

# Management Information Systems (MIS)

## 37C00100

## Spring 2023

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Principal University Lecturer of ISS

Dept. of Information & Service Management ISM

February 28, 2023




Aalto University  
School of Business

Teaching assistant:  
Ly H. Nguyen



# Topics in today's lecture

- My academic background
- Digital era and revolutions, new skills needed from biz students
- ICT use in firms, government policies, digital barometers, EU's recent initiatives
- Information Systems Science (ISS) - a young discipline
- Motivation: Why should you study Management IS?
- Practical information about the lectures & assignments
- Wrap up and next steps
- *Chapters 1 & 2 of the book – look the pre-recorded video lecture in MyCourses* 

# My academic background

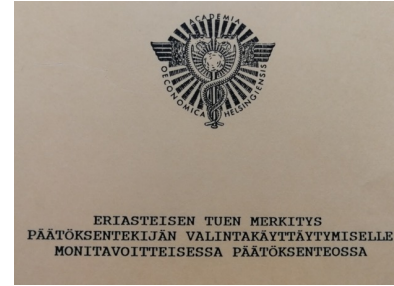


IBM PC 5150

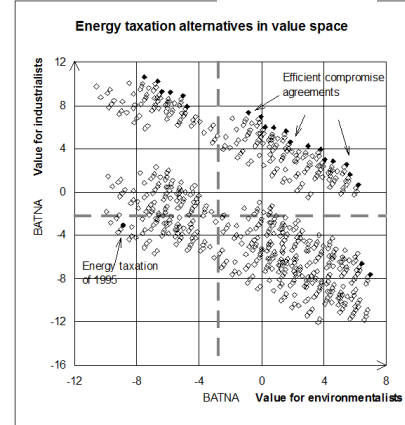
My 1<sup>st</sup> computers I used at Aalto when studying ISM (IS and OR/MS)



Macintosh 128K



**MSc thesis in OR/MS regarding Multiple-Criteria Decision-Making (MCDM)**



Pic from 2012

**BIZ representative in Aalto's project: Success of Students group behind AllWell? wellbeing survey**



**Big data Strategy for Finland 2014**  
<http://julkaisut.valtioneuvosto.fi/handle/10024/77879>

**Member of the Success of Students core workgroup 2016-2020 behind the AllWell? wellbeing questionnaire**



**BIZ Bachelor Program:**  
Associate Program Director '2020-

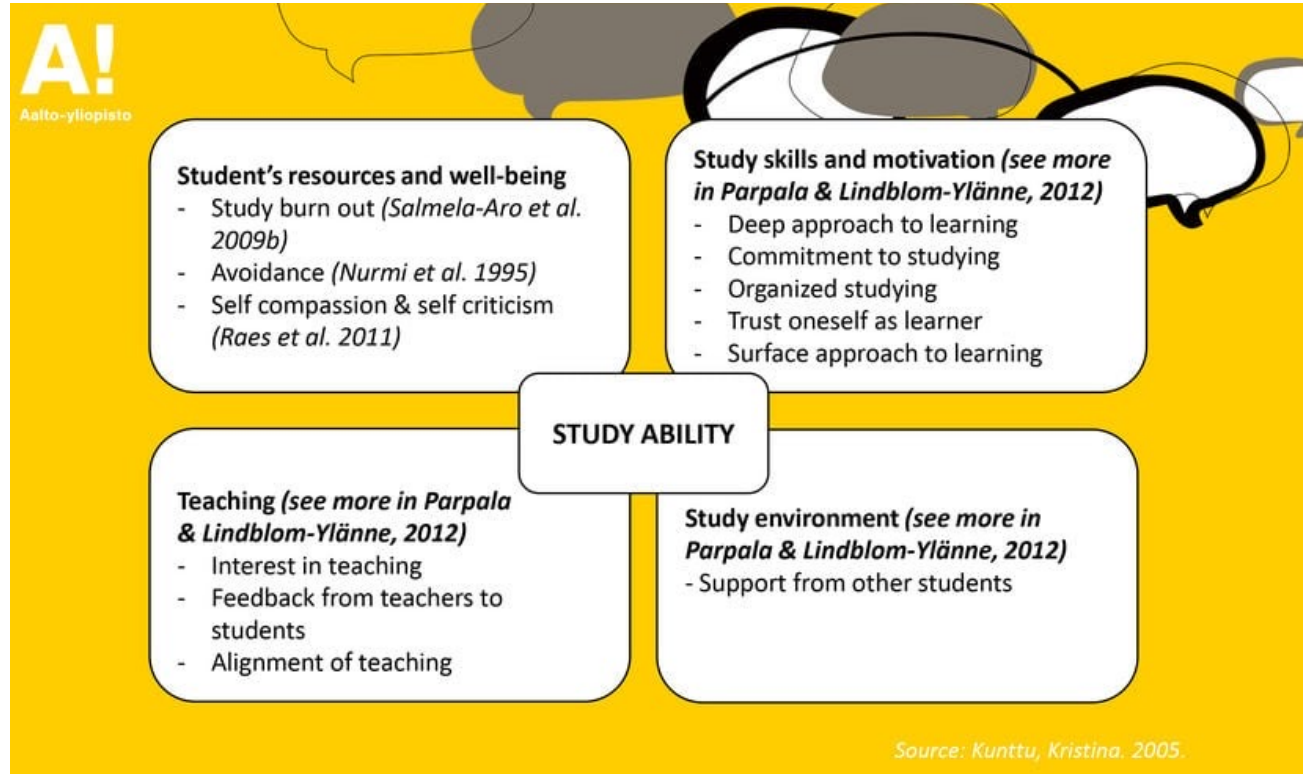
**Teaching:** MIS, BSc thesis seminar, Programming I, Business Process Management for the Digital Era, previously Digitalism Challenge hackathon until '19

**Research:** Text-mining & science visualization, online collaboration, experiences, sustainability in SCM



# AllWell? survey, if you received it, please answer today!!

The AllWell? questionnaire on study wellbeing is sent to all of Aalto's second-year bachelor's and first-year master's students every year. Its purpose is to collect information on students' study abilities, motivation, teaching, and peer support. The questionnaire is open from 15 February to 1 March 2023.

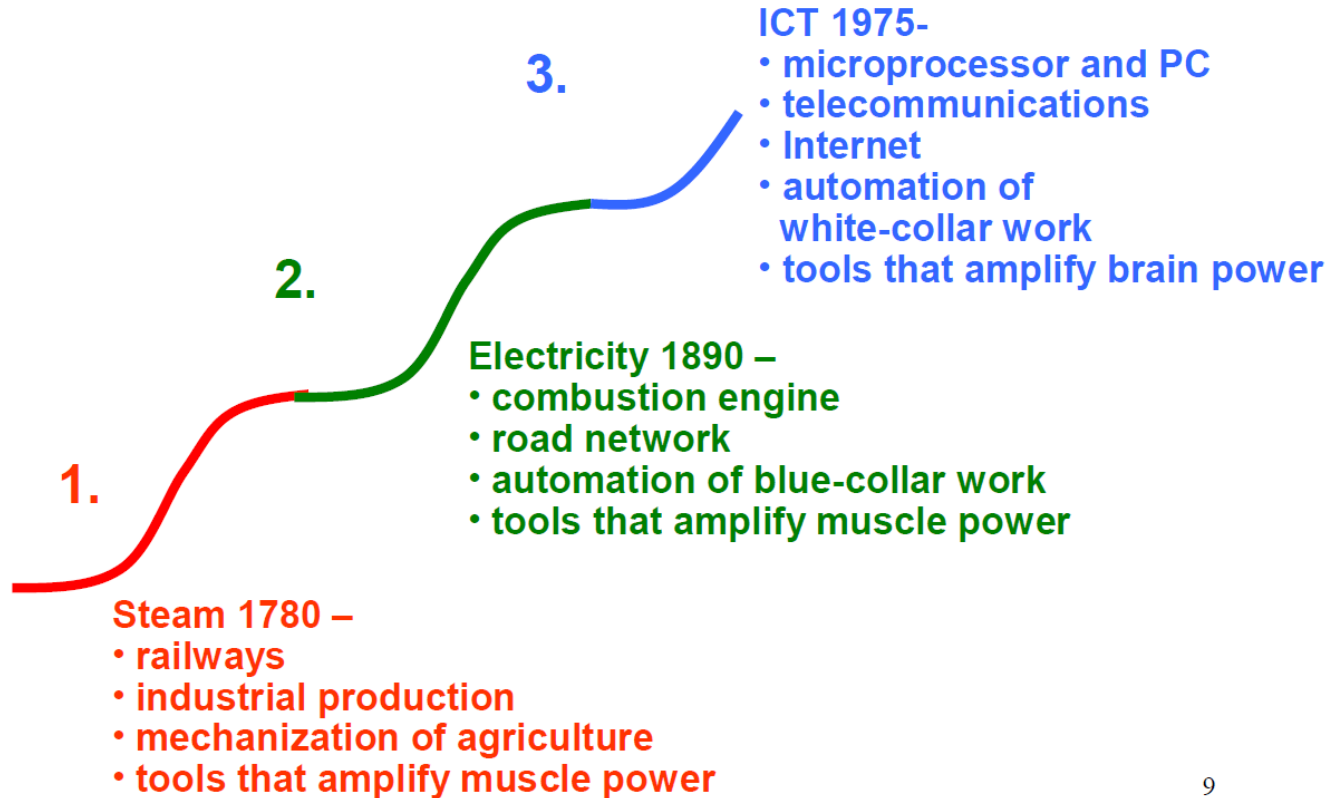


The survey is anonymous and you will get **feedback on your own studying** after answering, besides helping the **university to support student wellbeing!**



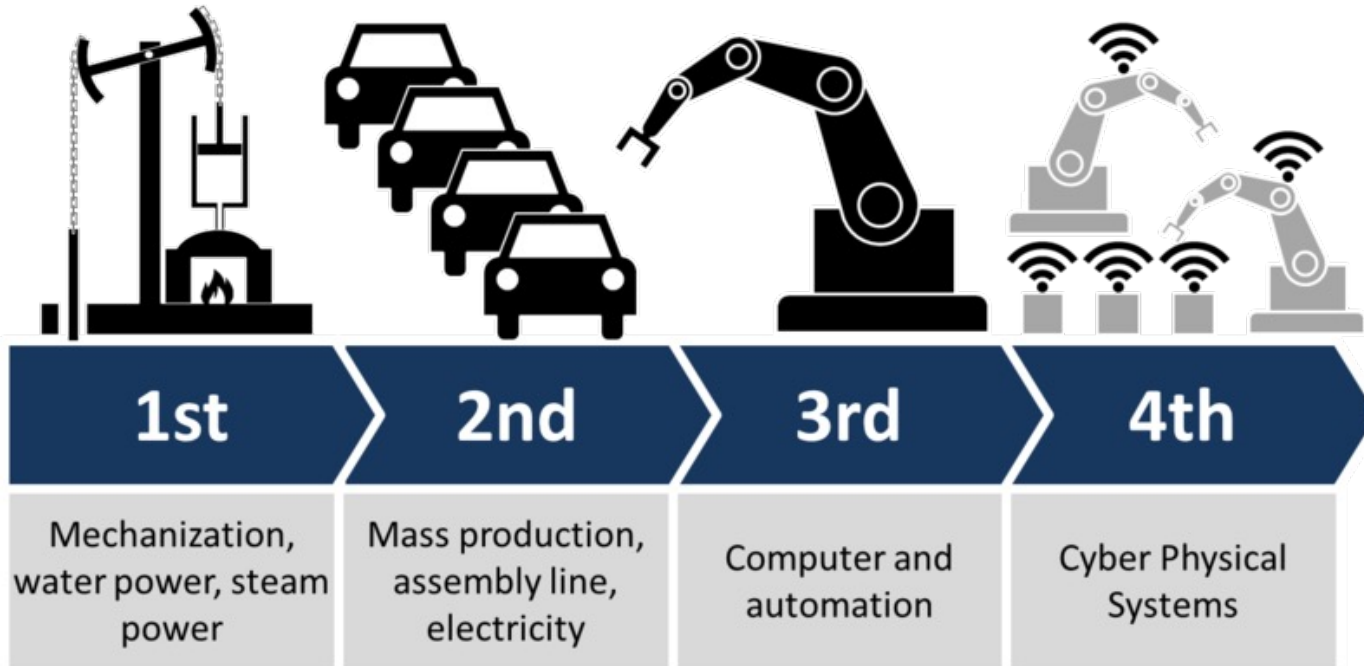
# Digital era and revolutions: New skills needed from business students

# 3 industrial revolutions and general purpose technologies



# 4th industrial revolution / Industry 4.0

Built on the digital age, and distinguished by a **ubiquitous and mobile internet**, small powerful **cheap sensors**, artificial intelligence (**AI**) and machine learning (**ML**).



