

Přednáška 11

Trendy a budoucnost IT

CORE013 Vývoj softwarových systémů: od myšlenky k funkčnímu řešení

11. Trendy a budoucnost IT

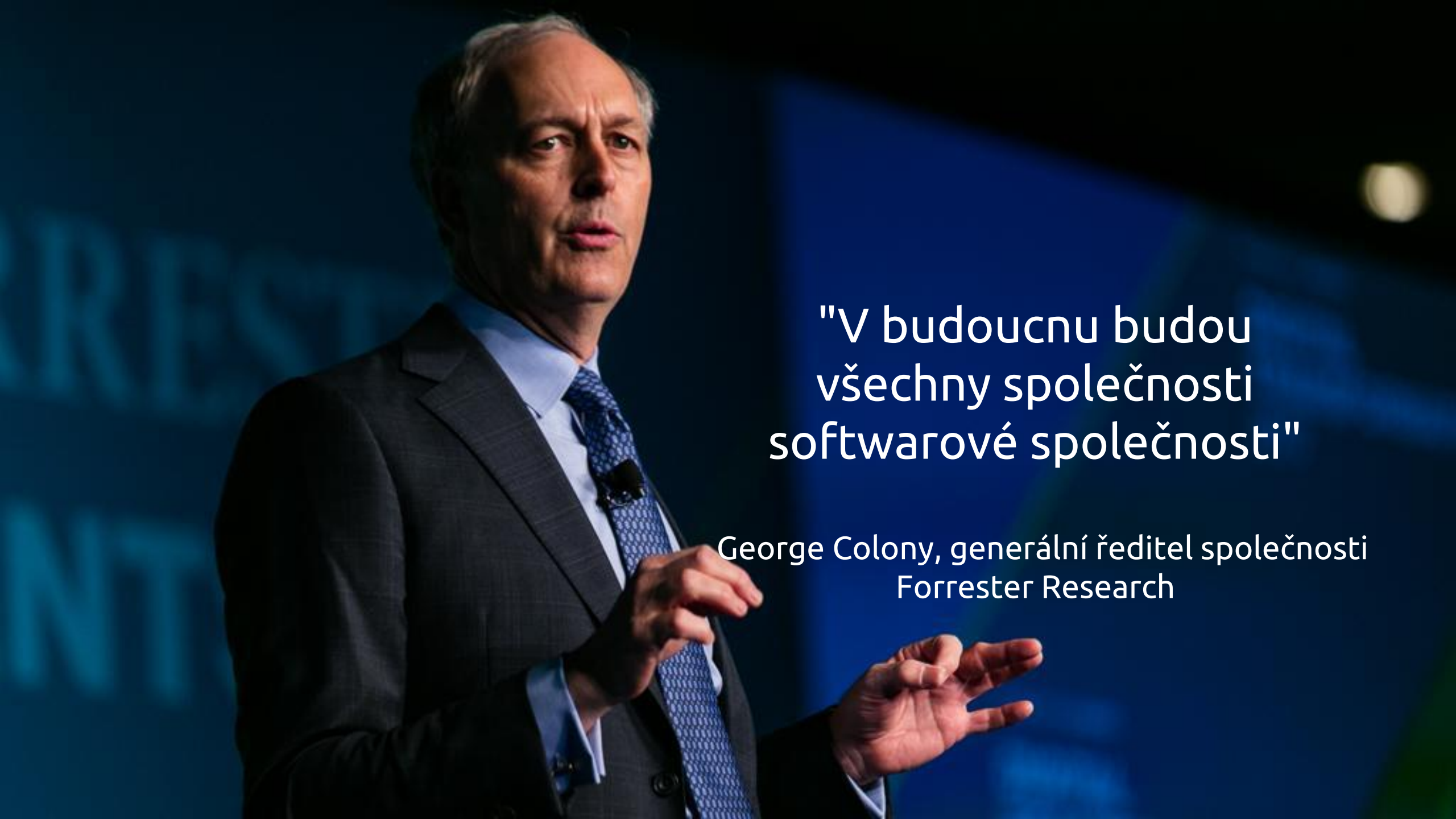
- Trendy a budoucnost, příležitosti a hrozby
- Automatizace
- Robotika a IoT
- Big data and BI
- AI and bots

Domácí práce a příprava na dnešní přednášku

- Najděte a nasdílejte inspirativní článek k tématu do diskuzního fóra

https://is.muni.cz/auth/discussion/predmetove/fi/podzim2023/CORE013/trendy_a_budoucnost_it/

DIGITALIZACE PROMĚŇUJE SVĚT

A man in a dark suit, light blue shirt, and patterned tie is speaking. He is gesturing with his hands. The background is dark blue with some blurred lights.

"V budoucnu budou
všechny společnosti
softwarové společnosti"

George Colony, generální ředitel společnosti
Forrester Research

Digitalizace jako cesta k inovacím

- **Inovace** - všechny velké společnosti se vyvíjejí prostřednictvím digitalizace (nebo zaniknou).
- **Udržitelnost** - inteligentní využívání zdrojů (např. doprava, energetické sítě, budovy).
- **Reakce na globální problémy**
 - Růst populace v rozvojových zemích (přístup k potravinám, vodě, vzdělání, bydlení, lékařské péči)
 - Stárnutí populace ve vyspělých zemích (zdravotní péče, podpora, sociální začlenění)
 - Kvalita životního prostředí (změna klimatu, znečištění, obnovitelné zdroje energie).
 - Organizovaný zločin (terorismus, náboženské/etnické/rasové konflikty, dezinformace, kyberkriminalita).

LOOKING AHEAD AT DIGITAL TRANSFORMATION & THE GROWTH OF IOT

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www.utopiainc.com



Digital Supply Chains... reduce process costs by 50%, reduce procurement costs by 20% and **increase revenue by 10%**.

Source: Digital Supply Chains: A Roadmap for The Center for Global Enterprise



Companies with 50% or more of their revenues from **digital ecosystems achieve 32% higher revenue growth** and 27% higher profit margins.

Source: Source: MIT Sloan Management Review, Thinking about Increasingly Digital Ecosystems



The volume of data captured by IoT will exceed 1.6 zettabytes by 2020.

Source: Edge Analytics in IoT, ABI Research



By 2018, **60% of enterprise IT will be off-premise** and in the cloud.

Source: IDC FutureScape: Worldwide IT Industry 2017 Predictions, IDC Research, Inc.



Only 5% of organizations feel that they have mastered digital to a point of differentiation from their competitors.

Source: Source: Digital Transformation in the Age of the Customer, Deloitte



Only 9% of companies have access to real-time data for financial analysis and planning.

Source: 2017 CFO 500: Real-time Data, AccountingSource.com, The CFO 500



70% of utilities executives said their companies **want to be digital leaders** in the sector.

Source: PwC



Industrial companies are planning to **invest 5% of their revenues annually to digitally transform their enterprise**, with 55% of their investments expecting a payback in two years or less.

Source: Industry 4.0: Building the Digital Enterprise, PwC



IoT could be worth \$19 trillion over the next decade thanks to cost savings and profits for business and increased revenues for the public sector.

Source: The Lifetime of Everything's Just About to Begin, PwC



By 2019, **40% of local & regional governments will use IoT** to turn infrastructure into assets instead of liabilities.

Source: IDC FutureScape: Worldwide IT Industry 2017 Predictions, IDC Research, Inc.



The volume of data expenditure on data analytics will grow from \$700 million in 2012 to \$3.8 billion in 2020

Source: GTM Research



In 2016, **93% of energy and utilities companies increased the number of IoT projects** they were involved in.

Source: ENERGY INDUSTRY: 101 LESSONS LEARNED - DESIGN FIRST TECHNOLOGY'S SECOND-ORDER Advisory

7 TECH JOBS THAT DIDN'T EXIST 20 YEARS AGO

In the 1990s, telling someone you worked "in the cloud" would have gotten you a weird look. The Digital Age has brought with it jobs that weren't imagined in our parents' generation. What are a few of the most popular, and how does one snag these contemporary careers?

CLOUD SOLUTIONS ARCHITECT

Yep. Cloud architect. Never thought you'd hear those words together, did you?

