации абзацев, определяется ведущая тема текста, темы и подтемы каждого абзаца, составление логического плана текста в виде перечня тем и подтем текста.

Клише, используемые при составлении аннотации:

а) клише, начинающие аннотацию и вводящие в главную тему:

The article (text) is called...

The title of the article (text) is...

The article (text) is published in...

The article is printed in...

The article consists of...

The article is devoted to...

The text touches upon the probleme...

In the introductory part the author points out...

в) клише, оформляющие основную мысль произведения:

The author raises the problem of...

The main part of the text informs about...

The article contains statistics about...

с) клише, оформляющие выводы автора оригинала:

In the concluding paragraphs it is pointed out...

Summing up the information it is important to say that...

Generalizing the information, it is necessary to say that...

В конце аннотации указывают фамилию, инициалы составителя, факультет, курс, группу, дату составления.

Например:

Summary

The article is called 'English for Specific Purposes in Russia: a Historical Perspective'. The article is published in Journal 'ESP Russia' in January, 1996. Volume 1. It is written by Tamara Nazarova, Professor of Moscow State University. The article is devoted to historical development of an approach of language teaching which is directed by specific and apparent reasons for learning.

The author raises two problems for identification. The 1st is: What is the meaning of the word ESP? And the 2nd: How to use it?

In the concluding paragraphs it is pointed out that ESP methodology has been consistently applied to intellectual communication at large. Summing up the information it is important to say that as it is shown, terminologies of usage differ in various sciences, but the category of reproduction allows the learner to acquire proficiency in the use of neutral 'prefabricated units'.

Рекомендации для разработки проектов

Проектное обучение представляет собой технологию активной познавательной деятельности студентов, в основе которой лежит разработка в ходе самостоятельной (групповой или индивидуальной) исследовательской деятельности различных типов проектов – перспективных заданий, направленных на решение задач практики.

Участники проектной деятельности должны ответить на вопросы:

1. Что является целью проектной деятельности?
2. В чем актуальность (оригинальность, ценность) идеи проекта?
3. На решение каких задач практики он будет направлен?
4. Каков будет результат (продукт)?
5. Где он может быть применен?
6. Как он может изменить ситуацию?

Типы проектов в вузе:

– *исследовательские* проекты, подчиненные логике исследования и имеющие структуру, приближенную или полностью совпадающую с научным исследованием;

– *информационные* проекты (модуль исследовательского), направленные на поиск, знакомство и представление информации;

– *практикоориентированные* проекты, имеющие профессиональную направленность, результат которых ориентирован на социальные интересы самих студентов.

Процесс работы над проектом многоступенчатый. В таблице представлены этапы и содержание проектной деятельности.

Этапы работы над проектом	Содержание работы	Деятельность студентов
<i>Подготовка</i>	Определение реальной ситуации, ее осмысление,	Анализируют ситуацию, выявляют проблему,

	рождение задачи (проблемы) из описания ситуации, постановка вопросов	рассматривают актуальность ее решения
<i>Прогнозирование и целеполагание</i>	Прогноз изменения ситуации, постановка личностных и коллективных целей, их осознание	Обсуждают. Прогнозируют. Определяют цели
<i>Планирование</i>	Определение источников, способов сбора и анализа информации, форм представления результатов. Установление критериев оценки процесса и результатов. Распределение задач между членами групп	Разрабатывают план действий. Определяют и распределяют задачи. Вырабатывают критерии оценки результатов
<i>Реализация</i>	Сбор информации. Работа над проектом. Решение промежуточных задач. Получение запланированных результатов	Выполняют свою часть проекта. Промежуточное обсуждение хода реализации проекта
<i>Оформление и представление</i>	Формы представления устного и письменного отчета. Оппонирование	Отчитываются, обсуждают, представляют результаты для внедрения в практику
<i>Мониторинг и рефлексия</i>	Интерпретация и анализ процесса и результата. Внешняя оценка. Рефлексия студентов по поводу авторства в проекте. Формулирование выводов. Новое целеполагание	Анализируют, интерпретируют, оценивают в ходе коллективного обсуждения и самооценок

Параметры внешней оценки проекта:

- значимость и актуальность проблемы;
- корректность используемых методов исследования и обработки полученных результатов;
- активность каждого члена проектной группы в соответствии с его индивидуальными возможностями;
- характер принимаемых решений, общения, взаимопомощи;
- глубина проникновения в проблему, привлечение знаний из других областей;
- эстетика оформления результатов проекта;
- умение аргументировать, доказывать, делать выводы и заключения, отвечать на вопросы.