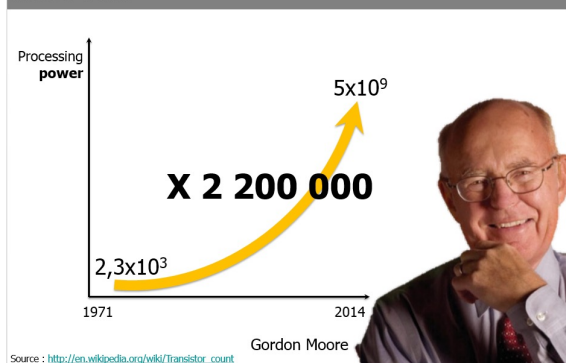
# Details of digital revolutions since 1950s

<b>Revolution</b>	<b>Ascension</b>	<b>Enablers</b>	<b>Leverage</b>
Computational Revolution	1950	Electronics + Binary computation	Management Information System
Communications Revolution	1980	Personal computer + Telecommunications	Strategic Information System
Commercial Revolution	1995	The Internet	Business Model
Collaborative Revolution	2010	Social + Mobile + Analytics + Cloud	Platform Ecosystem
Cognitive Revolution	Imminent	Cognitive technologies	Global Brain



# Enabling trends

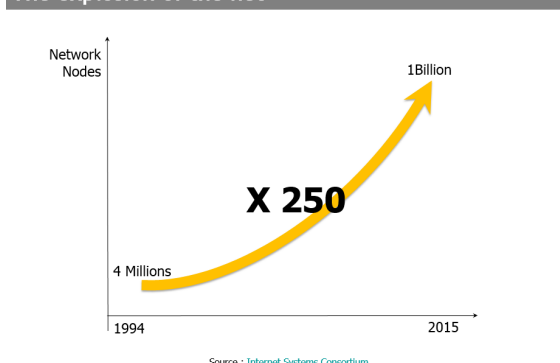
## Moore's law



Source: [http://en.wikipedia.org/wiki/Transistor\\_count](http://en.wikipedia.org/wiki/Transistor_count)

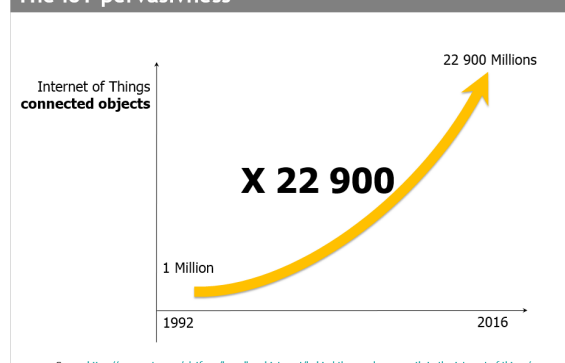
<http://celebslists.com/images/gordon-moore-04.jpg>

## The explosion of the net



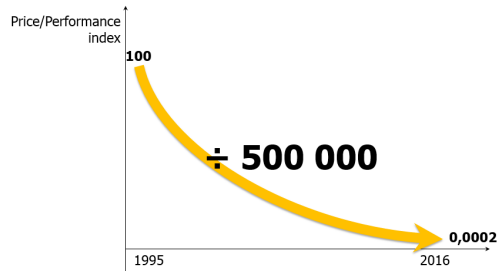
Source: [Internet Systems Consortium](http://Internet-Systems-Consortium)

## The IoT pervasiveness



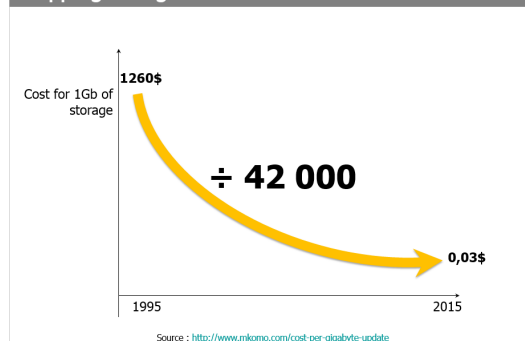
Source: <https://www.ncta.com/platform/broadband-internet/behind-the-numbers-growth-in-the-internet-of-things/>

## Dropping prices!



Source: <http://www.singularity.com/charts/page62.html>

## Dropping storage costs



Source: <http://www.mkomo.com/cost-per-gigabyte-update>

# MIT professors Brynjolfsson and McAfee, book 2017



The latest phase of **computers and the internet** have created **three shifts** in how work happens.

1. The first is **artificial intelligence (AI)**: a move from **man to machine** (self-driving cars, online translation, etc.).
2. The second is a shift from **products to platforms** (such as Facebook, Alibaba, Airbnb).
3. The third shift is from the **core to the crowd**.  
The core refers to centralized institutions (like central banks or the *Encyclopedia Britannica*); the crowd refers to the **decentralized, self-organizing participants**



# HOW WELL ARE TODAY'S GRADUATES PREPARED FOR THE DIGITAL ERA?

WHAT KINDS OF SKILLS ARE EXPECTED OF JOB CANDIDATES IN THE DIGITAL ERA?

## Welcome to MaCuDE

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MaCuDE is a collaborative effort among faculty and deans at more than 100 business schools, who recognize that their curricula must include more of an analytical and digital emphasis in order to ensure their universities remain value creators for students

# MaCuDE's 9 task forces - foundational pillars of business education

Each task force is responsible for identifying necessary changes for business education.



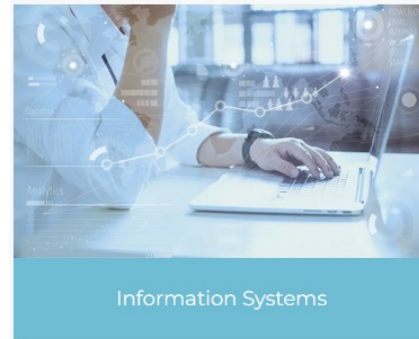
Accounting



Analytics



Finance



Information Systems



Management



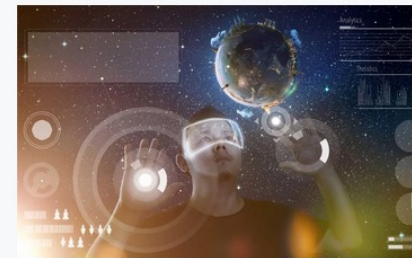
Marketing



Strategy, Innovation &  
Entrepreneurship



Cybersecurity



Future of Learning and Work

Source: <https://macude.org/>  
MaCuDE = Management  
Curriculum for the Digital Era



# MaCuDE – Phase 1 report

The Digital Era is characterized by five key developments, which are also reflected in the curricula of business schools:

- Data Analytics and Machine Learning
- Programming
- Algorithms and Artificial Intelligence
- Emerging Digital Technologies, and
- Managing Digital Organizations

***“Business School students should be exposed to emerging technologies and learn how to assess their utility.” (p.8)***

## Developing Digital Leaders

May 2022

A Report of the Current State of Digital Topics in Undergraduate and Graduate Business Curricula

Gregory Prastacos  
Michael zur Muehlen  
Elizabeth Gomez  
Stevens Institute of Technology



# MaCuDE – Phase 1 report 2022

To facilitate data-driven decision-making, individuals are expected to be **familiar with the lifecycle of information**, i.e., develop a sense of data literacy:

- *Data collection and data integration*

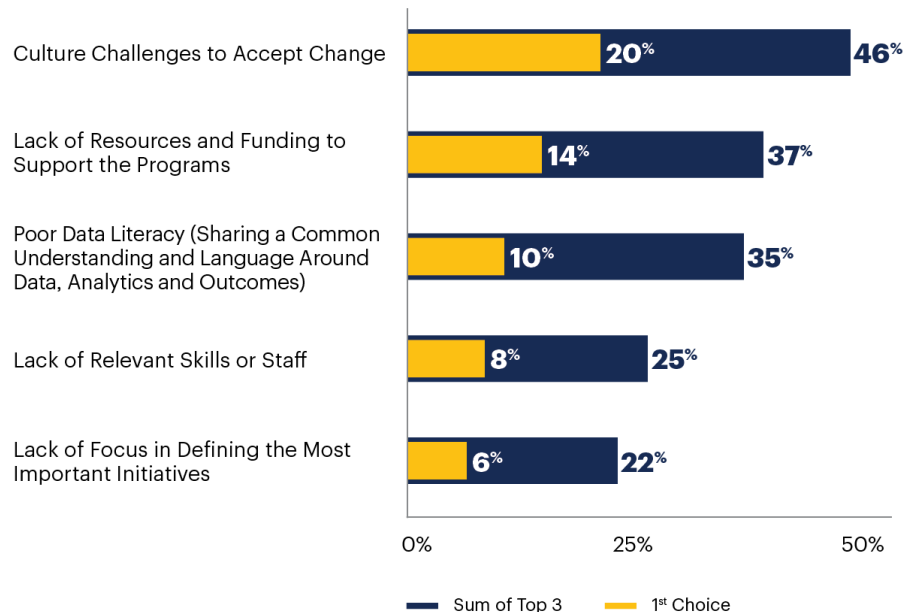
Data literacy transcends disciplinary boundaries and is a requirement of all business school graduates, no matter their major. While many disciplines have specific requirements that align with their specific data formats (e.g., customer data in Marketing, market data in Finance), themes such as the **trustworthiness of data, technical data integration, and information visualization are cross-cutting concerns**.

Once a sense of data literacy is established, Business School graduates need to be familiar with techniques for the analysis of these data sources. This includes:

- *Data Interpretation*
- *Data Visualization*
- *Storytelling with Data (presenting data visually in a persuasive way to convince an audience)*
- *Data-driven Decision-Making*

# Most critical roadblocks in data and analytics

**Culture** (change resistance), **lack of resources** and **poor data literacy** are the three top roadblocks for data and analytics leaders.