MEDIAN SALARY \$122,107⁽¹⁾



NECESSARY SKILLS

- Attention to detail
- Ability to solve complex problems
- Planning and organizational skills

12,700 Number of job openings in the U.S. each year through 2024⁽²⁾

APP DEVELOPER

From language learning to downloadable smartphone games, apps don't make themselves.

MEDIAN SALARY \$66,847⁽¹⁾



NECESSARY SKILLS

- Creativity and vision
- Open to new ideas
- Ability to work on a team

149.3 BILLION Number of apps downloaded in 2016⁽³⁾

DRONE OPERATOR

Some of you are doing this for free, so the joke's on you.

MEDIAN SALARY \$70,700⁽¹⁾



NECESSARY SKILLS

- Natural coordination
- Ability to learn new technologies
- Ability to analyze and solve complex problems

\$1.9 BILLION Amount of venture capital that has gone into drone startups so far⁽⁴⁾

WEBSITE USER EXPERIENCE DESIGNER

These smooth operators make sure smooth customers can use their smooth website smoothly. If not, they make some real smooth corrections.

MEDIAN SALARY \$72,405⁽¹⁾



NECESSARY SKILLS

- Ability to adapt to change
- Quick problem-solving skills
- Innovative mind set

A well designed user interface for a business' website could raise its conversion rates up to **200%.**⁽⁵⁾

SOCIAL MEDIA MANAGER

Companies now need people to run their social media pages, including making witty comments to customers via Twitter.

MEDIAN SALARY \$48,097⁽¹⁾



NECESSARY SKILLS

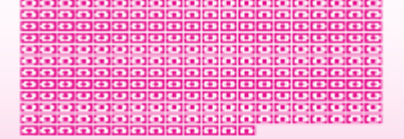
- Expert communication skills
- Creative writing experience
- Good sense of humor

When companies provide customer service through social media, those customers spend **20%-40% MORE.**⁽⁶⁾

DRIVERLESS CAR ENGINEER

These brainiacs work on the cars of the future: no drivers, all automation, all the time.

MEDIAN SALARY \$233,000⁽⁷⁾



NECESSARY SKILLS

- Desire to learn new technology
- Ability to work on a team
- Self-discipline

\$80 BILLION Estimated amount invested in driverless car technology over the past three years⁽⁸⁾

DIGITAL ANALYTICS MANAGER

They look at the crazy amount of data a business collects through social media, ad clicks, and website traffic.

MEDIAN SALARY \$92,958⁽¹⁾



NECESSARY SKILLS

- Leadership skills
- Attention to detail
- A strong analytical mind

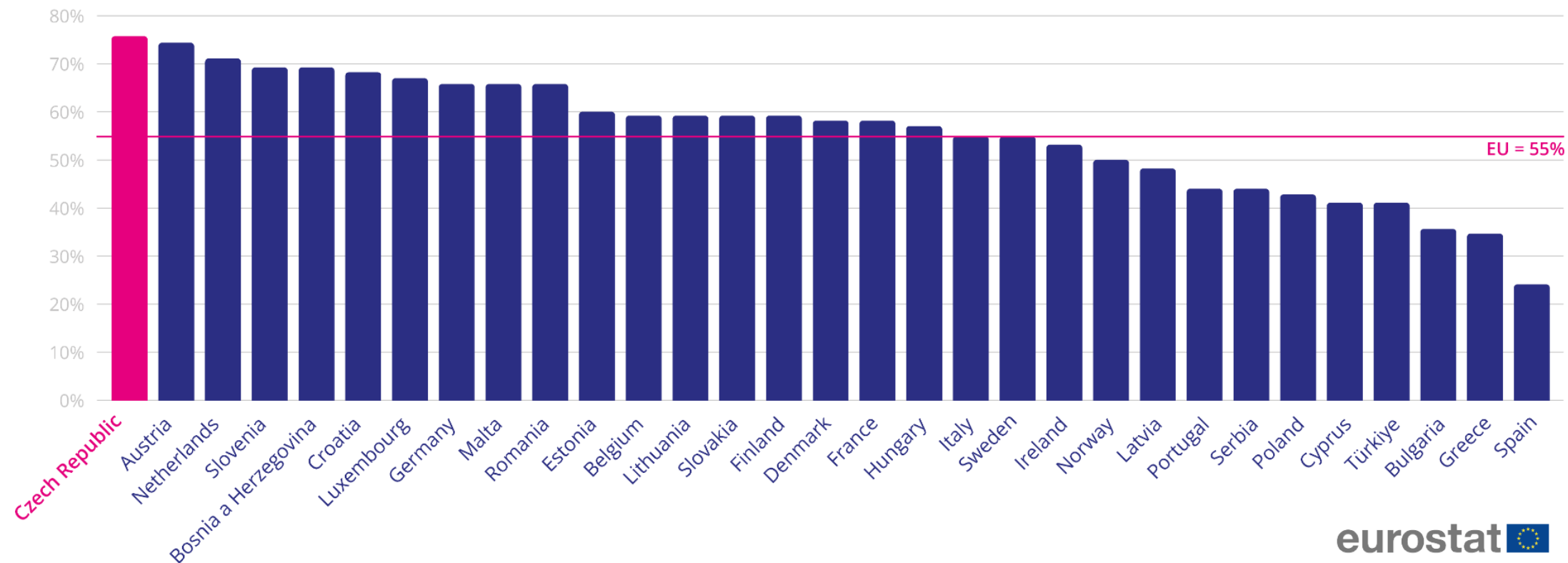
700,000 Estimated job openings for data science and analytics professionals by 2020⁽⁹⁾

KING UNIVERSITY

SOURCES
 1. glassdoor.com
 2. jobstudies.com
 3. eedat.com
 4. drone.com
 5. forbes.com
 6. entrepreneur.com
 7. paych.com
 8. driverless.com
 9. driveleagan.com

**MUNI
FI**

Enterprises with hard-to-fill vacancies in ICT, 2020



DIGITAL NATION?

Facts, stats and how to close the gap

WELCOME TO THE
OFFLINE NATION
POP. 11M
LOW INCOME • ELDERLY • UNEDUCATED

WELCOME TO THE
ONLINE WORLD
POP. 36M
BETTER OFF • YOUNG • EDUCATED

who's offline?

no digital skills

never used

narrow users
- 4 activities

disabled

no quals

65yrs

< £12.5k

who's online?

99% of 16-24 yr olds

90% of ABC1s

95% of graduates

99% of £40k+ earners

75% of households

internet access

smart phone

laptop

tablet

7% smart tv

51%

62%

100%

26%

WHY WE'RE NOT ONLINE

MOTIVATION

82% of people who don't have the internet at home say it's because they **have no interest**

SKILLS + CONFIDENCE

88% feel more **confident** after they get help to use the internet

SUSTAINED ACCESS

20% say **cost** is why they're not online at home
20% say **lack of online skills** is why they have no broadband at home
< 1% say **poor broadband access** is why they're not online

We don't need the web

Let's raise awareness

We don't have the skills

We'll help you learn

We don't have access

Get help with access at home

local marketing
calls to action from local brands

online learning
own pace, any place, bitesized, pick 'n' mix

outreach
helping people where they live, work and play

hyperlocal delivery
friendly informal community spaces

access
wi-fi, signposting + partnership

intermediaries
trusted partners helping hard-to-reach people

inspiration
showing the web as relevant and fun

1-1 support
volunteers and expert tutors

TO CLOSE THE GAP

user activity



Jobs

People with good ICT skills earn between 3%-10% more than those without.

72% of employers wouldn't even interview entry level candidates with no IT skills.

Money

Getting online increases lifetime earnings by >£8300.

By 2016 British people will buy £221bn worth of online goods and services.

Social

33% of people got online to communicate with friends and family.

In 2011 the UK business participation effect of Facebook was £1.1bn.

Public services

Digital by default services are more efficient and convenient for users. 93% say GOV.UK is easy to use.

The government could save as much as £70bn by 2020 if it adopted plans to work smarter and digitise its activities.

Health

36% visited their GP less after using NHS Choices.

If just 1% of GP visits were converted to NHS Choices visits, it would save close to £10bn.