Общие практические рекомендации для изучающих иностранный язык

Владение иностранным языком на современном этапе развития общества играет важную роль в формировании личности человека, свидетельствует о его высоком образовательном и культурном уровне. Изучение иностранного языка, с одной стороны, занятие довольно увлекательное, а с другой – очень непростое. Помимо интереса и желания оно требует больших усилий и терпения, значительных временных затрат, постоянной систематической работы.

Для организации успешной самостоятельной работы по овладению иностранным языком предлагаем вам несколько практических советов:

1. Регулярно занимайтесь языком. Не допускайте длительных перерывов, так как процесс забывания иноязычной информации происходит быстрее, чем в родном языке.

2. Составляйте собственный план работы над языком на день, неделю, месяц и старайтесь его выполнять.

3. Фиксируйте свои достижения в изучении иностранного языка. Помните, язык – беспредметен и безграничен, и каждое усвоенное слово или явление языка обогащает ваши знания.

4. Старайтесь сделать свои занятия разнообразными и интересными, используя различные виды деятельности: работу над произношением, выполнение грамматических упражнений, перевод, чтение вслух, прослушивание аудиокассет, просмотр телепрограмм, видеокассет или дисков с повторением и имитацией диктора, составление небольших ситуаций и рассказов, исполнение песен на иностранном языке и др.

5. Старайтесь больше учить наизусть стихов, песен, считалок, поговорок, диалогов, выражений речевого этикета, фрагментов текстов. Все это тренирует вашу память, расширяет ваши знания иностранного языка.

6. Будьте настойчивы и терпеливы в изучении языка. Здесь, как нигде, действует принцип перехода количественных изменений в качественные. Будьте активны, участвуйте во всех мероприятиях на иностранном языке, настраивайтесь на успех и добивайтесь его.

РАЗДЕЛ 6. ПОСТМАШИННОЕ РЕДАКТИРОВАНИЕ ПЕРЕВОДА ТЕКСТОВ ПРОФЕССИОНАЛЬНОЙ НАПРАВЛЕННОСТИ НА БАЗЕ ОСНОВНЫХ ПОЛОЖЕНИЙ ТЕОРИИ ПЕРЕВОДА

Способы перевода

Перевод – это преобразование сообщения на исходном языке в сообщение на языке перевода. Точный перевод, по определению, невозможен уже в силу того, что разные языки отличаются как по грамматическому строю, так и по простому количеству слов, не говоря уже о различии культур, что тоже может иметь влияние на способ и результаты перевода.

Выполняя перевод, переводчик, прежде всего, определяет способ перевода, т. е. меру информационной упорядоченности для переводного текста. Первая ступень в выборе способа перевода заключается в определении того, **в каком виде должен быть представлен исходный текст в переводящей культуре: полностью или частично**. В зависимости от коммуникативного задания на этом этапе выбирается либо **полный**, либо **сокращенный** перевод (в некоторых источниках именуемый также **реферативным**, хотя эти термины не вполне адекватны).

Полный перевод

Полный перевод направлен на тщательное воспроизведение всех компонентов информационной упорядоченности исходного текста в единицах переводящего языка. Полный перевод может осуществляться различными способами, но наиболее распространенными можно считать следующие: **буквальный**, или **пословный** перевод, **семантический** перевод и **коммуникативный** перевод.

Буквальный перевод заключается в пословном воспроизведении исходного текста в единицах переводящего языка по возможности с сохранением даже порядка следования элементов. По существу, буквальный перевод сравнительно редко применяется для коммуникативных целей и обычно имеет исключительно научную область распространения. Так, в целях лингвистического анализа буквальный перевод является предпочтительнее других способов.

Семантический перевод заключается в возможно более полной передаче контекстуального значения элементов исходного текста в единицах переводящего языка. Процесс семантического перевода представляет собой естественное взаимодействие двух стратегий: 1) стратегии, ориентированной на способ выражения, принятый в переводящем языке; 2) стратегии, ориентированной на сохранение особенностей исходной формы выражения.

Первая стратегия применяется к общеупотребительным лексико-грамматическим элементам исходного текста, таким как стандартные синтаксические структуры, пунктуация, длина предложений, типичные метафоры, союзы, синтаксические обороты, морфологические структуры, широко распространенные общекультурные и научно-популярные термины и выражения и т.п.

Вторая стратегия оказывается уместной при переводе нестандартных, авторских оборотов, оригинальных стилистических приемов, необычной лексики и т.п. В таких случаях семантический перевод чаще всего ориентируется на специфику исходного знака и сохраняет в переводе как можно больше его особенностей, вплоть до буквального перевода.