[gartner.com/SmarterWithGartner](https://www.gartner.com/SmarterWithGartner)

n = 291 All Respondents, Excluding Unsure  
Q. Which of the following are the most important roadblocks to the success of your Data and Analytics team?  
Source: Fifth Annual Chief Data Officer Survey  
© 2020 Gartner, Inc. All rights reserved. CTMKT 987209

**Gartner**

# Top-5 skills emphasized by recruiters

## Skills in highest demand

1	Data skills/data literacy
2	Communication and collaboration skills
3	Basic computer skills
4	Project management skills
5	Presentation/public speaking skills

## Skills that have increased most in demand over the past 2 years

1	Data skills/data literacy
2	Project management skills
3	Research skills
4	Computer programming skills
5	Communication and collaboration skills

## Skills recruiters anticipate will increase most in importance in the next 5 years

1	Data skills/data literacy
2	Communication and collaboration skills
3	Research skills
4	Project management skills
5	Computer programming skills

Base: 219 US hiring managers/recruiters involved with decision making regarding recruiting new employees or creating job role requirements

Note: Showing top 5

Source: A commissioned study conducted by Forrester Consulting on behalf of Tableau, January 2021



# Data skills are valued and pay off

“To what extent do you agree with each of the following statements regarding data skills at your organization?”

■ Somewhat/Completely agree



**82%** We value data skills highly when making hiring decisions.



**82%** In general, entry-level employees with data skills are considerably more valuable than those without.



**79%** We will pay more for candidates with data skills.



**73%** Requiring data skills makes a job more attractive to candidates.

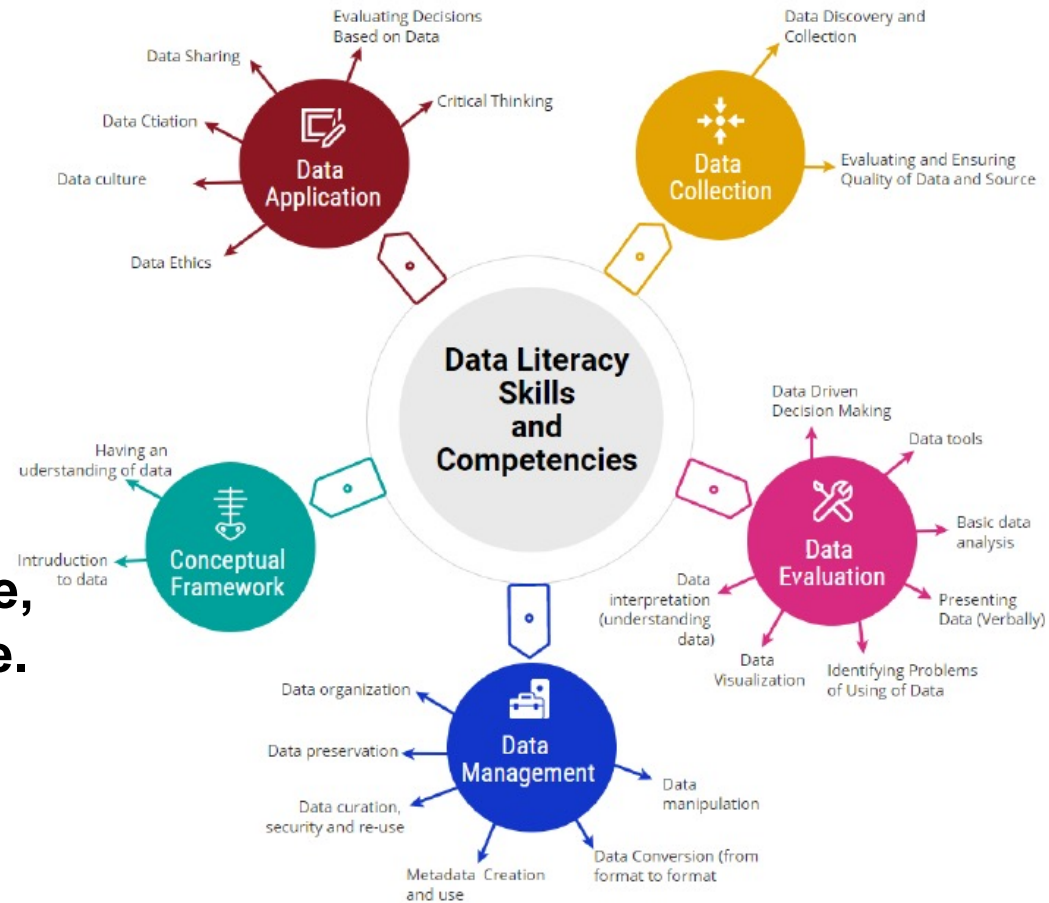
Base: 219 US hiring managers/recruiters involved with decision making regarding recruiting new employees or creating job role requirements

Source: A commissioned study conducted by Forrester Consulting on behalf of Tableau, January 2021

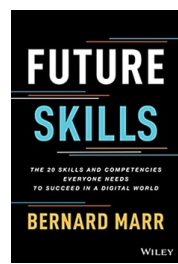
# Data literacy

The ability to read, write and communicate data in context, including an understanding of data sources and constructs, analytical methods and techniques applied — and the ability to describe the use case, application and resulting value.

(Gartner, 2019)



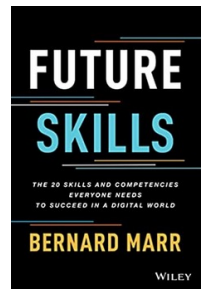
# Futurist Bernard Marr on future skills



*“But far from detaching us from our humanity, I believe this wave of new technologies **will make work more human**, not less. What can be automated will be automated, **leaving humans to do the work that we’re ultimately better suited to—tasks that rely on distinctly human skills like complex decision-making, creativity, empathy and emotional intelligence, critical thinking, and communication**. These are the sorts of skills where humans outperform even the most intelligent machine. This is where we excel. And it’s where the future of work lies. In more human, more fulfilling work.”* (p. 2)

*“In a world that’s constantly changing, digital skills will quickly grow stale and need refreshing. **Continual learning will become the norm**. And in this ever-shifting landscape, a **positive mindset**—by which I mean excitement about the possibilities that new technologies bring, and a **willingness to learn** about them—is what will separate the successful from the not-so-successful.”* (p. 5)

# Futurist Bernard Marr on future skills



*“Everyone should be asking themselves two key questions:*

- 1. **What does the digital revolution mean for my workplace and my job** (or my future career prospects, for those still in education)?  
For many, it will mean that easily repeatable tasks become increasingly automated, as the division of labor between humans and machines shifts.*
- 2. **How will I equip myself with the skills needed to work alongside technology?** “*

*There’s much work to do. According to one survey, 75 percent of employees think their **job will become more digitally demanding within five years**, yet a fifth of businesses have no digital skills strategy in place<sup>1</sup>. People are at risk of falling behind, in other words, due to a **lack of digital literacy.**” (p. 7-8)*



# ICT utilization in Finland – Macroeconomic trends, Government policies and companies' IT use statistics

# Prof. Pohjola's 2014 report to Technology Industries in Finland

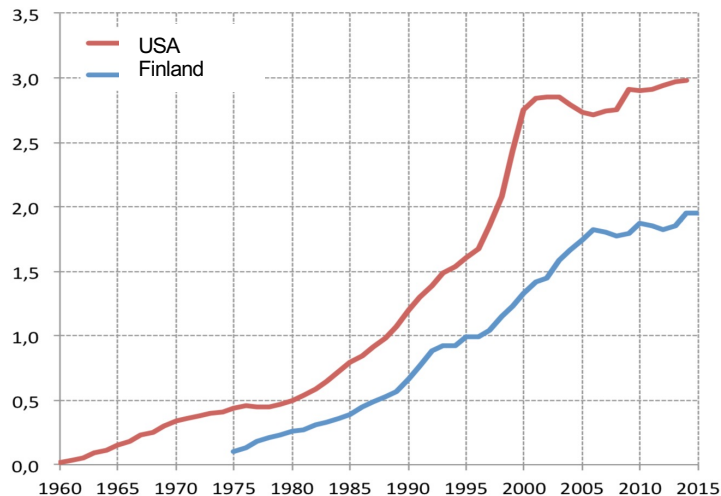
*“Regarding the utilization of ICT, we are at the same phase as **how electricity was used in the 1930's**. The greatest productivity gains from electricity accrued from the **new ways of operating** that it enabled.” (cf. digital transformation)*

*“**Why ICT would revolutionize the world only now?** Because digital technology is only now **so cheap that everybody can afford it**. The computing power of a tablet is the same as that of a 10-15 year-old supercomputer, which cost millions.”*

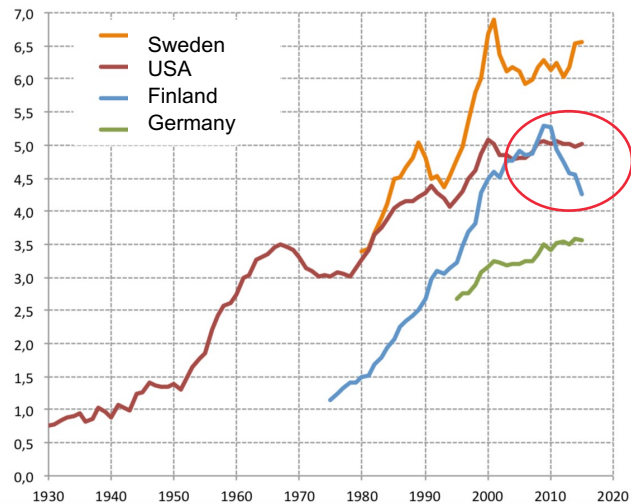
*“It is though a problem that **only a handful of firms' executives understand the impact and opportunities of digitalization in combining industrial manufacturing and service production.**” \**

\* This is gradually improving, see e.g. SITRA's Situation room: <https://www.sitra.fi/tapahtumat/datatalouden-tilannehuone/> or the Dimecc Ecosystem <https://www.dimecc.com>, or the recent **Twin (digi-green) transition** by EU <https://circinnovation.com/articles/data4circularity-towards-a-data-driven-circular-economy-in-finland-16-february-2022/>

# Prof. Pohjola on ICT, productivity and economic growth in 2019



The share of **software and databases** from private sector net capital (excluding apartments,%)



**“It appears the digi leap has not been done in Finland yet – and it certainly does not happen by decreasing the ICT and R&D investments!”**