Education

A person with a degree is 3x more likely to use the internet than one without.

Being online drives >£708m from educational attainment and lifetime earnings.

BENEFITS

personal

economic

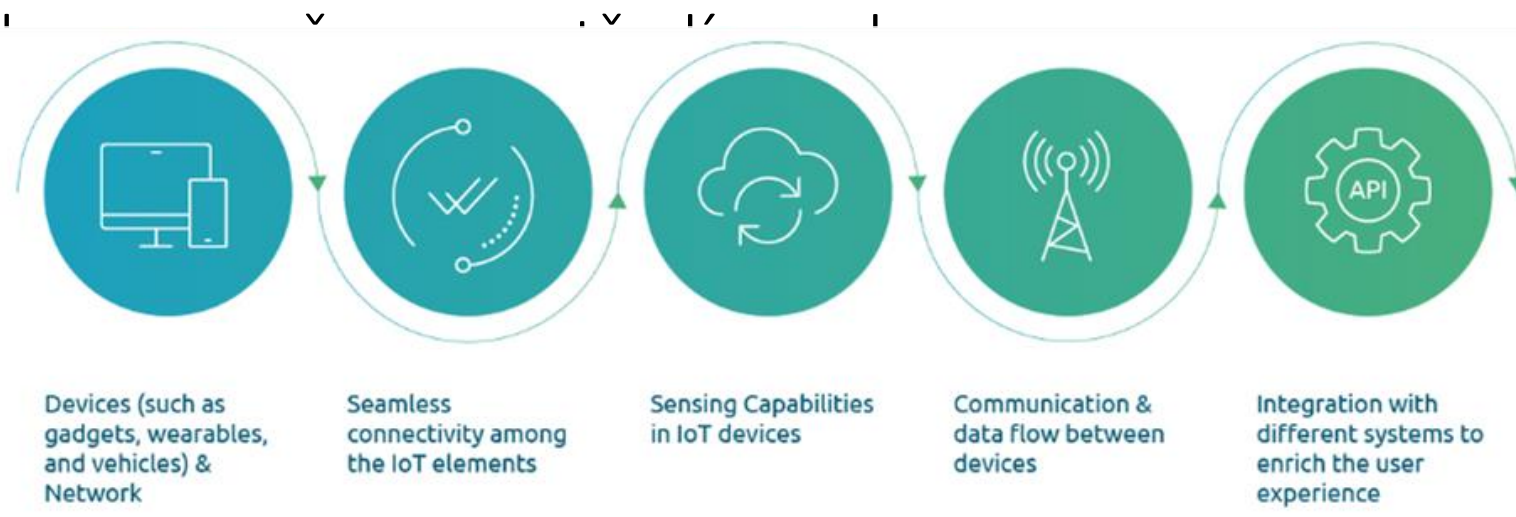


TINDER FOUNDATION
WE MAKE GOOD THINGS HAPPEN WITH DIGITAL TECHNOLOGY

INTERNET OF THINGS

Internet of Things

- Internet věcí je systém fyzických zařízení, která jsou propojená pomocí sítě a mohou tak spolu komunikovat.
- Každé ze zařízení sbírá data za pomoci senzorů a díky sdílení těchto dat systém umožňuje např. dálkové monitorování, efektivnější plánování, flexibilní reakce



Oblasti využití

- Doprava
- Průmyslová výroba
- Zdravotnictví
- Energetika
- Potravinářství
- Chytré domácnosti

The Internet of Things

The Internet of Things (IoT) connects machines and devices to one another. IoT can help all industries become more efficient, productive and safer.

To become connected an object must be able to:



2003-2010:

10 - 20 BILLION

things connected to the internet today⁽¹⁾



By 2020 this number is estimated to grow to

40 - 50 BILLION⁽¹⁾



That's roughly 5 connected devices per person on earth!

The Rise of Sensors

Sensors enable IoT. Every object, even the human body.



Anything that is hard to monitor can become easy.

THE INTERNET OF THINGS

EVOLUTION OR REVOLUTION?

The opportunities generated by IoT far outweigh the risks

For businesses to fully realize the great potential of IoT, they will need to be prepared for the risks that lie ahead.

The insurance industry is well positioned to help businesses navigate an IoT world.

IoT Risks:



Industries currently benefitting from IoT:



A New Economic Age

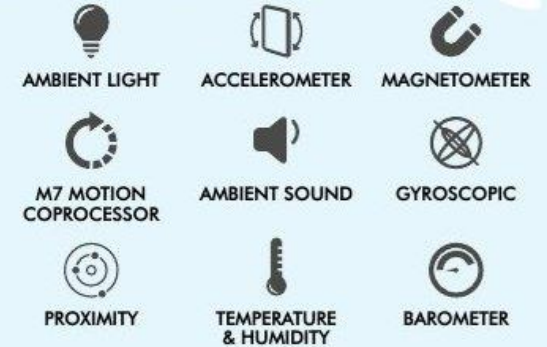
The 2020 annual global economic potential across all sectors is estimated up to

\$14.4 TRILLION⁽³⁾

That is the current GDP of the European Union!



Today's devices have between 6-9 sensors:



Cheap sensors are accelerating the growth of IoT.

The decrease in cost of sensors has fuelled the number of connected devices:

Cost of an Accelerometer

2007 1 Axis:

\$7⁽²⁾

Today 6 Axis:

\$0.5

https://iotnews.asia/wp-content/uploads/2017/02/iot_infographic.jpg

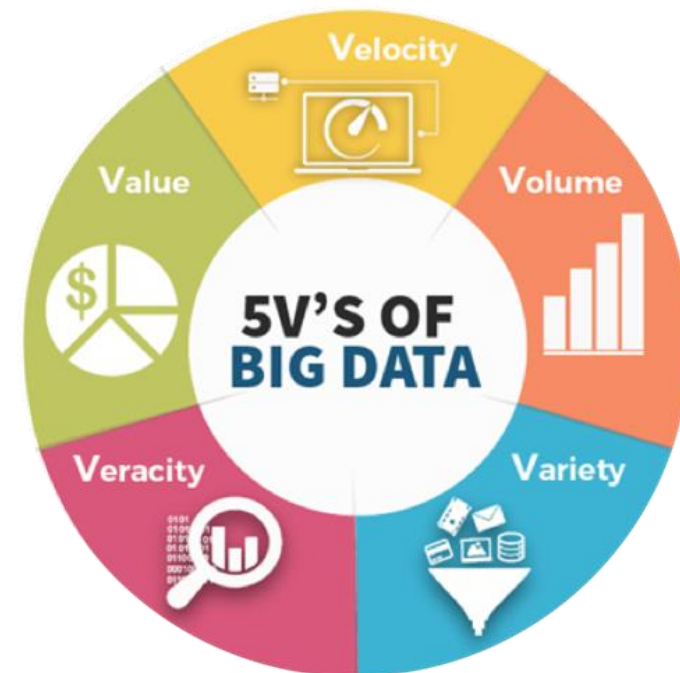
Safety Driverless cars, worker accident prevention **Efficiency** Biometric banking, smart TVs & thermostats

Decision Making Data driven insights **Infrastructure** Risk triggers, electrical networks & predictive maintenance

BIG DATA AND BUSINESS INTELLIGENCE

Velká data - 7. přednáška

- Charakteristika - 5 V's:
 - **Objem** - velikost dat je obrovská
 - **Rozmanitost** - různé zdroje a formát dat
 - **Variabilita** - údaje mohou být nekonzistentní a nepředvídatelné
 - **Rychlost** - data jsou generována velmi rychle
 - **Věřohodnost** - data jsou ověřena a validována.
- Zpracování dat:
 - Čištění
 - Analýza
 - Vizualizace
 - Zabezpečení



https://img.techentice.com/media/2019/04/5_V_Big_data-1.png

A Minute on the Internet in 2019

Estimated data created on the internet in one minute



https://www.opusinteractive.com/unlocking-the-secrets-of-the-hybrid-cloud/chartofftheday_17518_internet_use_one_minute_n/

Business Intelligence

- Business Intelligence je analýza trhu a velký plánuje další směřování systému/podnikání
- Zahrnuje zpracování a vizualizace dat, jejich organizace umožňuje rychlejší rozhodování budoucím vývoji.