Коммуникативный перевод заключается в выборе такого пути передачи исходной информации, который приводит к переводному тексту с адекватным исходному воздействием на получателя. *Главным объектом при таком способе перевода оказывается не столько языковой состав исходного текста, сколько его содержательное и эмоционально-эстетическое значение.* Причем в отличие от функционального перевода, коммуникативный перевод не допускает ни сокращений, ни упрощений исходного материала. В сущности, то, что в обиходе часто называется литературным и, в частности, художественным переводом, на самом деле представляет собой именно коммуникативный перевод, учитывающий — или программирующий — прагматику получателя. Этот способ является оптимальным для большей части художественной литературы, публицистики, части научно-теоретических и научно-популярных текстов и т.п.

Сокращенный перевод

Сокращенному переводу могут подлежать практически все типы текстов: от простого делового письма до романа. Результатом применения сокращенного перевода являются такие тексты, как тезисы, конспекты, рефераты, аннотации, переложения, дайджесты и т. п.

В сущности, сокращенный перевод выполняется одним из двух фундаментальных способов перевода: **выборочным** или **функциональным**.

Выборочный перевод как способ сокращенного перевода состоит в *выборе ключевых, с точки зрения переводчика, единиц исходного текста и их полном переводе.* Все остальные компоненты исходного текста при таком способе отбрасываются как второстепенные с точки зрения достижения результата и не подлежат переводу вообще. Такой способ довольно часто применяется для пересказа в тезисно-реферативном виде деловых писем, газетных материалов, научных статей и сообщений, докладов и т. п. Достоверность такого перевода основывается на точности выбора ключевых единиц, чтобы в переводе не пропала какая-либо важная часть информации.

Функциональный перевод как способ сокращенной передачи исходного текста на другом языке заключается в компоновании переводного текста из функционально преобразованных единиц исходного текста. Функциональное преобразование может основываться на лексико-семантических, грамматических и стилистических трансформациях исходного текста, примененных в целях его общего сокращения или упрощения. *Типичным примером такого способа перевода является так называемый литературный пересказ,* когда целое крупное произведение пересказывается в упрощенном варианте, например, *Алиса в Стране Чудес* в

переводе-пересказе Б.Заходера. Помимо трансформации упрощения исходного текста *функциональный перевод допускает также общие купюры наиболее сложных частей исходного текста*, но это не обязательно, т. к. они могут быть также упрощены.

Рекомендуемые правила для выбора способа перевода

1. **Частичный перевод** применяется для передачи на переводящем языке исходных текстов в целях общего ознакомления с их содержанием, когда подробности не являются коммуникативно существенными.

2. **Выборочный** частичный перевод используется при переводе содержания докладов, деловых писем, стандартных сообщений, газетных материалов и других аналогичных текстов или высказываний, когда нужно получить представление о ключевых содержательных моментах исходного текста, но подробное ознакомление со всем контентом не является первоочередной задачей.

3. **Функциональный** частичный перевод применяется для сокращения или упрощения исходных текстов, когда они предназначены либо для массового читателя, либо для получателей менее высокого уровня готовности к восприятию такого типа исходных текстов. К таковым относятся различного рода *пересказы, адаптации, версии* и т. п.

4. **Полный перевод** применяется для передачи исходных текстов, содержание которых имеет настолько высокую значимость, что должно быть представлено получателю переводного текста в подробном виде.

5. **Буквальный** полный перевод применяется в сравнительно редких случаях, например: в учебных или научных целях, для академических изданий уникальных текстов, в частности эпоса, и т. п.

6. **Семантический** полный перевод выполняется для передачи исходных текстов, имеющих высокую научную или социально-культурную значимость, подробное содержание которых предназначено для широкого круга специалистов.

7. **Коммуникативно-прагматический** полный перевод используется для передачи исходных текстов, имеющих высокую социально-культурную значимость, подробное содержание которых предназначено для массового получателя.

Единицы перевода

Одно из основных умений переводчика заключается в свободном владении различными способами членения исходного текста.

Наиболее распространенной ошибкой начинающих переводчиков является стремление переводить *пословно*, т. е. однообразно членить исходный текст или высказывание на отдельные слова, находить им соответствие на языке перевода и таким образом составлять переводной текст. Суть ошибки состоит в подмене представлений о характере переводимых знаков: вместо речевых единиц, которые, собственно, и подлежат переводу, переводчик механически подставляет языковые

единицы, в то время как в разных языках языковой состав той или иной речевой единицы может не совпадать. Точное определение единиц перевода — одно из важнейших условий точности перевода вообще.

Основой единицы перевода может служить не только слово, но любая языковая единица: от фонемы до сверхфразового единства. Главным условием правильности определения исходной единицы, подлежащей переводу, является *выявление текстовой функции* той или иной исходной единицы.

Рекомендуемые правила сегментации текста для перевода

1. Устанавливая статус и параметры единицы перевода, мы членим текст на более или менее крупные отрезки, от отдельного слова до целого эпизода, а порой и до сегмента, равного самому тексту.