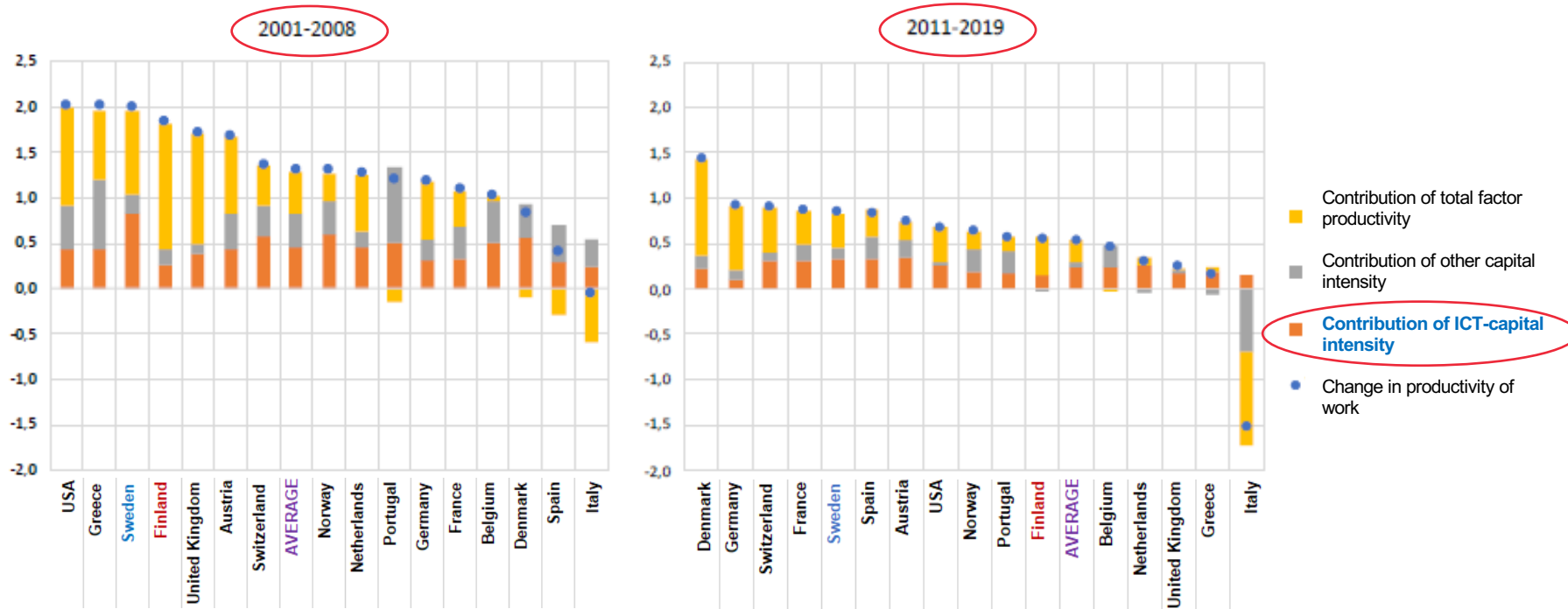
**Investments to intellectual property (software and databases, R&D - in relation to GDP)**

Source: <https://ilf.fi/wp-content/uploads/sites/11/2019/12/ILF-IT-tuottavuus-iltapuhde-190131-4-Matti-Pohjola.pdf>

See also Pohjola (2020): Teknologia, investoinnit, rakennemuutos ja tuottavuus – Suomi kv vertailussa: [https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/162051/TEM\\_2020\\_05.pdf](https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/162051/TEM_2020_05.pdf)

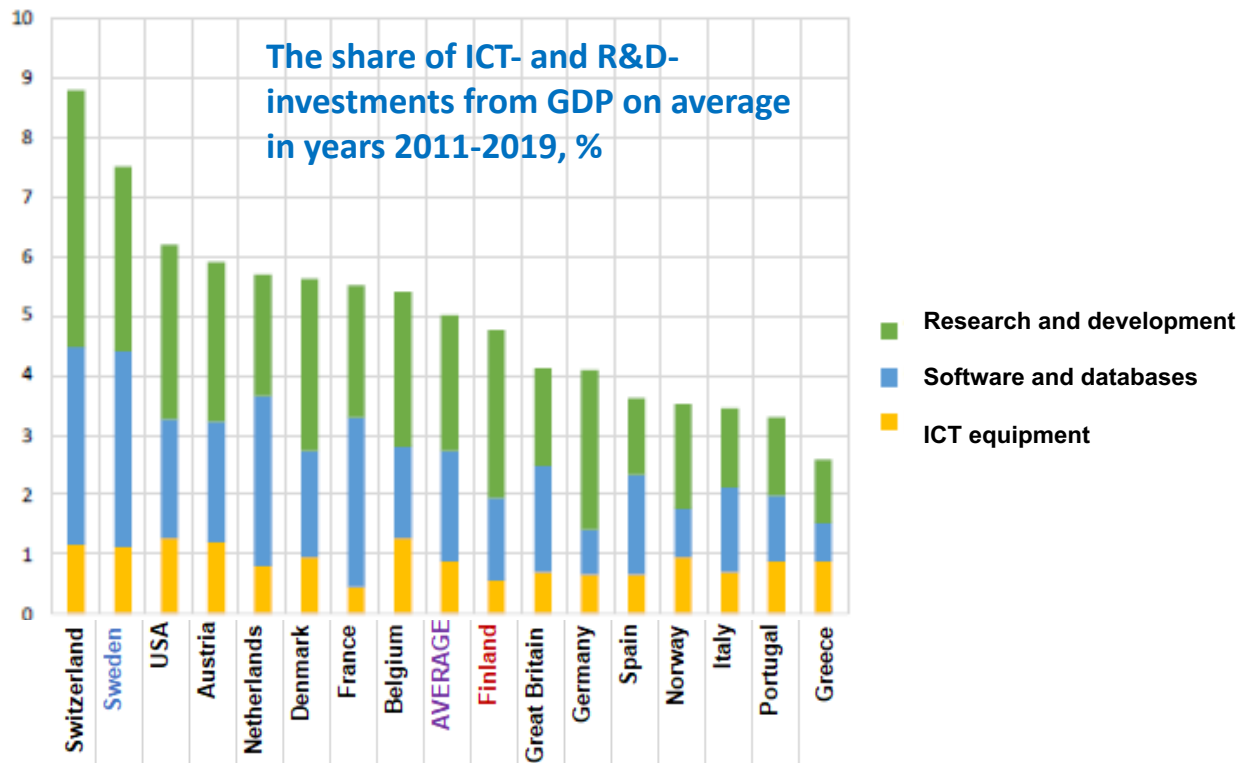
# Prof. Pohjola on productivity, structural change and economic growth in 2021

## Average annual change in the productivity of work (%), and contributions of sources to it (%-points)



ICT capital has increased the productivity of work on average more than **the other capital together**.  
 In Sweden, ICT capital's contribution has been 2-fold compared to Finland and Germany!

# Prof. Pohjola on productivity, structural change and economic growth in 2021

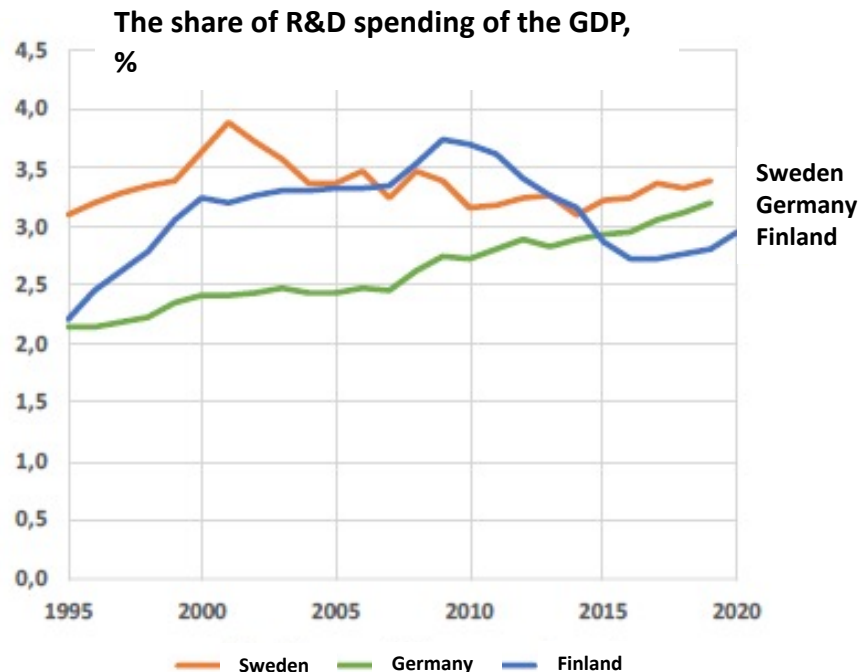


**Finland's ICT investments' share of all investments is almost half compared to that of Sweden, and even below the average of 16 OECD countries.**

# Prof. Pohjola on productivity, structural change and economic growth in 2021

Also, the **share of R&D spending of the GDP** has fallen smaller in Finland than in Sweden and Germany.

To remedy the situation, PM Sanna Marin's Government aimed to turn the **R&D and innovation funding** to a growth path, by outlining **a road map for increasing them to 4% of GDP by 2030** and to develop Finland as the world's best innovation and experimentation environment.



Economical research gives solid grounds for the change of direction in innovation policy. **Direct R&D subsidies to companies, indirect subsidies via tax deductions, as well as facilitating the immigration of trained workforce** are effective means in the short term (ca. 5 years), while **increasing education\***, especially in the fields of science and technology, are effective in the long term.

\* **ICT degrees (including ISM) are valued with a coefficient of 1.75x by the Finnish Ministry of Education and Culture**



## Preparations on **information and technology policy** are ongoing in the Finnish Parliament's Futures committee and Tietopolitiikka.fi group.

Tietopolitiikka.fi (est. 2020) is a collaboration group, which includes information policy actors from all parliamentary parties.

Their 55 action recommendations from December 2022 present views that the group and also several stakeholders agree on. The goal is that **information and technology policy guidelines will be made during the 2023 Gov't program negotiations**, with which Finland aims to respond to the challenges and opportunities of the digital age.

**Contents of report:** Mgmt of information and technology policy, human-oriented public services, interoperability of services, digital infrastructure, enabling legislation, public procurement, innovations and digital transition, digital skills, digital security, democracy and participation in the digital era.