<http://kreyonsystems.com/BusinessIntelligence.aspx>

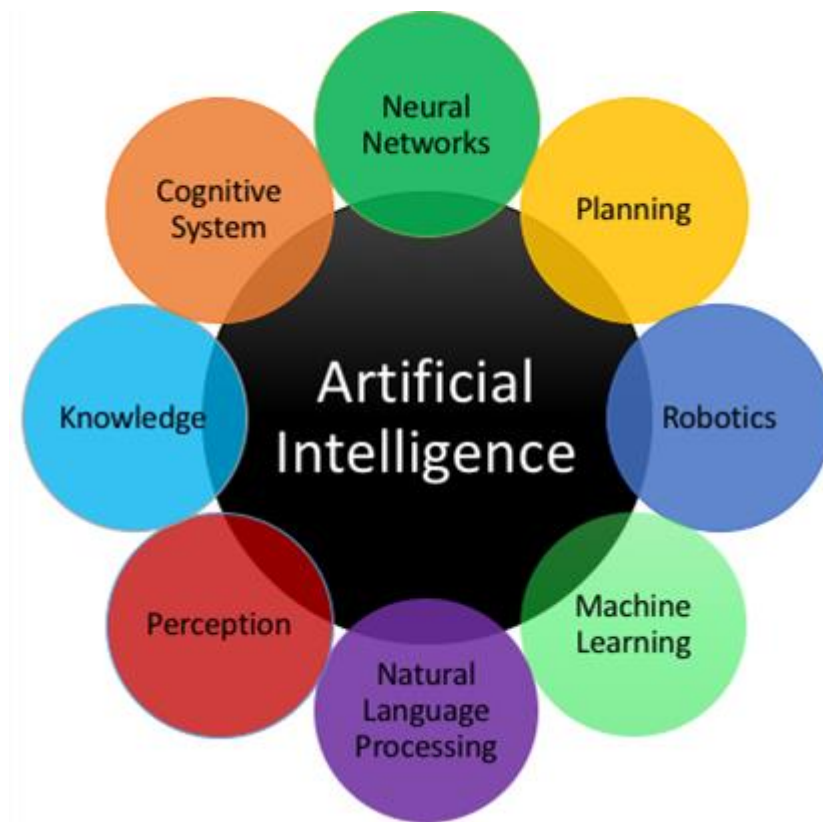
Oblasti využití

- Vláda a vzdělávání
- Finance
- Zdravotnictví
- Energetika
- Potravinářství
- Podnikání

UMĚLÁ INTELIGENCE

Umělá inteligence

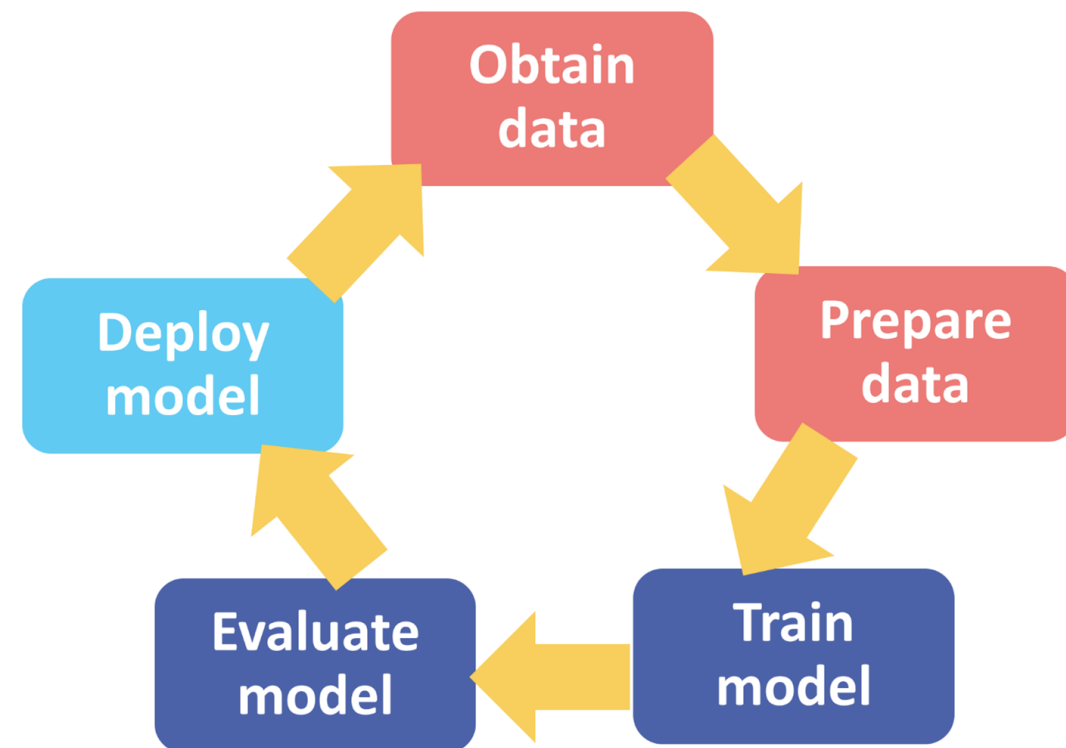
- Umělá inteligence je systém (program) napodobující lidské myšlení.
- Základní schopnosti UI:
 - Komunikace s okolím
 - Samostatné rozhodování
 - Schopnost poučit se
 - Plnění úkolů bez explicitních instrukcí



<https://www.besttechguru.com/future-technology-explained-what-is-artificial-intelligence/>

Strojové učení

- Strojové učení je návrh a vývoj programu, který má schopnost se samostatně učit a získávat zkušenosti.
- Během učení program obdrží data, na základě kterých si vytváří vzory, které se pak snaží hledat v neznámých situacích.