2. Если слово зависит главным образом от ближайшего контекста, то основанием для построения единицы перевода является словосочетание или простое предложение, в которое входит данное слово.

3. Если слово зависит от нескольких текстовых компонентов, в том числе и выходящих за пределы предложения, то построение единицы перевода основывается на сложном предложении или эпизоде.

4. Если слово зависит от множества текстовых компонентов, то в основе единицы перевода должен лежать весь исходный текст.

5. Если слово зависит от условий, выходящих за пределы текста, то переводчик должен предусмотреть возможность культурологического комментария или создания новой языковой единицы путем транслитерации или калькирования (в некоторых случаях возможно сочетание всех названных способов).

Роль словаря при переводе

Словарь, несомненно, является неоценимым пособием и помощником при овладении иностранным языком. Переводчик, как бы он хорошо ни владел языком, вынужден постоянно обращаться к словарю, т. к. в процессе перевода перед ним раскрывается все богатство иностранного языка: его краски, явные и скрытые возможности слов, нетрадиционные словосочетания, фразеология, в значительной мере отражающая национальный характер, и многое другое. Зачастую словарь не дает готового перевода слова, лишь подсказывая его значение, а порой и просто указывает, в каком направлении нужно искать обусловленное контекстом значение. Поэтому глубоко заблуждается тот переводчик, который считает, что словарь отвечает на все вопросы, разрешает все недоумения и загадки. Умение правильно пользоваться словарем, извлекать максимум информации из лаконичной словарной статьи и правильно, творчески применять данные словаря в конкретных условиях контекста — неперенные качества переводчика.

Для начинающего переводчика наилучшим англо-русским словарем является словарь профессора В. К. Мюллера, бумажная или электронная

версия (www.twirpx.com/file/1214745/).

Данный словарь достаточно удобен для переводческой работы. В нем тщательно продуман состав словарных единиц, он богат типичными моделями, словосочетаниями и конструкциями современного английского языка.

Содержание словарной статьи

Какую информацию получает переводчик в словарной статье?
Словарная статья включает следующее:

- 1) заглавное слово;
- 2) транскрипцию;
- 3) указание на принадлежность слова к определенной части речи;
- 4) стилистические пометы;
- 5) перечисление основных значений, присущих данному слову;
- 6) переводы примеров-иллюстраций;
- 7) толкования и пояснения заглавного слова и его значений (если в русском языке нет прямого соответствия, т. е. словарного эквивалента);
- 8) сочетаемость слова;
- 9) фразеологические единицы.

Существует определенная традиция в расположении информации внутри словарной статьи.

Многозначные слова представлены во всем многообразии их значений. Значения распределяются в зависимости от их употребительности. В конце словарной статьи даются термины, общеспециальные и узкоспециальные, характерные для отдельно взятой области.

Стилистические пометы

Начинающий переводчик, который только вырабатывает навыки общения с англо-русским словарем, не вправе игнорировать такой важнейший элемент словарной статьи, каким является **стилистическая помета-сокращение**. **Стилистическая помета, стоящая перед определенным значением слова, дает не только стилистическую характеристику слова, но и указывает на ограниченные возможности словоупотребления, кроме** того, она более глубоко раскрывает смысловую структуру слова.

Стилистическая помета соотносит слово либо с литературно-книжной лексикой (термины науки и техники, архаизмы, поэтизмы, историзмы, библеизмы, редко употребляемые слова и т.д.), либо с разговорной лексикой (вульгаризмы, жаргонизмы, сленг, просторечие).

Типы словарных соответствий

Для того чтобы переводчик смог трезво оценить возможности англо-русского словаря и умело им пользоваться в своей практической работе, он должен представлять себе, какого рода смысловые соотношения существуют между единицами словарного состава английского и русского языков.

Русское слово, более или менее близкое по значению определенному английскому слову, является его лексическим или словарным соответствием.

Сравнивая единицы словарного состава английского и русского языков, можно выявить два основных типа словарных соответствий – **эквиваленты и вариантные соответствия**.

Когда значению английского слова соответствует значение одного русского слова, мы имеем дело с эквивалентом.

Слов-эквивалентов сравнительно немного. Эквиваленты есть в основном у терминов, географических названий и имен собственных. Эти слова наиболее устойчивы и в наименьшей мере зависимы от контекста.

Второй тип соответствий, наиболее распространенный, – **вариантное соответствие**.

Когда одно английское слово имеет в русском языке несколько словарных соответствий, можно говорить о вариативном соответствии.