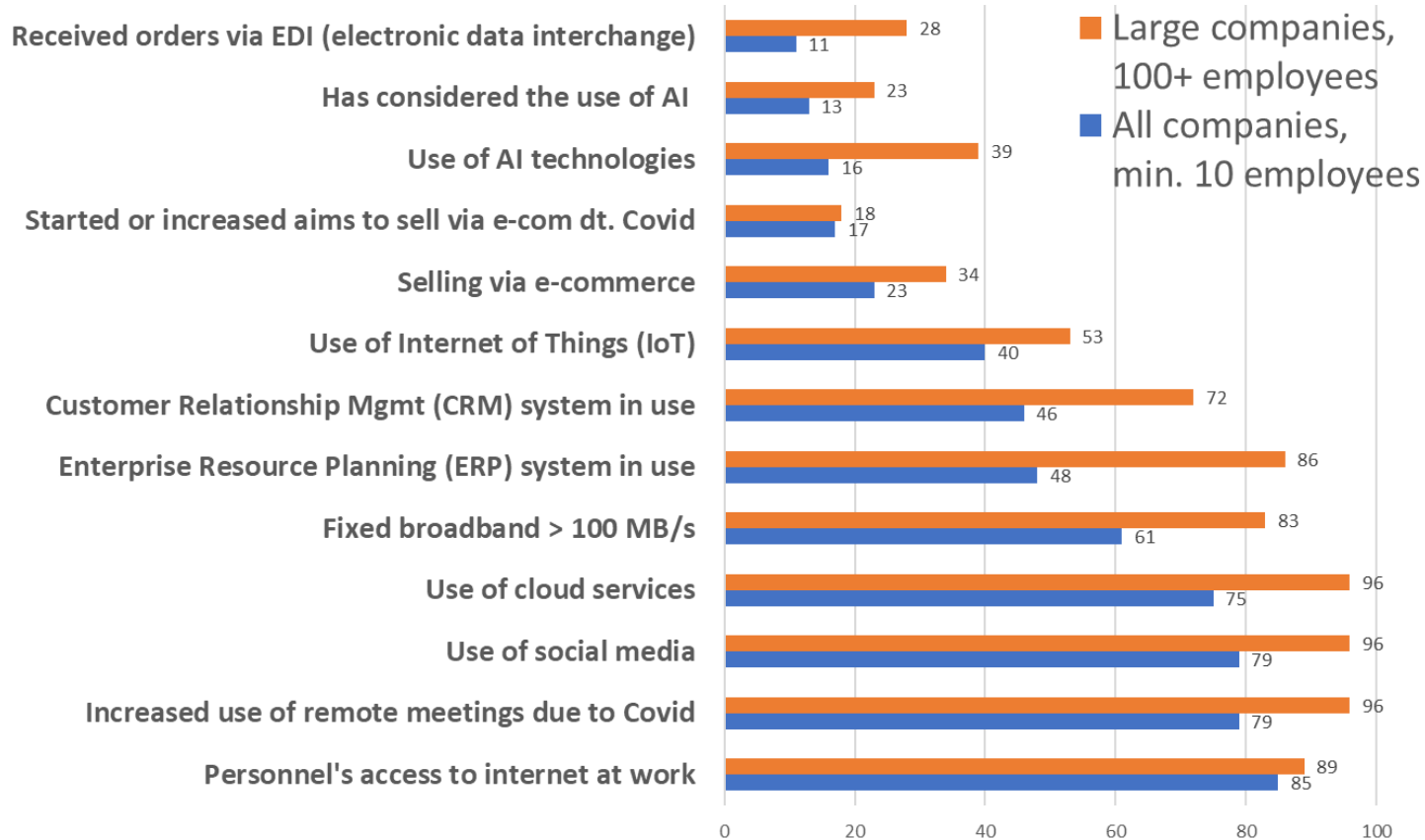
Sources: Tietopolitiikka.fi (2022): <https://tietopolitiikka.fi/wp-content/uploads/2022/12/tietopolitiikka.fi-A4-netti.pdf>  
Eduskunnan tulevaisuusvaliokunta (2023): Cross-administrative management of information and technology policy: <https://www.eduskunta.fi/FI/naineduskuntatoimii/julkaisut/Documents/TUVJ-5-22.pdf>

## Tieto- ja teknologiapolitiikka – 55 suositeltua toimenpidettä

Parlamentaarinen tietopolitiikan  
yhteistyöryhmä 12/2022

1. Tieto- ja teknologiapolitiikan johtaminen
2. Ihmislähtöiset julkiset palvelut
3. Yhteentoimivuus
4. Digitaalinen infrastruktuuri
5. Mahdollistava lainsäädäntö
6. Julkiset hankinnat
7. Innovaatiot ja digitaalinen siirtymä
8. Digitaalinen osaaminen
9. Digitaalinen turvallisuus
10. Demokratia ja osallisuus digiaikakaudella

# Use of ICT in Finnish companies (min. 10 persons) in 2021, % of all companies (Statistics Finland)

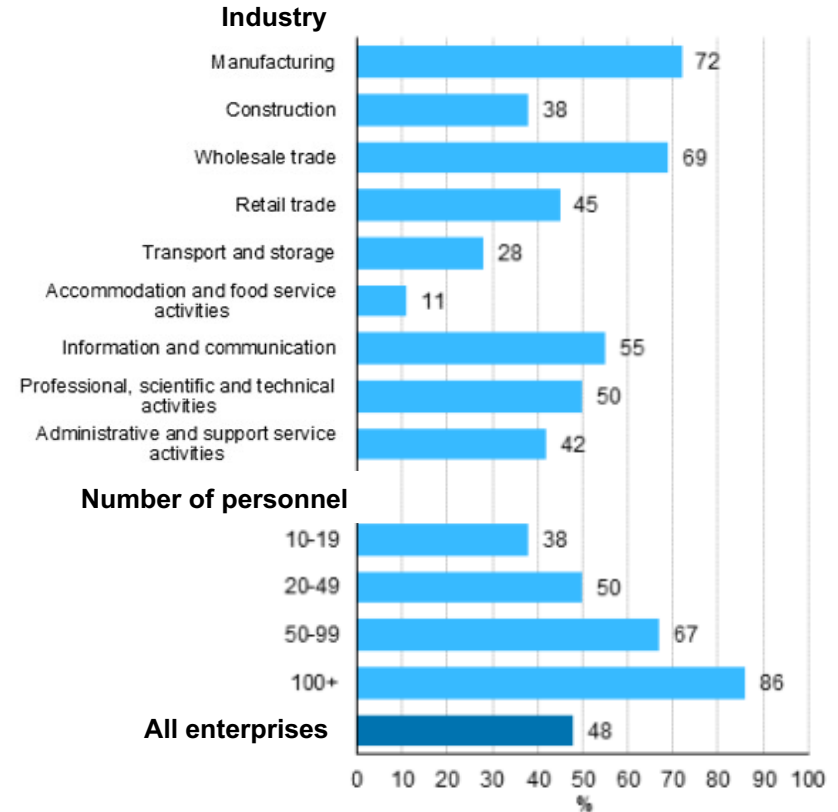
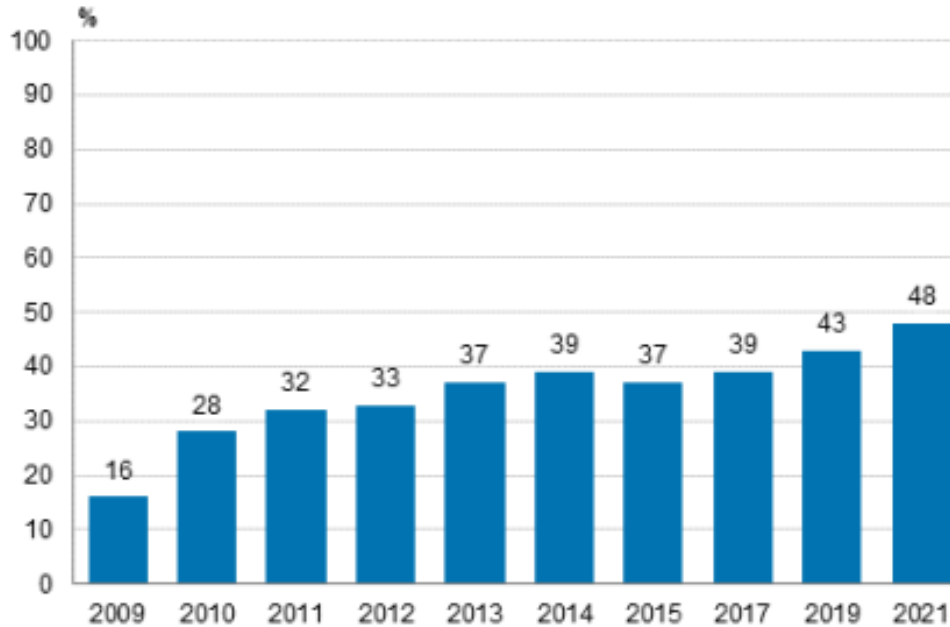


**Major potential for improvement!**

In Spring 2022: Use of cloud services: **81 %**

Use of social media: **81 %** of companies

# Use of ERP systems in Finnish companies (min. 10 persons), % of all companies

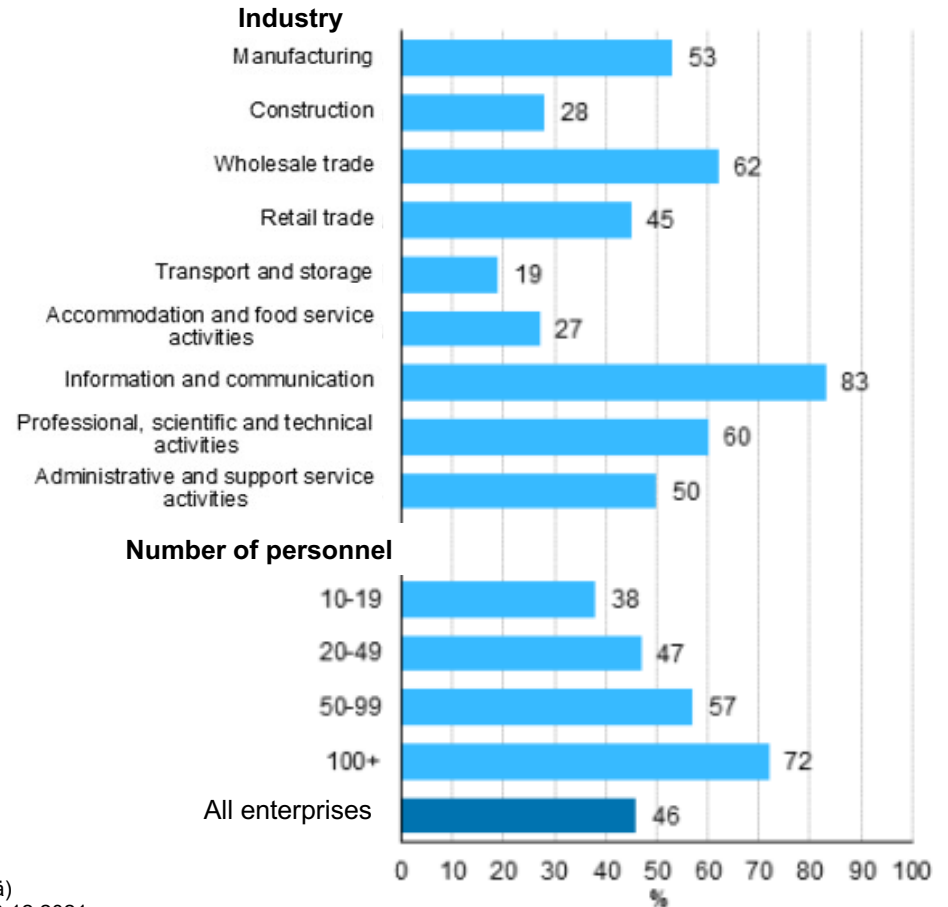


ERP = Enterprise Resource Planning system (toiminnanohjausjärjestelmä)

Source: [https://www.stat.fi/til/icte/2021/icte\\_2021\\_2021-12-03\\_tie\\_001\\_fi.html](https://www.stat.fi/til/icte/2021/icte_2021_2021-12-03_tie_001_fi.html)