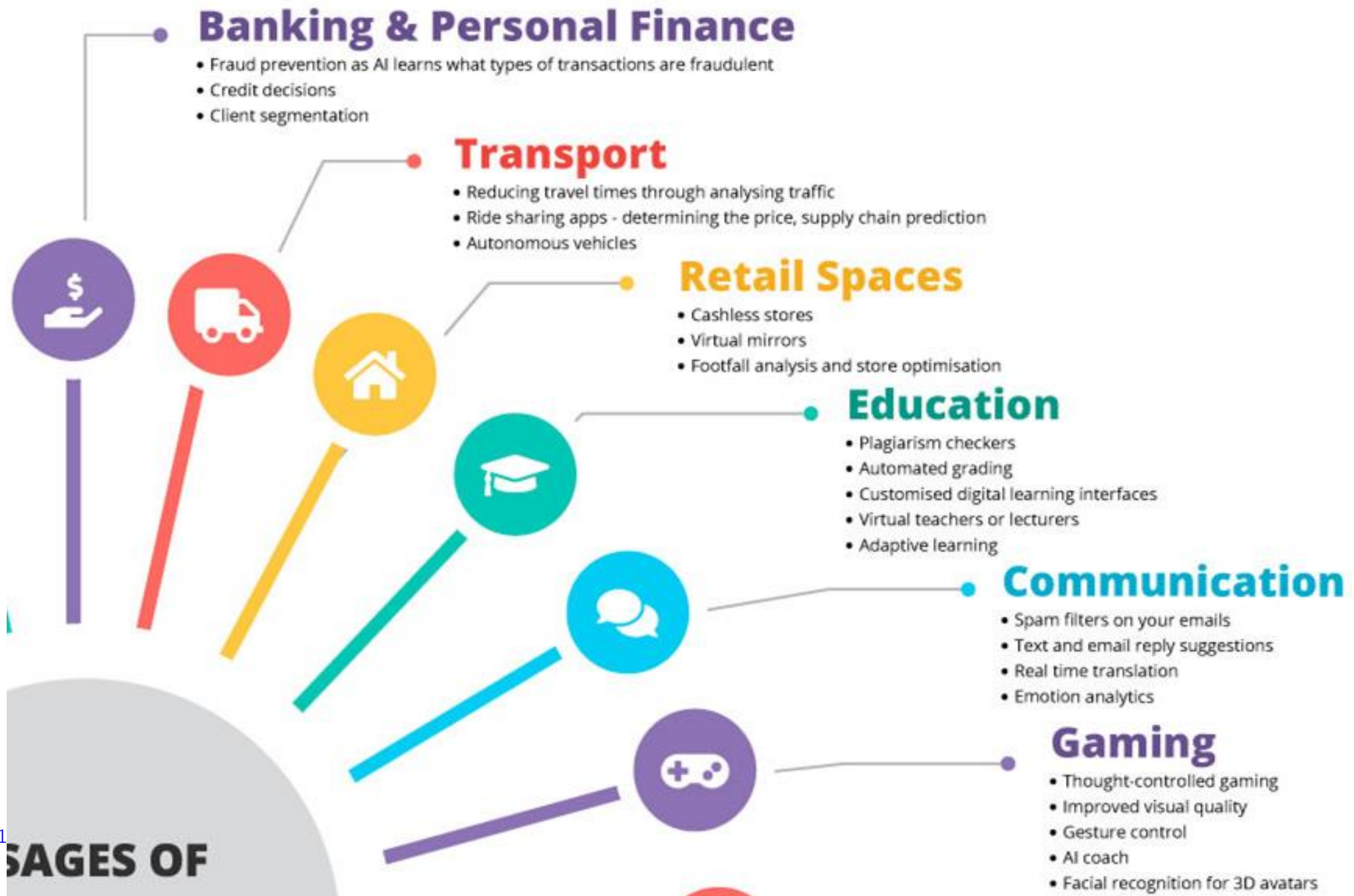


<https://acloudguru.com/blog/engineering/prepare-your-dataset-for-machine-learning>

Oblasti využití

- Počítačové hry
- Zpracování přirozeného jazyka
 - Siri, Alexa, ...
- Rozpoznávání mluvené řeči nebo rukopisu
 - Hlasové psaní zpráv, psaní matematických rovnic v MS Word
- Zpracování obrazu
 - vojenství - rozpoznávání cílů na mapě
 - zdravotnictví - hledání nádorů a jiných útvarů na snímcích
 - bezpečnost - rozpoznávání obličejů a SPZ kamerou





ARTIFICIAL INTELLIGENCE



Social Networks

- Photo recognition
- Newsfeed personalisation
- Friendship suggestions
- Augmented reality filters
- Chatbots
- Automated video/music synchronisation

Real Estate

- Targeted advertising
- Market analysis
- Client segmentation

Agriculture

- Robot harvesters
- Computer vision to monitor crop and soil health
- Predictive analysis for environmental impacts on crops

Healthcare

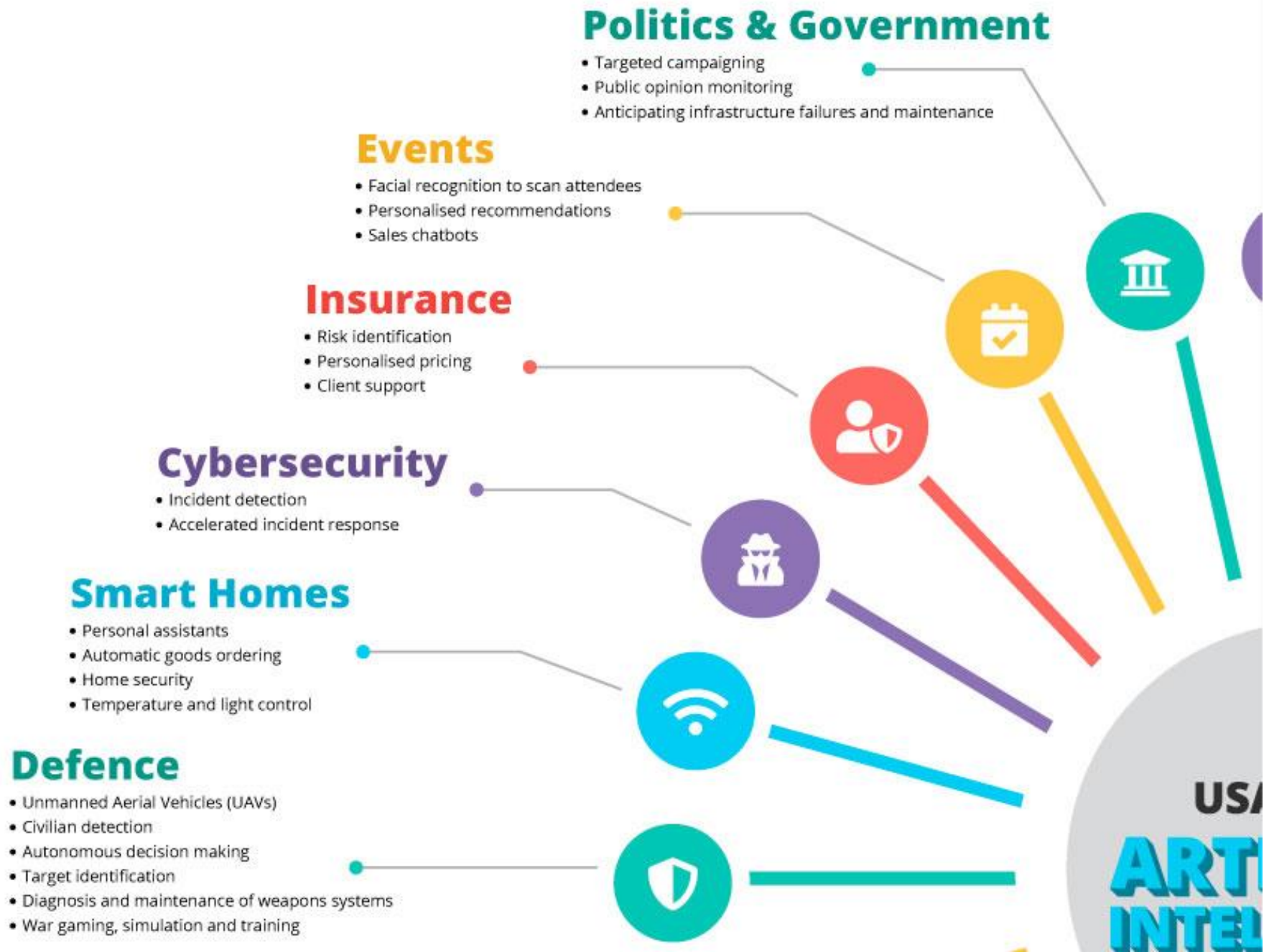
- Autonomous surgical robots
- Automatic disease identification and diagnosis
- Personalised treatment
- Drug discovery
- Identifying candidates for clinical trials
- Epidemic outbreak prediction
- Automation of routine tasks like X-Rays, CT scans, data entry
- Health monitoring/wearable health trackers
- Virtual doctors