Переводчик имеет возможность выбирать из нескольких вариантов именно то соответствие, которое наилучшим образом вписывается в имеющийся контекст. При этом решающую роль играет контекст. **Следует помнить, что термин «вариантное соответствие» предполагает несколько словарных соответствий английскому слову внутри одного значения, но отнюдь не многозначность.** Например:

intention – намерение, стремление, цель, замысел

nice – хороший, приятный, милый, славный

retired – удалившийся от дел; отставной, в отставке; ушедший на пенсию

Контекстуальное значение

Далеко не всегда словарь может предложить переводчику то единственное нужное слово, которое требуется по контексту. Как правило, семантическая структура слова, т.е. объем всех его значений, не исчерпывает всех смысловых возможностей, заложенных в слове. Иногда некоторые значения и оттенки значений реализуются только в определенном контексте.

Контекстуальное значение не входит в смысловую структуру слова и в словарях не фиксируется. Так, среди словарных значений прилагательного **brave** – 1) храбрый, смелый; 2) превосходный, прекрасный; 3) *уст., книжн.* Нарядный – нет ни одного, которым можно было бы воспользоваться при переводе сочетания **a coat of brave lipstick**. По всей вероятности, здесь речь идет об интенсивном цвете губной помады – слой ярко-красной губной помады.

Таким образом, особенности контекста могут заставить переводчика отказаться от словарных соответствий, искать и находить контекстуальные значения слов, что является наиболее творческим приёмом в процессе перевода.

Контекст и виды контекста

Под **контекстом** принято понимать языковое окружение, в котором употребляется та или иная языковая единица.

Значение слова, особенно многозначного, реализуется в словосочетании, в грамматической конструкции, в совокупности слов. Попробуйте произнести вне контекста такие русские слова, как *класс*, *передача*, *сторона*, и вы поймете, что употребленные в изолированном виде они вряд ли несут какую-либо информацию и не могут вызвать у слушателя определенные ассоциации. Для того чтобы они обрели значение, им нужен «указательный минимум».

Принято различать несколько видов контекста – **узкий, широкий и экстралингвистический (внелингвистический)**.

Под **узким контекстом** подразумевается контекст словосочетания или предложения.

В отличие от узкого контекста широкий контекст выходит за рамки предложения. Это может быть абзац, глава и все произведение в целом. Следующий пример взят из романа Энн Тайлер.

Первая глава романа повествует о том, как одну супружескую пару, прожившую вместе 20 лет, постигло горе – хулиганы убили их единственного, горячо любимого двенадцатилетнего сына. Главный герой, глядя на свою убитую горем жену, вспоминает, какой она была 20 лет назад, когда жизнь только начиналась и обещала одни радости:

Sarah, a **bubbly** girl with a tumble of copper-brown curls.

Сара, **жизнерадостная** девушка с копной медно-рыжих курчавых волос.

В словаре В.К. Мюллера прилагательное **bubbly** представлено двумя значениями: 1) пенящийся (*о вине*); 2) пузырчатый (*о стекле*).

Поскольку словарные эквиваленты русско-английского словаря неприемлемы для перевода **bubbly**, нам приходится искать единственно правильное определение (*жизнерадостная*) в контексте всей главы.

Лексико-семантические модификации

Лексико-семантические модификации или переводческие трансформации — это ряд переводческих техник и приёмов, используемых при передаче содержания слов и устойчивых словосочетаний, имеющих вполне определённые словарные соответствия в переводящем языке. Однако наличие словарного соответствия не всегда решает проблему адекватности перевода. Обычно под лексико-семантическими модификациями понимают: расширение или генерализацию значения, сужение или конкретизацию значения, логическое развитие или смену вектора причинно-следственной связи, целостное преобразование, описание.

Сужение, или конкретизация, исходного значения используется в тех случаях, когда мера информационной упорядоченности исходной единицы ниже, чем мера упорядоченности соответствующей ей по смыслу единицы в переводящем языке, например: русское понятие «*исследовать*»

может относиться к различным ситуативным условиям, и в значительной мере упорядочивается контекстом; в английском языке ему будут соответствовать различные более узкие по значению единицы, в зависимости от контекста:

to explore (ср. исследовать местность – *to explore the environment*)

to investigate (ср. исследовать рынок – *to investigate the market*)

to research into (ср. исследовать явление – *to research into the classical literature*) и т.д.

Английское значение слова *man* достаточно широко и может употребляться в таких контекстах, в которых на русском языке требует слова с более конкретным значением, например:

*He is a **man** of taste.*

*Он **человек** со вкусом.*

*All the king's **men**.*

*Все королевские **солдаты**.*

*Then you will be a **man**, my son.*

*Вот тогда ты и станешь **мужчиной**, сын; и т. д.*

Причиной конкретизации глаголов также могут служить не структурно-системные различия языков, а стилистические нормы повествования. Так, глаголы речи **to say** и **to tell** могут переводиться не только глаголами, сопровождающими высказывания типа *ответил, спросил, заметил, сообщил, возразил*, но и глаголами, выходящими за рамки собственно речевых: *посочувствовал, велел, пригрозил* и т. п. Чаще всего это делается во избежание монотонности повествования, для создания большей естественности и живости текста.