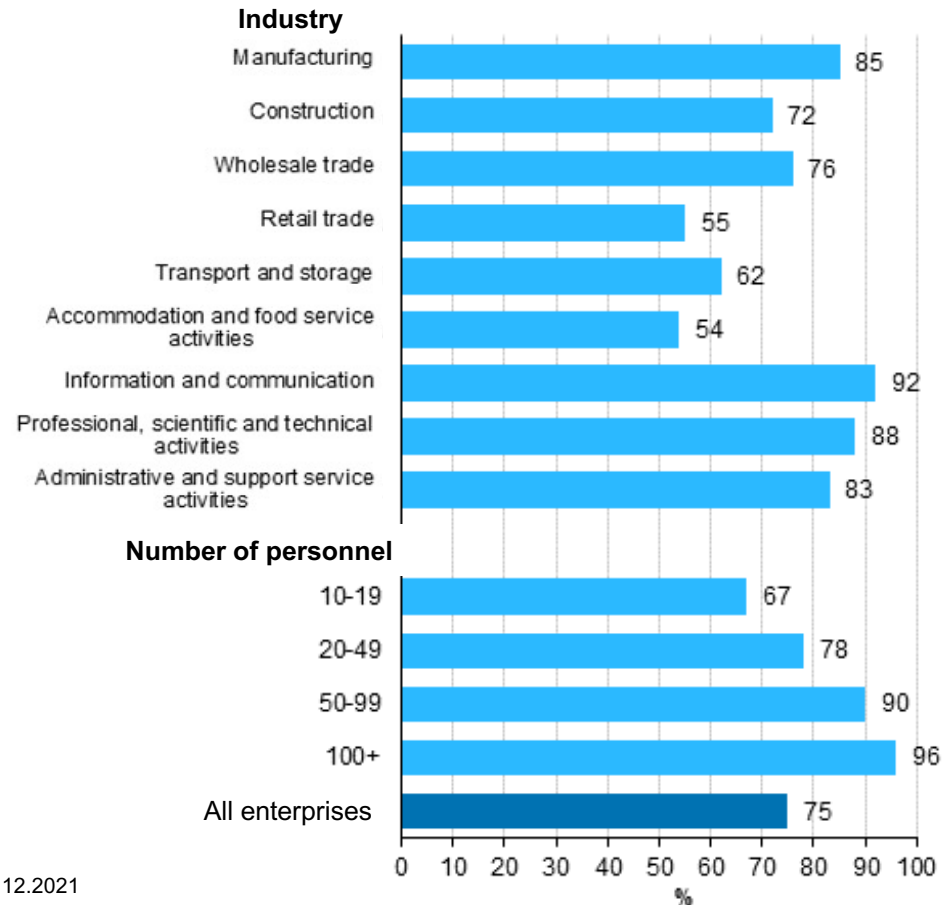
# Use of CRM systems in Finnish companies

In enterprises, min. 10 persons

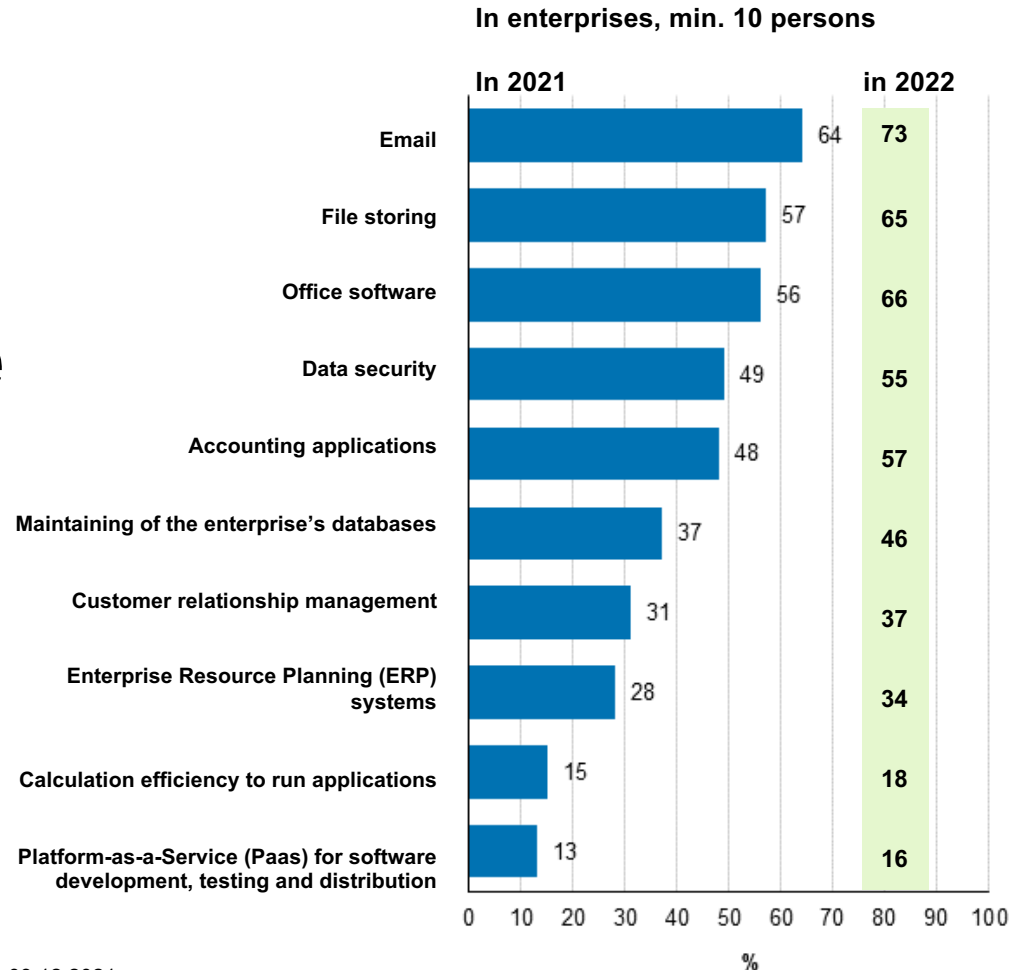


# Use of cloud services in Finnish companies

In enterprises, min. 10 persons



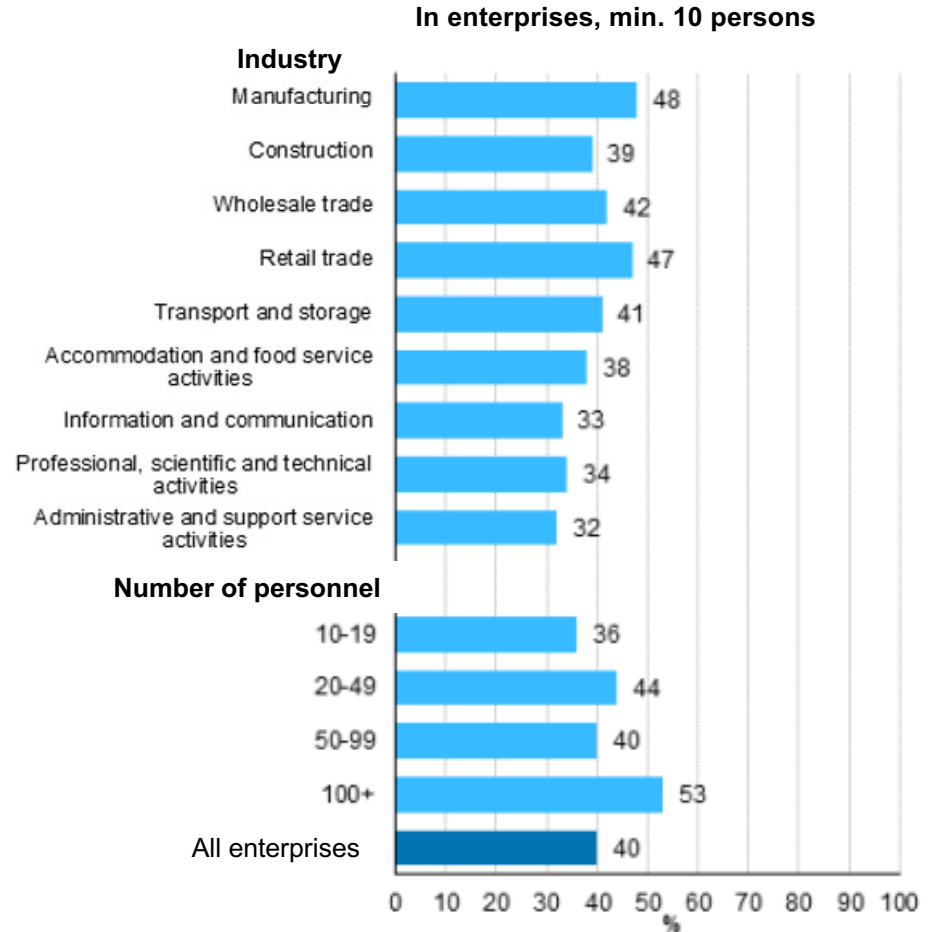
# Cloud services are used most for email, office software and file storing





# Use of IoT in Finnish companies

IoT is most commonly used for **monitoring the safety of business premises** (32%), next in **logistics** (12%), **maintenance** (10%), **energy consumption management** (10%), **manufacturing processes** (8%), **customer service** (4%) and in other purposes (7%).

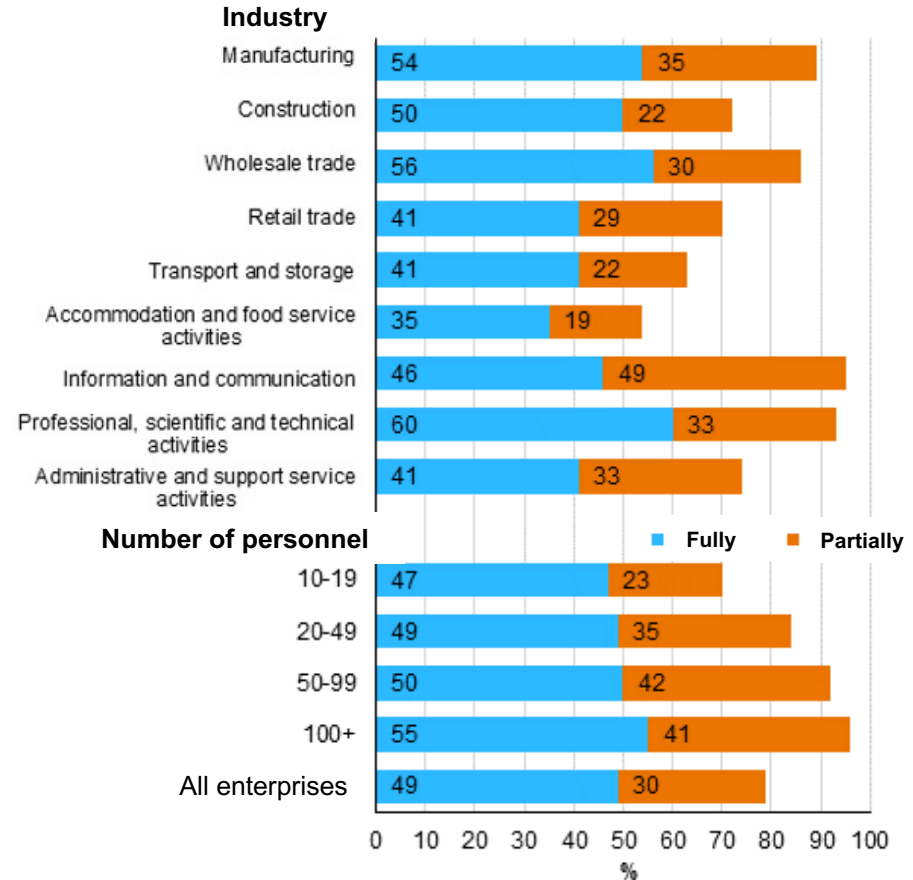


# Virtual meetings

The first Covid year 2020 increased the use of virtual meetings in 79% of the enterprises (either fully due to Covid in 49%, or partially due to Covid, in 30% of all enterprises).

Largest increases were in **Information and communication industry** (95%) and in **large companies** (96%).