Online Shopping

- Search recommendations
- Customer service and sales chatbots
- 3D modelling



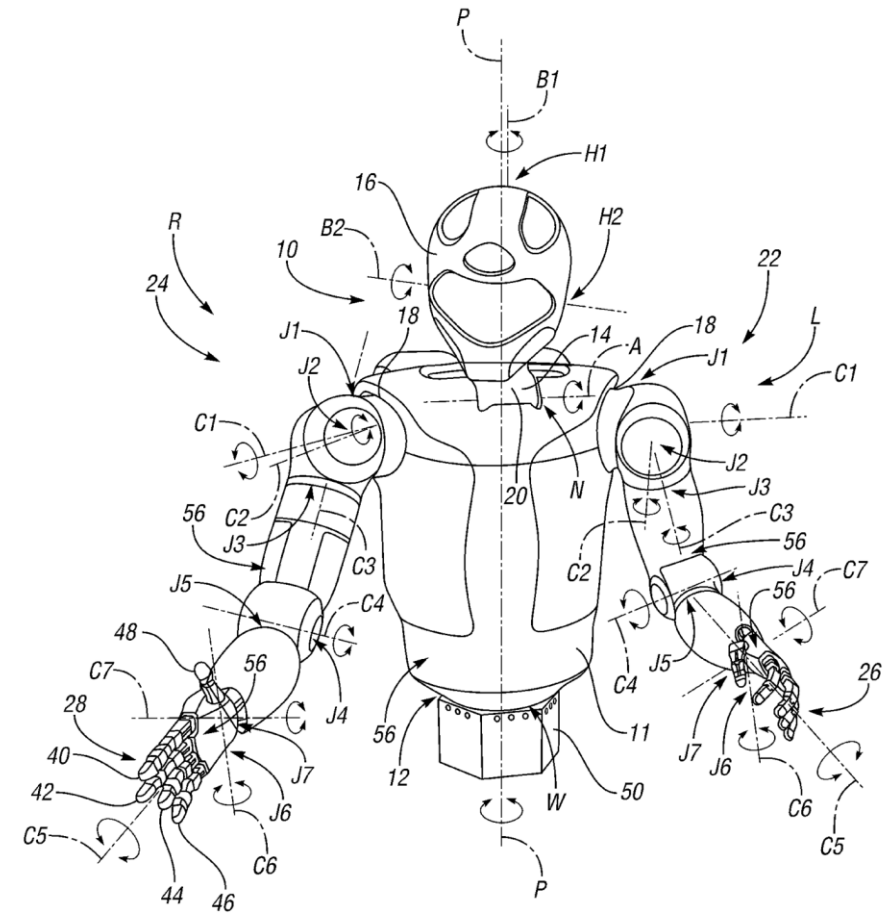
https://img.oneragtime.com/uploads/2018/08/infographic_wheel_v2.jpg



ROBOTIKA

Robotika

- Jaká rozdíl je mezi robotem a umělou inteligencí?
- Představte si, že stavíte robotického člověka z čeho se bude takový robot skládat?
- Jakým způsobem mohou roboti lidem usnadnit život?



<https://patents.google.com/patent/US8511964>

The rise of Robotics and AI

Fueled by advances in computing power and connectivity, the fields of robotics and artificial intelligence have grown rapidly

1941 Three Laws of Robotics:



A robot may not injure a human being or, through inaction, allow a human being to be harmed

A robot must obey orders given it by human beings except where such orders would conflict with the First Law

A robot must protect its own existence as long as such protection does not conflict with the First or Second Law

1921 The term robot

is first used by Czech writer Karel Capek



1939

Elektro, a humanoid robot, debuts at the World's Fair, smoking cigarettes and blowing up balloons



1948

William Grey Walter creates the first autonomous robot with complex behavior



1950 Turing's Test.

Alan Turing publishes paper about the possibility of machines that think, develops idea known as the

It tests a machine's ability to "think" by answering a series of questions. In essence, the tester must think the machine's answers are coming from a human

1954

George Devol invents the first digitally operated and programmable robot

1951

Marvin Minsky builds the first neurocomputer, SNARC

1956

IBM 305, the first hard disk drive
5MB

1970

IBM 1330
100MB per pack

1985

IBM 0665, a 5.25" disk with
20-40MB

Minimize and maximize

Shrinking disk sizes and exponentially growing capacity help fuel robotics and AI

1956

Field of AI research founded at a conference at Dartmouth

1960

Frank Rosenblatt constructs **Mark I Perceptron**, a computer that learned new skills by trial and error

1968

Mobile robot "**Shakey**" is introduced. It's controlled by a computer the size of a room



1979

SCARA, an articulated robot arm, is developed for assembly lines



1972

Stanford researcher develops **PARRY**, designed to simulate a paranoid schizophrenic.

1974

Intel produces its second-generation 8080 general-purpose chips



1961

GM installs **Unimate** robot to lift and stack hot pieces of metal

How are you feeling today?

I have had enough of this.

1984

The **RB5X**, developed by General Robotics Corp., includes software enabling it to learn from its environment



1984

Doug Lenat and his team start **Cyc**, to codify millions of pieces knowledge that compose human common sense

1985

Jaron Lanier's VPL Research, Inc., sells first VR glasses and gloves; Lanier coins the phrase

virtual reality



1988

Researchers launch **Jabberwacky**, an AI chatbot designed to learn through conversation

Nope, I'm human.

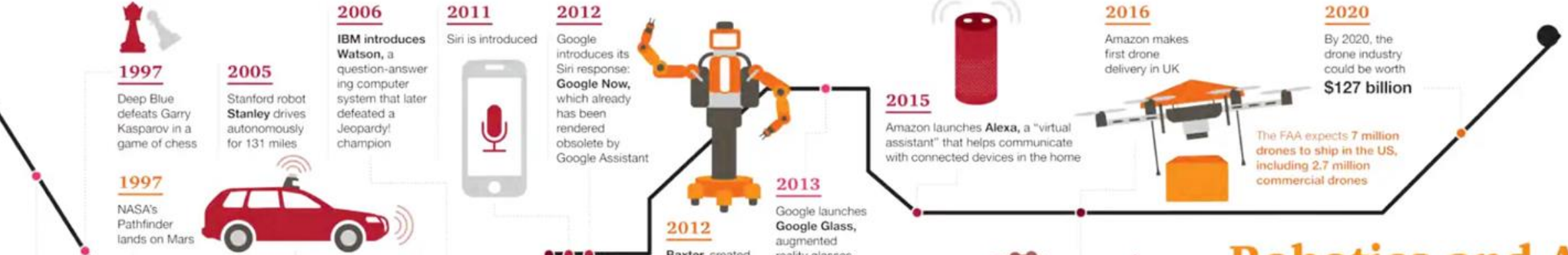


1986

Honda creates the **EO**, the first of a series of humanoid robots that walk on two feet

1988

The first **HelpMate** service robot begins work at Danbury Hospital



1990
Tom Caudell coins the phrase **augmented reality**



1990
iRobot Corporation is founded, producing domestic and military robots



1998
Dr. Cynthia Breazeal creates **Kismet**, a robot that interacts emotionally with humans

2000
The UN estimates there are **742,500 industrial robots** in use worldwide



2005
Stanford robot **Stanley** drives autonomously for 131 miles



2007
Fanuc develops an industrial robot arm that can grab 120 items per minute



2010
Google launches a 3D version of its **Street View**

2004
Seagate ST1, 1" disk
2.5-5GB

2015
Seagate Thin HDD, 2.5", 7mm thick
2 TB

2025
Even smaller
100+ TB?

Growing capacities

As disk size has shrunk, capacity has grown exponentially since 2000

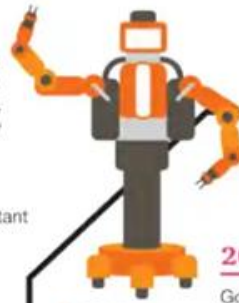


2006
IBM introduces **Watson**, a question-answering computer system that later defeated a Jeopardy! champion



2011
Siri is introduced

2012
Google introduces its Siri response: **Google Now**, which already has been rendered obsolete by Google Assistant



2012
Baxter, created by Rodney Brooks, can do light repetitive tasks



2013
Google launches **Google Glass**, augmented reality glasses

2015
Amazon launches **Alexa**, a "virtual assistant" that helps communicate with connected devices in the home



2016
Amazon makes first drone delivery in UK



The FAA expects 7 million drones to ship in the US, including 2.7 million commercial drones

2020
By 2020, the drone industry could be worth **\$127 billion**

Robotics and AI charging forward

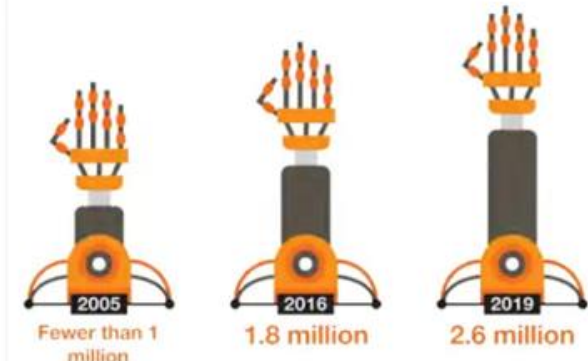
With technologies advancing at breakneck speeds, robotics and artificial intelligence are finding new applications in factories, businesses, and homes

2016
Sony PlayStation launches **PlayStation VR**



2016
Uber begins testing driverless cars in California and Arizona

2016
Companies utilize an estimated **1.8 million industrial robots**



Industrial robots: looking forward

A common fixture in the factory, the industrial robot has reshaped the manufacturing landscape through the years by performing duties unsuitable for humans