Расширение, или генерализация исходного значения имеет место в тех случаях, когда мера информационной упорядоченности исходной единицы выше меры упорядоченности соответствующей ей по смыслу единицы в переводящем языке. Например, русское слово *лечение* соответствует английскому *treatment*, которое обладает гораздо более широким спектром значений и для информационного упорядочения требует специальных контекстов, не совпадающих с контекстами *лечения*.

Лечение оказалось успешным, и она полностью выздоровела.

*The **treatment** turned to be successful and she recovered completely.*

*их **понимание** ситуации*

*their **treatment** of the situation*

*Он **обращался** с родителями очень почтительно.*

*His **treatment** of his parents was very deferential.*

Каждый язык по-своему отражает окружающий нас мир, и это, в частности, проявляется в том, как он «дробит» действительность с помощью словесных знаков. Эти знаки – слова и устойчивые словосочетания – в английском языке отличаются, в целом, большей широтой и абстрактностью значений, чем в русском. Широта, а иногда и аморфность их семантики, является основной причиной того, что при переводе на русский язык приходится чаще прибегать к сужению, или конкретизации значений, чем к

обратному приему – расширению, или генерализации.

Логическое развитие – это такой вид переводческих трансформаций, при которых происходит замена одного понятия другим на основе их смежности или логической близости. При этом главная идея высказывания *остается* неизменной, т.к. понятия тесно связаны друг с другом. Такого рода замены возможны и в рамках одного языка. Сравните, к примеру, ряд следующих синонимичных фраз: *это очень популярная книга, на эту книгу большой спрос, эта книга пользуется большим успехом, этой книгой зачитываются все* и т.д. Конечно, при переходе от одного предложения к другому происходит незначительный семантический сдвиг, но общность смысла в них сохраняется. Аналогичный механизм преобразований лежит в основе межъязыкового логического развития. Таким образом, сама природа языка определяет возможность и даже закономерность этого приема.

Логическое развитие – это установление связей, перебрасывание своеобразного «смыслового мостика» между логически близкими понятиями.

Some cocaine dealers employ children as runners: they're **less likely to be arrested**.

Многие торговцы наркотиками используют детей в качестве посыльных – они **меньше привлекают внимание (и не возбуждают подозрений)**.

Целостное преобразование. Название приема – **целостное преобразование** – говорит о том, что изменения, которые происходят при нем, носят более значительный и глубокий характер, чем во всех приемах, рассмотренных выше. *Целостность* заключается в том, что **трансформации подвергается не отдельно взятое слово (как это может быть на нижней ступени конкретизации, генерализации, логического развития и даже антонимического перевода), а целый смысловой комплекс — словосочетание или все предложение.** Причем ни один из элементов (т.е. слов) этого преобразуемого комплекса, взятый в отдельности, не связан семантически с новой формой выражения – т.е. преобразование проходит более глубоко и более кардинально.

В качестве классических примеров целостного преобразования обычно приводят те фразеологизмы или этикетные формулы, перевод которых на русский язык требует полного отрыва от словарных значений составляющих их компонентов: *a fly in the ointment* (букв. «муха в бальзаме») *ложка дегтя в бочке меда*; *help yourself* (букв. «помогите себе!») *угощайтесь, пожалуйста!* Такого рода примеры действительно очень наглядно иллюстрируют механизм целостного преобразования, однако подобные переводческие операции возможны и при передаче свободных словосочетаний. В таких случаях готовый, «преобразованный» вариант перевода, естественно, нельзя найти в словаре, однако использование этого приема вовсе не является неоправданной вольностью.

Описание. Когда ни один из словесных приемов подбора соответствия не удовлетворяет ситуации, переводчики прибегают к *описанию*.

Описательный перевод, как правило, употребляется параллельно с транскрипцией и применяется при переводе терминов, культуронимов, уникальных объектов и т. п.

Правила применения лексико-семантических трансформаций

1. **Сужение** значения применяется в тех случаях, когда исходная единица обладает высокой степенью информационной неопределенности и в значительной мере зависит от контекста. При этом практически переводится не столько само слово, сколько конкретный вариант его значения в определенном контексте.

2. **Расширение** исходного значения допускается в тех случаях, когда переводящее слово отличается большей степенью информационной неопределенности, которая в достаточной мере упорядочивается данным контекстом.