Companies that increased **virtual meetings** due to Covid, fully or partially (enterprises, min. 10 persons)



# The use of social media

The amount of enterprises using social media has **grown steadily from 38% (2013) to 79% in 8 years.**

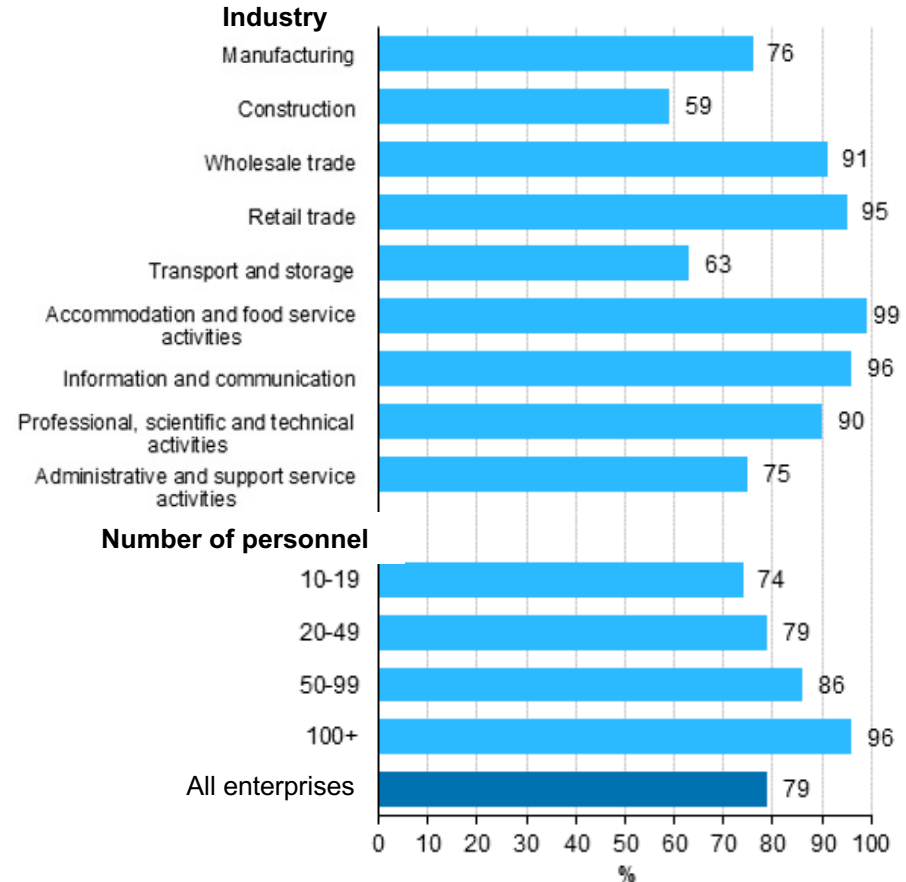
Most used services were **community services** such as Facebook, LinkedIn or Yammer (76% of companies used them).

50% of the enterprises used a service for **sharing multimedia** (such as Instagram, YouTube, SlideShare, Pinterest), 21% used **company blogs or microblogs** (Twitter), and **wiki-based sharing tools** were used by 6%.

Source: [https://tilastokeskus.fi/til/ict/2021/ict\\_2021\\_2021-12-03\\_tie\\_001\\_en.html](https://tilastokeskus.fi/til/ict/2021/ict_2021_2021-12-03_tie_001_en.html)  
03.12.2021

See more detailed stats on social media use from the annual CMAD.fi presentations <https://cmad.fi/ohjelma>

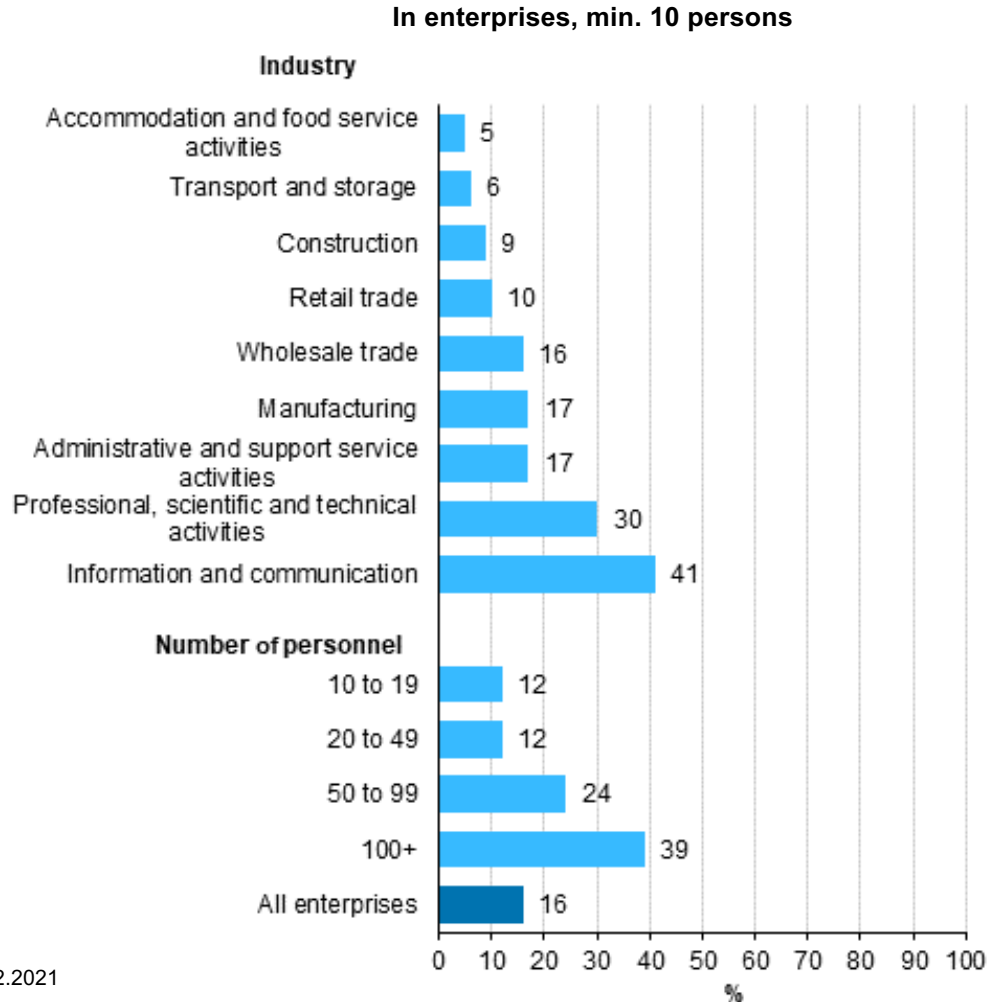
(enterprises > 10 persons)



# Use of AI in Finnish companies in 2021

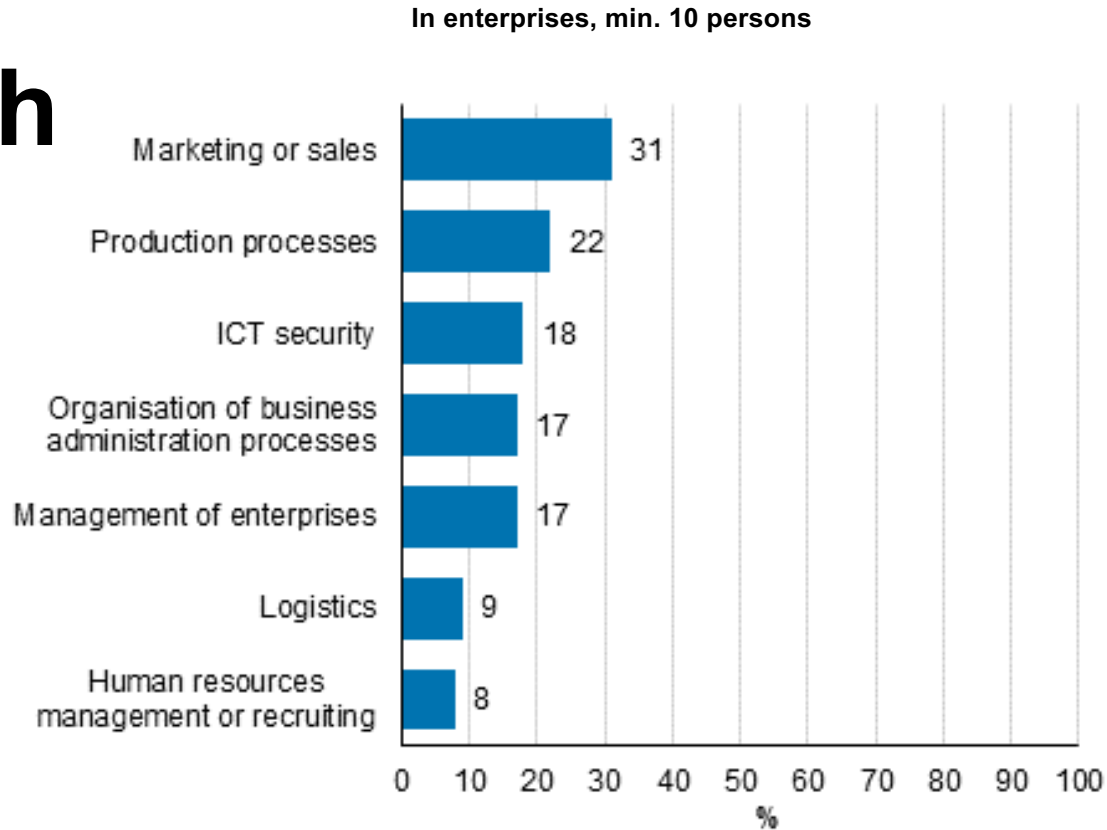
16% of all Finnish enterprises use AI technologies, while 39% of large enterprises use it already.

AI is most commonly used in the industries of information and communication (41%) and professional, scientific and technical activities (30%).



# Use purposes of AI in Finnish companies in 2021

AI is most commonly used for marketing or sales (31%), in production process (22%) or in data security (18%).

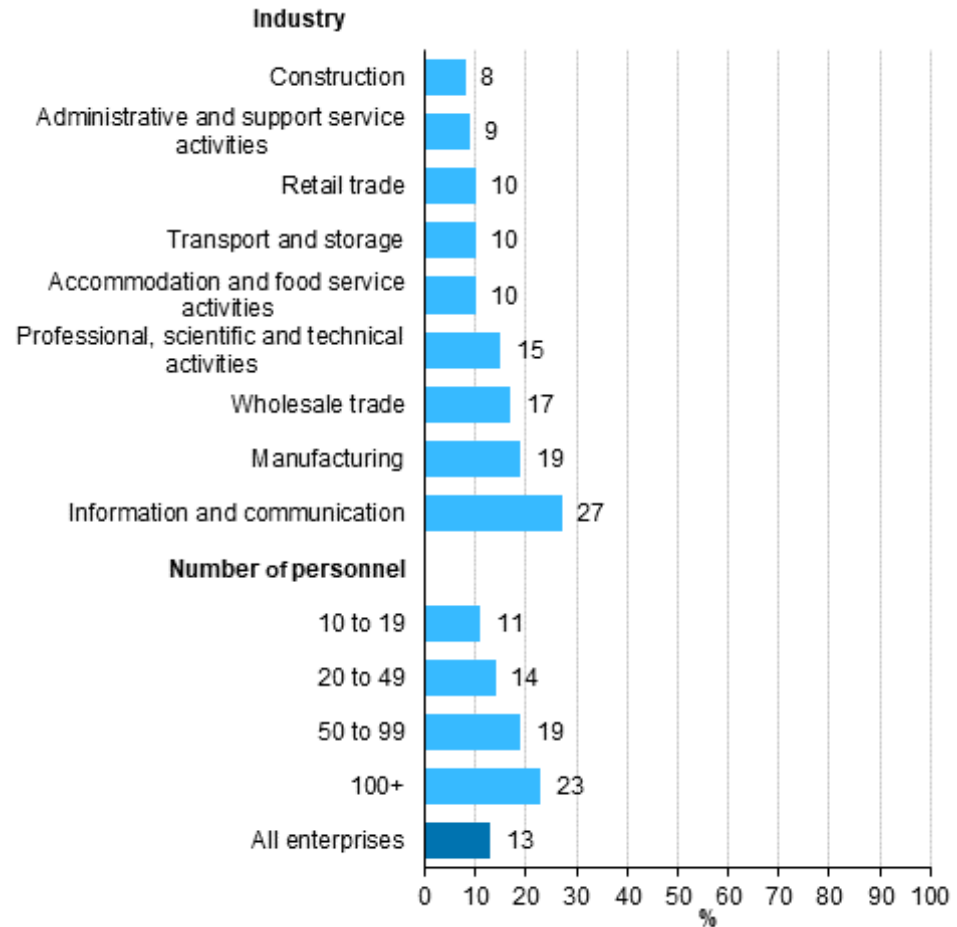


# Considered adopting AI in Finnish companies

13% of all enterprises and 23% of large enterprises have considered *adopting* AI technologies.