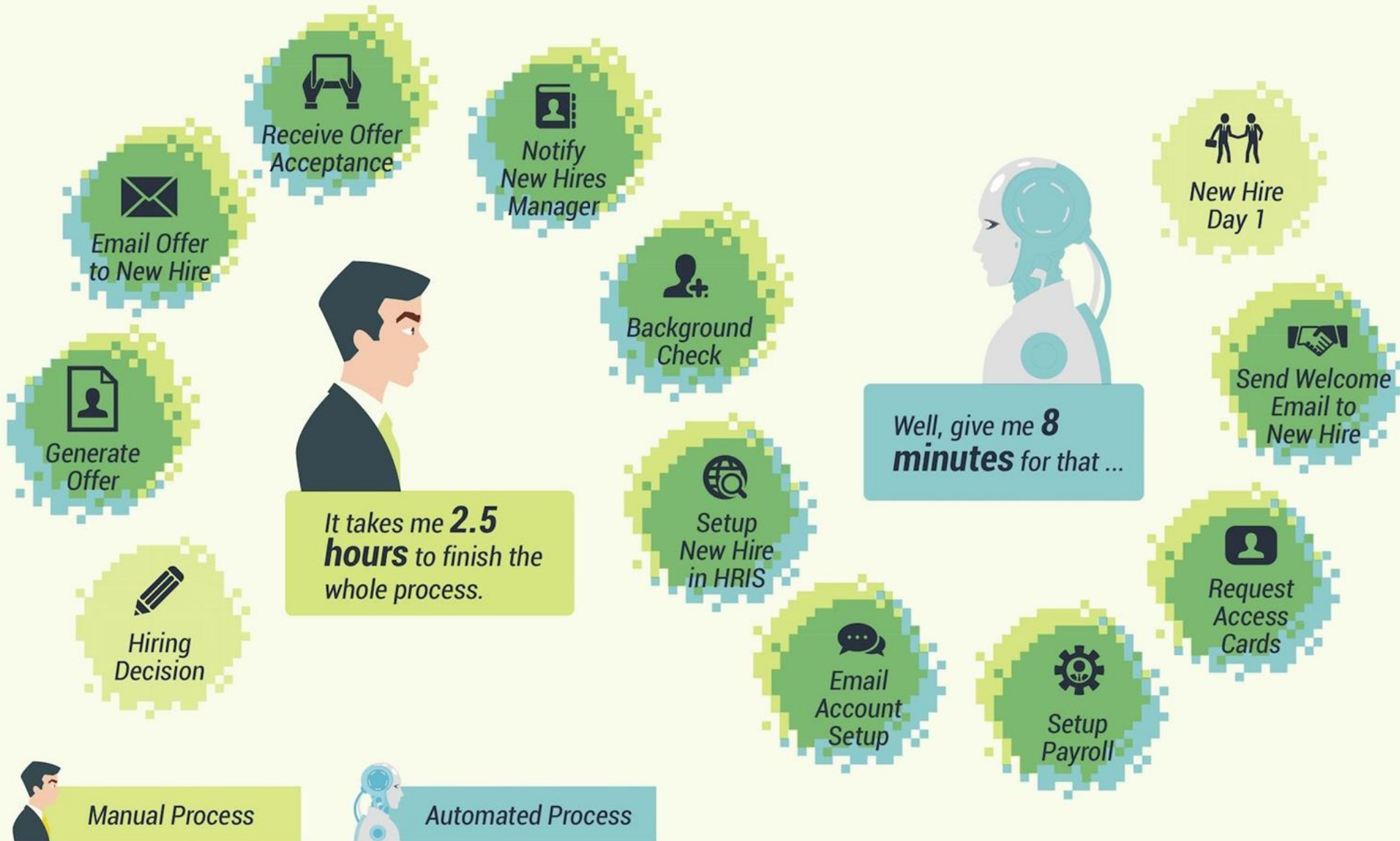
Robotics and other computerization could replace **47 percent of U.S. jobs**, according to a 2013 University of Oxford study

2034

AUTOMATIZACE

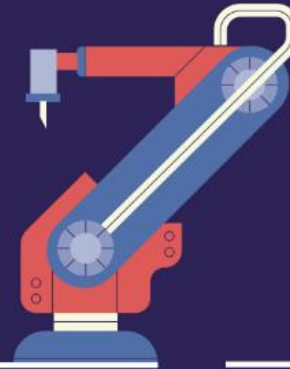
Automatizace

- Jaké výhody nám přináší automatizace?
- Ve kterých oblastech je vhodné automatizovat a kde naopak ne?
- Jaké etické problémy se mohou vázat k automatizaci?



AGE OF AUTOMATION

THE OUTLOOK FOR MANUFACTURING JOBS AND AUTOMATION IN SEVEN CHARTS



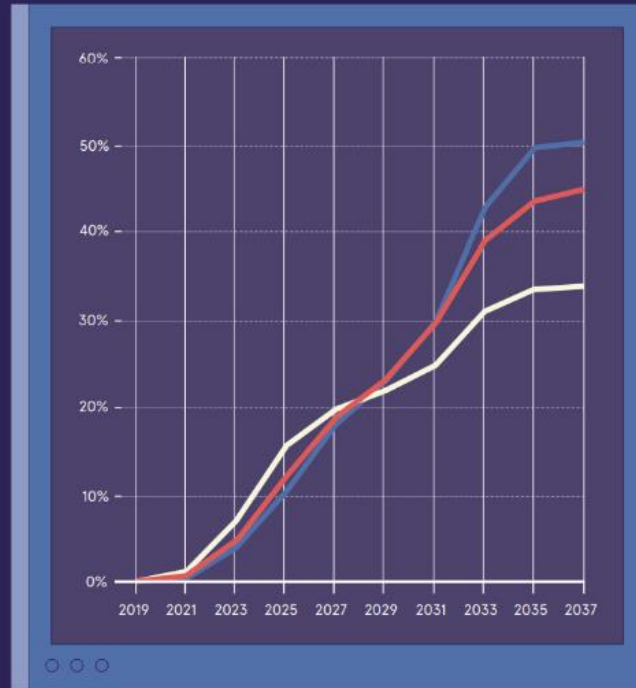
Advances in artificial intelligence and remote communication will arguably impact manufacturing more than any other sector, given that half of all roles within the industry involve manual and routine work. And yet, despite a large portion of jobs being at high risk of automation, job losses may not be as severe as feared as manufacturers upskill workers to adapt for a new technological future

<https://www.visualcapitalist.com/automation-manufacturing-jobs-7-charts/automation->

01 AUTOMATION'S IMPACT ON THE JOBS MARKET WILL START TO BE FELT FROM THE MID-2020S

Share of jobs with a high potential of automation

● Transportation and storage ● Manufacturing ● Wholesale and retail trade

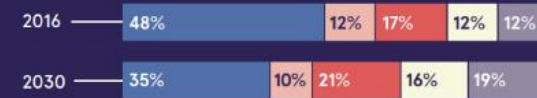


PwC/OECD 2018

02 UPSKILLING NEEDED AS ROUTINE AND MANUAL JOBS MAKE UP HALF OF WORKFORCE

Composition of current skills needed for current and future manufacturing jobs

● Physical and manual ● Social and emotional
● Basic cognitive ● Technological
● Higher cognitive



McKinsey 2018

03 AUTOMATION ADOPTION VARIES WITH COMPANY SIZE

Percentage of manufacturers investing to automate processes by number of employees