3. Прием **логического развития** носит творческий характер — для удачного пользования им от переводчика требуется глубокое проникновение в текст, способность логически мыслить, развивать исходную идею и одновременно не преступать той грани, за которой начинается уже новый, иной смысл.

4. **Описание** значения исходной единицы применяется в условиях отсутствия регулярного словарного соответствия или при несовпадении смысловых функций соответствующих единиц в исходном и переводящем языках. Описание должно быть предельно кратким и в идеале приближать по своим качествам к отдельному слову или фразеологической единице таким образом, чтобы оно могло употребляться в тексте без искусственной единицы, создаваемой в таких случаях либо с помощью транскрипции, либо калькирования, когда это по каким-либо соображениям неуместно в пределах данного текста.

5. **Целостное преобразование** приводит к комплексному лексико-грамматическому преобразованию исходного предложения, как следствие, основной задачей становится сохранение неизменным плана содержания.

Синтаксические преобразования на уровне предложений

Предложение – наиболее сложная по формальному и семантическому составу единица языка. Если отдельное слово, морфологическую форму или даже словосочетание можно рассматривать как устойчивую и сравнительно независимую информационную данность, соответствия которой в принципе исчислимы, то любое предложение обязательно связано и обусловлено **авторской установкой**, а потому может, с точки зрения перевода, **иметь неопределенное множество интерпретаций**.

Все эти свойства предложения, доставляющие много хлопот переводчику, проявляются в гибкости практически всех компонентов предложения, которые при переводе могут частично или полностью менять свой грамматический и/или лексико-семантический облик.

Проблема перевода предложения с английского языка на русский

решается, как правило, с помощью таких приемов, как **нулевой перевод, функциональная замена, распространение, стяжение перестановка, расщепление, объединение, антонимический перевод.**

Нулевой перевод – обусловленная разницей грамматических структур невозможность передать какой-либо компонент предложения. Нулевой перевод используется, например, для английских предложений с формальным подлежащим, которое носит исключительно грамматический характер и не имеет лексико-семантического содержания:

It is a long way to the final solutions.

До окончательного решения еще далеко.

You must know your place.

Знай свое место.

Функциональная замена – замена одного члена предложения другим при переводе является наиболее частым приемом при переводе сказуемого. Наиболее распространенный вариант – это замена глагольного сказуемого именным – и наоборот.

Например, исходное глагольное сказуемое в русском предложении преобразуется в составное именное при переводе на английский язык.

He was very evasive.

Он вел себя очень уклончиво.

Вариантом функциональной замены является **распространение** (противоположный ему прием – **стяжение**), которое заключается в превращении единичного члена предложения в группу или в целое придаточное предложение:

Such was Tolstoy's fame that Yasnaya Polyana became a place of pilgrimage.

Слава Толстого была настолько велика, что Ясная Поляна превратилась в место паломничества.

Часто функциональная замена дополняется таким приемом, как **перестановка компонентов предложения**. Этот прием используется, когда последовательность элементов, при общности значения, определяется разными речевыми традициями и условиями, например в способе выражения отрицания:

They had no money but they had their wits.

У них не было денег, зато была голова на плечах.

Вообще различие в порядке слов и его функциональных особенностях в русском и английском языках заставляет переводчика достаточно часто обращаться к приему **перестановки**, что связано, прежде всего, с различиями в восприятии более или менее значимой информации предложения. Так, в русском предложении значимые компоненты, несущие новую информацию, тяготеют к концу фразы, вплоть до расщепления именного сказуемого (*Вернулся он оттуда совершенно иным человеком*). Английское предложение не требует обязательного помещения значимой информации в конце фразы (значимая информация может быть подчеркнута, например, с помощью неопределенного артикля или специфических оборотов).

При переводе сложных предложений вышеперечисленные приемы могут дополняться более кардинальным преобразованием структуры исходного предложения: **расщеплением** или **объединением**.

Расщепление заключается в том, что одно длинное или сложное по составу предложение разбивается на два или более (что встречается сравнительно редко). Этот прием может быть обусловлен как соображениями грамматическими (например, в случае различия в допустимости набора синтаксических оборотов), так и прагматическими (например, если предложение претерпевает целый ряд преобразований, приводящих к избыточному содержательному плану).

Противоположный расщеплению прием – **стяжение** – это объединение нескольких простых предложений в одно более сложное, применяется, как правило, в условиях различия синтаксических или стилистических традиций.

Заслуживает внимания также еще один прием, который используется в связи с предложениями: **антонимический перевод**, т.е. замена отрицательной или вопросительной формы предложения на утвердительную или наоборот. Условия применения такого преобразования, как правило, связаны с лексико-семантическим составом сказуемого. При переводе на русский язык с английского чаще всего отрицательная форма предложения меняется на утвердительную.