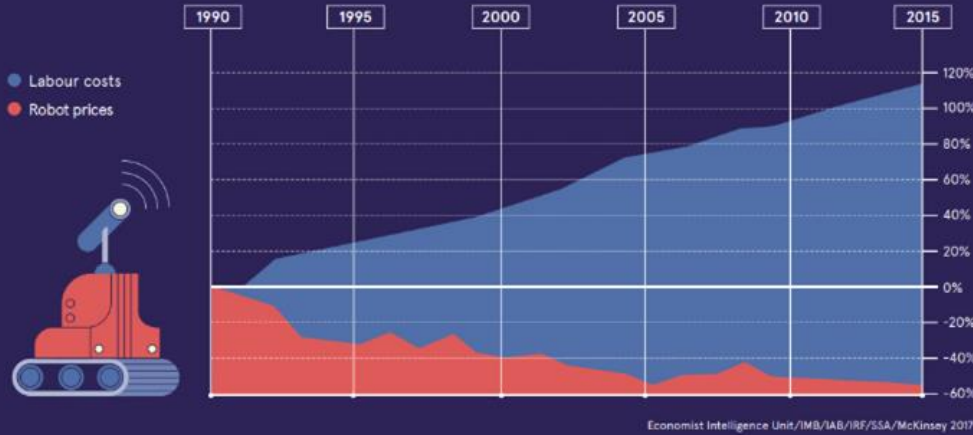
● All of the processes ● Most of our processes
● Some of our processes ● None of our processes



Mako UK 2018

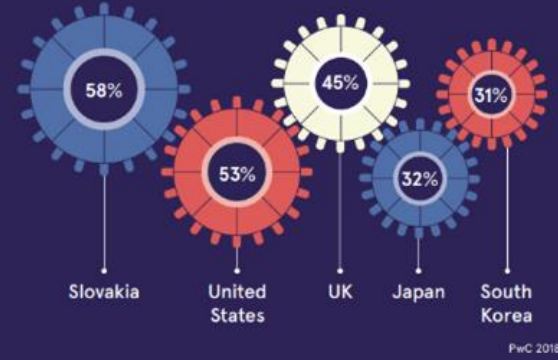
04 DECLINING ROBOT PRICES COULD ENCOURAGE MORE INVESTMENT AS LABOUR COSTS CREEP HIGHER

Example shown is for average robot prices and labour compensation in US manufacturing (1990 = 0%)



05 OVER-RELIANCES ON MANUAL WORK MEAN AUTOMATION IMPACT IS WORSE IN SOME REGIONS

Percentage of manufacturing jobs with a high potential of automation



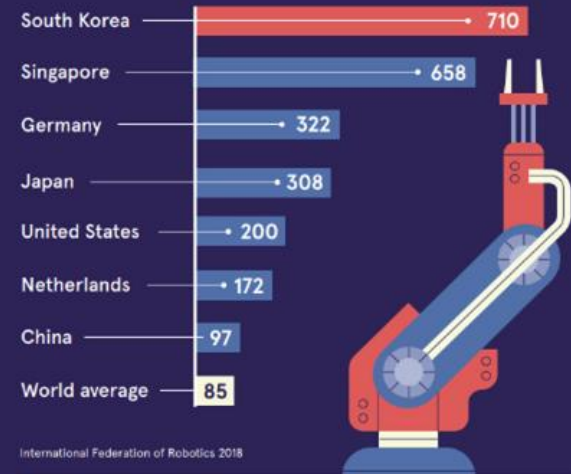
06 LOWER EDUCATED HARDEST HIT AS MANUAL TASKS PHASED OUT

Share of jobs with a high potential of automation by education level



07 SOUTH KOREA IS MILES AHEAD WHEN IT COMES TO ROBOT ADOPTION

Number of installed industrial robots per 10,000 manufacturing employees, selected countries



infographic/
https://www.visualcapitalist.com/automation-manufacturing-jobs-7-charts/automation-

Mýty a obavy o automatizaci a umělé inteligenci

- Automatizace znamená zavedení umělé inteligence.
- Roboti nás časem nahradí ve všech profesích.
- UI funguje jako lidský mozek.
- UI je pokročilá technologie, kterou si můžou dovolit používat jen velké a bohaté společnosti.
- UI nemá předsudky a je nestranná.

WILL A ROBOT TAKE YOUR JOB?

35% OF EXISTING JOBS are at a high risk of automation within 20 years



By 2020, humans will lose roughly **5 MILLION JOBS** to robots.

ADMINISTRATION jobs will be first to become automated

BY 2029 researchers anticipate robots will have reached **HUMAN LEVELS OF INTELLIGENCE.**



60% of the public said they feared robots could lead to fewer jobs

IN 5 YEARS office jobs will be gone and replaced with smart machines

An increase in technology will eliminate old jobs and introduce new ones

Losing your job to technology can mean more opportunities for you to retrain in a higher-skilled job

'IT'S JOB TRANSFORMATION, NOT REPLACEMENT'

Humans still beat robots in...



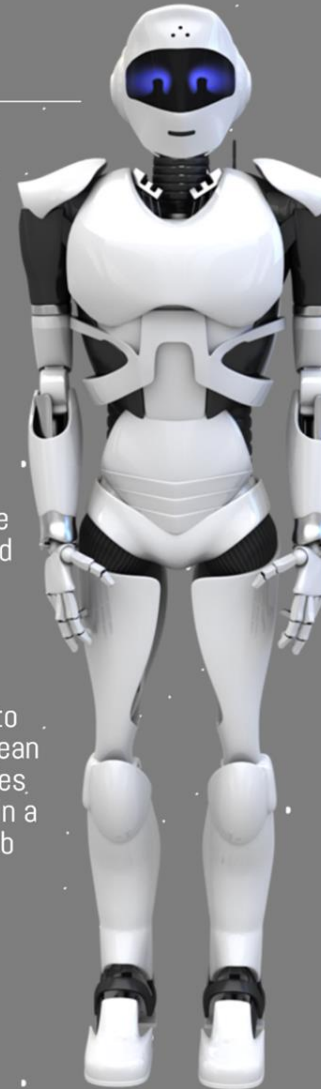
Social interaction



Creativity



Extensive mobility



<https://www.electriciancourses4u.co.uk/wp-content/uploads/robot-technology--infographic-1.png>

Sources:
<http://www.dailymail.co.uk/sciencetech/article-3487851/Do-fear-AI-taking-people-believe-computers-pose-threat-humanity-fear-ll-steal-jobs.html>
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<http://www.techtimes.com/articles/125316/20160119/digital-revolution-threatens-human-workforce-ai-robots-to-take-5-million-jobs-by-2020-wef-predicts.htm>
<http://www.wired.com/2015/08/robots-will-steal-jobs-theyll-give-us-new-ones/>
<http://uk.businessinsider.com/experts-predict-that-one-third-of-jobs-will-be-replaced-by-robots-2015-5?r=US&IR=T>
<https://www.washingtonpost.com/posteverything/wp/2016/02/17/yes-the-robots-will-steal-our-jobs-and-thats-fine/>

EC4U
ELECTRICIAN COURSES 4U

BEZPEČNOST

The Future of Identity

In an era where personal information is no longer private and passwords are far from unbreakable, the future of identity is now everyone's personal business.

67%

Comfortable using biometrics today



87%

Would consider using biometric authentication in the future

Millennials: where security is headed?

More lax on passwords...

...but also more likely to use newer methods



In fingerprints and banks we trust

Viewed as most secure form of authentication

Organizations most trusted to protect biometrics



<http://www.enacommmweb.net/blog/2018/02/02/infographic-ibm-security-future-of-identity->

Security vs. privacy vs. convenience

Consumers overwhelmingly rank security as a top priority, particularly when it comes to money-related apps. However, security drops as a top priority when it comes to social media.



Biometric authentication around the world

People in Asia have the highest biometric knowledge and comfort level, while U.S. lags behind.



To see the full report, visit: ibm.biz/FutureOfIdentity

Source: IBM "FUTURE OF IDENTITY" STUDY 2018

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http://www.enacommweb.net/blog/2018/02/02/infographic-ibm-security-future-of-identity-study/

MUNI
FI

OČEKÁVANÉ PRŮLOMOVÉ ZMĚNY

CO NÁS ČEKÁ PŘÍŠTĚ

12. Přesahy IT do dalších oborů

- Zdravotnickní
- Energetika
- Doprava
- Budovy
- Chytrá města
- Životní prostředí
- Průmysl
- Obrana
- eGovernment
- Finance

Domácí práce a příprava na příští přednášku

- Pročtěte si a okomentujte 2-3 články vložené do diskuzního fóra

https://is.muni.cz/auth/discussion/predmetove/fi/podzim2023/CORE013/trendy_a_budoucnost_it/