‘No kidding, I’m sorry’, I kept telling her.

«Серьезно, я действительно сожалею об этом», – твердил я ей.

В число приемов преобразования предложения можно включить и так называемое **добавление** и его противоположность – **опущение**. Добавление чаще применяется при переводе с английского языка на русский, в силу большей лаконичности, присущей английскому синтаксису; соответственно, средний объем предложения или текстового отрывка на русском языке, как правило, больше, чем в английском.

Рекомендуемые правила преобразования предложений при переводе

1. **Нулевой перевод** применяется в условиях синтаксической или лексико-семантической неуместности воссоздания исходной формы в единицах переводящего языка.

2. **Функциональная замена** используется при частичном несовпадении структурно-семантических свойств той или иной синтаксической единицы в исходном и переводящем языках.

3. **Перестановка** компонентов предложения используется в случаях несовпадения традиций актуального членения предложения в исходном и переводящем языках.

4. **Распространение** применяется тогда, когда уровень сложности предложения в исходном языке ниже, чем требуется для данного контекста в переводящем языке.

5. **Стяжение** применяется в том случае, когда уровень сложности исходного предложения выше, чем позволяют возможности переводящего

языка.

6. *Антонимический перевод* употребляется в случае несовпадения логических характеристик исходного сказуемого и условий манифестации смысла в переводящем языке.

7. *Добавление* применяется при наличии подтекста или имплицированных компонентов значения в исходном тексте, если переводящий язык или речевая традиция требуют их экспликации.

8. *Опущение* используется при наличии в исходном тексте избыточных элементов, которые должны быть имплицированы в соответствии с требованиями переводящего языка или речевой традиции.

Ложные друзья переводчика

При сравнении английского и русского языков можно выявить значительное количество слов, имеющих сходное написание или звучание. В основном эти заимствования – либо из одного языка в другой, либо – что чаще – обоими языками из третьего, общего источника, как правило, латинского, греческого, французского (**parliament, diplomat, method, theory, organization**, etc.). Слова такого рода могут, как помогать, так и мешать переводчику. Помощь они оказывают в тех случаях, когда за внешним сходством стоит совпадение значений.

Нельзя забывать о том, что у ряда слов в обоих языках сходство чисто формальное – у них нет ни одного общего, пересекающегося значения. При этом контекст зачастую не подает сигналов о том, что напрашивающееся по аналогии «соответствие» – ложное. В основном это бывает следствием того, что разноязычные «аналоги» принадлежат к одному кругу понятий. К примеру, английское слово *decade* и русское *декада* означают определенный отрезок времени, но *первое* – *десятилетие*, а *второе* – *десять дней*. Английское *biscuit* и русское *бисквит* относятся к гастрономической сфере, но *первое* – это *сухое печенье, галета*, а *второе* – *выпечка из сладкого сдобного теста*. Вот еще несколько примеров:

She has a very fine **complexion**.

У нее чудесный цвет лица (а не «комплексия»).

The work is done **accurately**.

Эта работа выполнена точно (а не «аккуратно»).

Well, he must be a **lunatic**.

Он, должно быть, сумасшедший (а не «лунатик»).

Еще большую опасность несут в себе слова, которые при наличии общего значения с соотносимыми с ними русскими словами имеют и другие значения, не присущие последним. Например, **fiction** – это не только *фикция*, но и *художественная литература, беллетристика*, **false** – это не только *фальшивый*, но и *ошибочный, искусственный (о волосах, зубах)*, **officer** – это не только *офицер*, но и *чиновник, полицейский, капитан на торговом судне* и т.д. Такая лексика составляет большую часть «ложных друзей переводчика» и поэтому требует особого внимания. Страховкой от ошибок может быть лишь очень внимательный анализ контекста и проверка всех значений слова

по словарю.

В этой же группе «ложных друзей переводчика» есть немалое количество слов, у которых общее с *русским* сходным словом значение не является основным, ведущим, оно менее частотно и находится на периферии словарной *статьи*: ***novel*** – это в первую очередь *роман* и гораздо реже *новелла*; ***partisan*** – это *сторонник, приверженец* и значительно реже *партизан*; ***sympathetic*** – это *сочувственный; полный сочувствия* и исключительно редко *симпатичный* и т.д. Фактор частотности надо принимать во внимание, нередко он играет не последнюю роль в выборе нужного соответствия в переводе.

Из всего сказанного нетрудно заключить, что данная группа лексики требует повышенного внимания со стороны переводчика. Тщательный анализ контекста – как узкого, так и широкого, – словари и энциклопедии могут обезопасить «ложных друзей переводчика» и даже превратить их в настоящих друзей.

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