Information and communication (27%), Manufacturing (19%) and Wholesale trade (17%) have the highest intents.

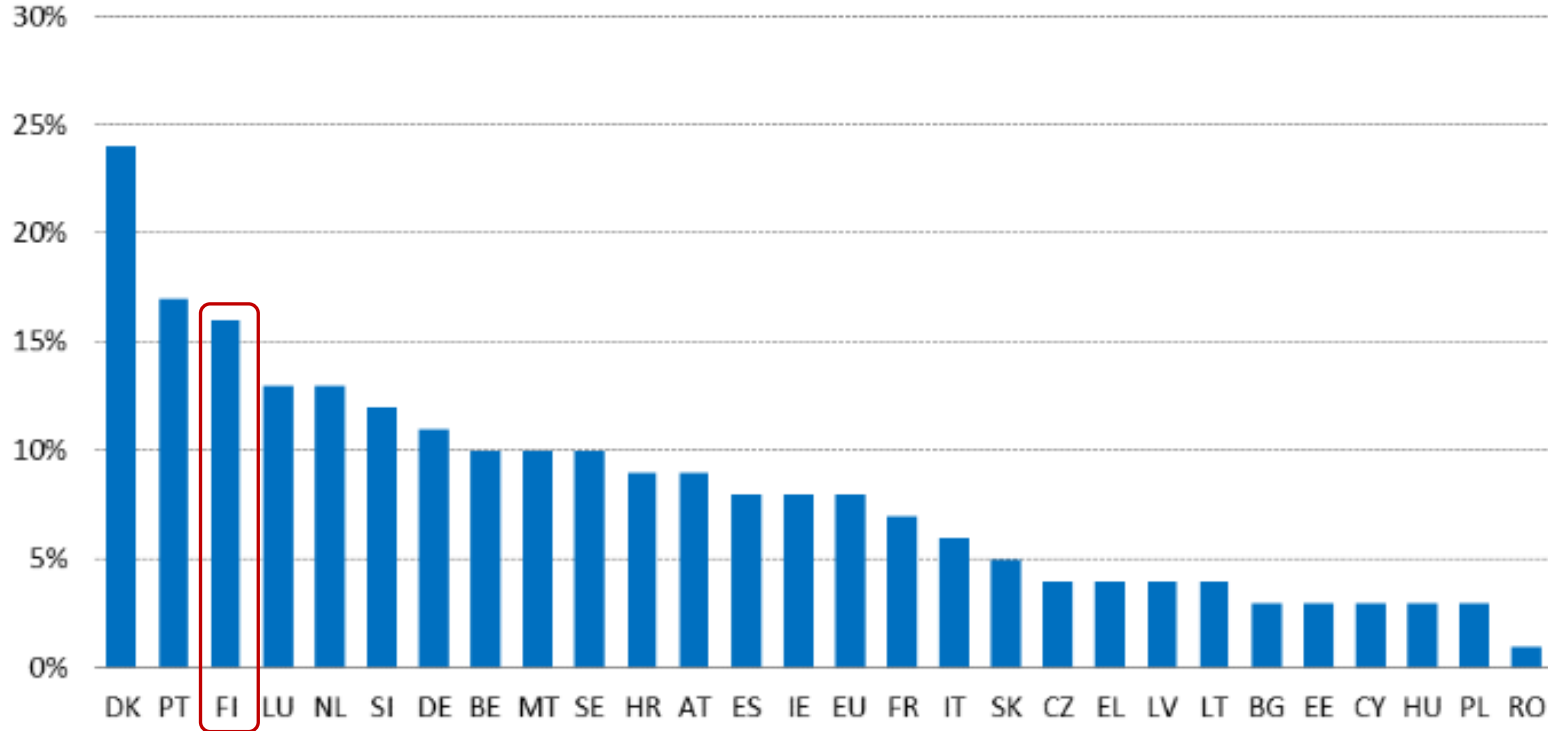
In enterprises, min. 10 persons





# Comparison to other EU countries – AI tech used in EU countries in 2021

Figure 53 Enterprises using an AI technology (% of enterprises), 2021



Source: Eurostat, European Union survey on ICT usage and e-commerce in enterprises.

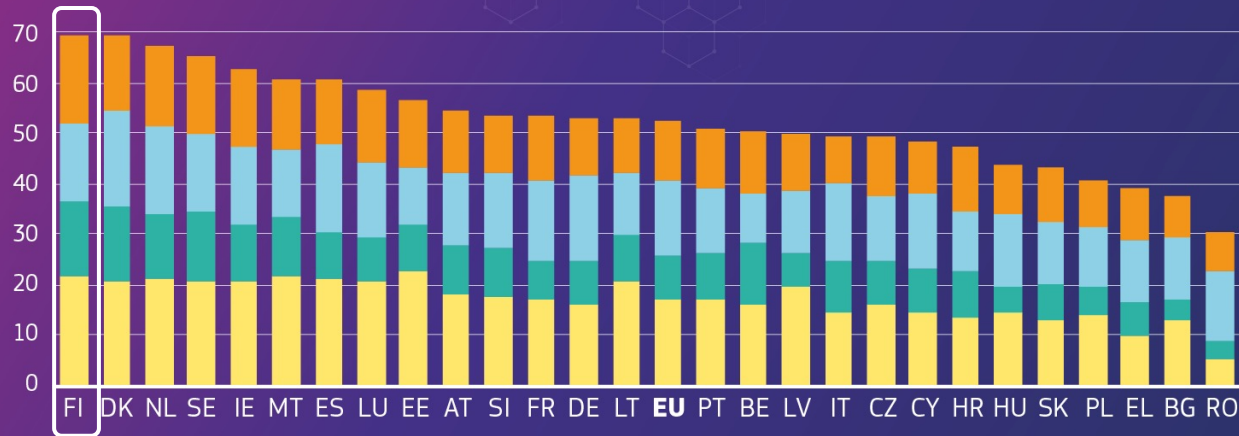
# Digital indexes and barometers

# Finland 1<sup>st</sup> in EU's Digital Economy and Society Index DESI 2022



## DESI 2022

Digital Economy and Society Index



HUMAN  
CAPITAL



CONNECTIVITY



INTEGRATION  
OF DIGITAL  
TECHNOLOGY

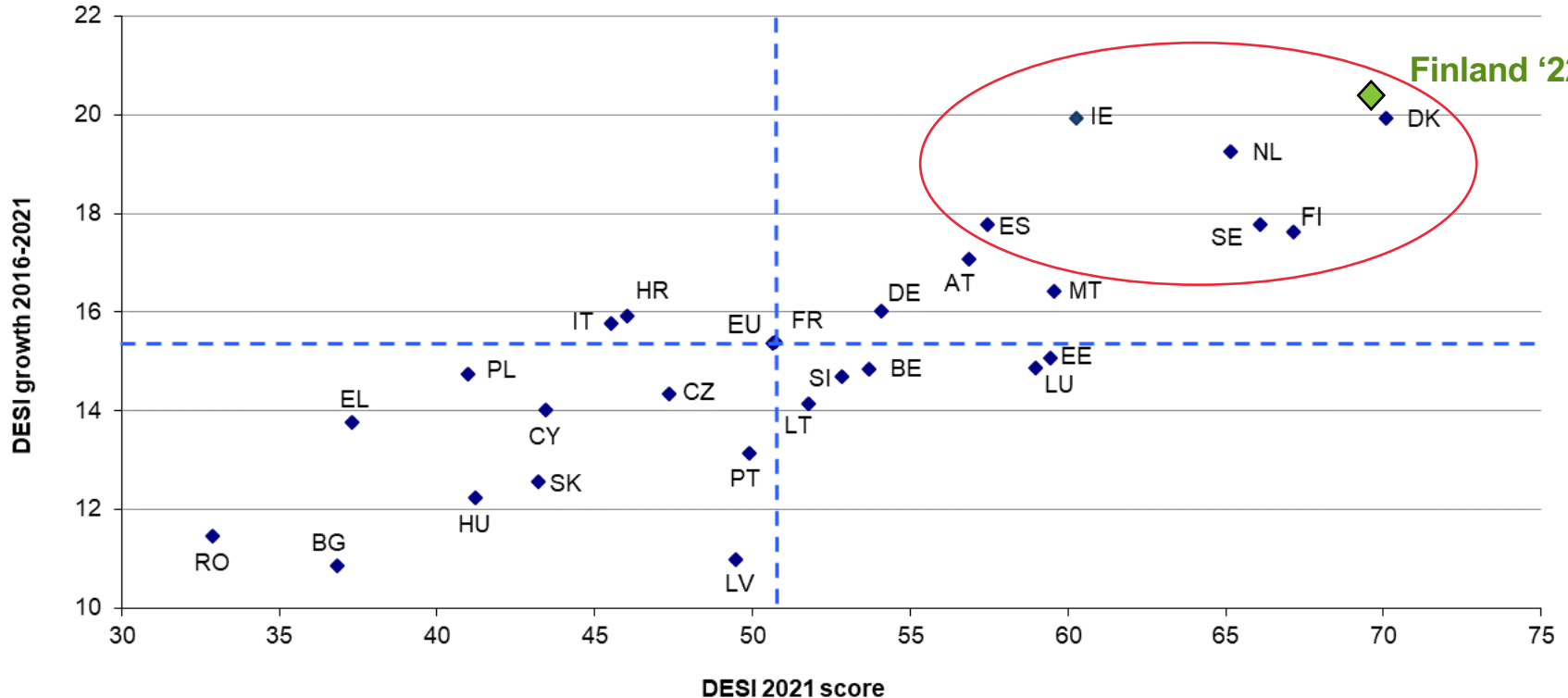


DIGITAL PUBLIC  
SERVICES

#DESIEU #DigitalEU

# DESI Progression from 2016 vs. score in 2021

The most significant progression was noted in Ireland and Denmark, followed by the Netherlands, Spain, Sweden & Finland. These countries also perform well above the EU DESI average based on their scores in DESI 2021.



Source: <https://ec.europa.eu/digital-single-market/en/desi>, 2021.

In 2022, Finland's score is 69.6 (was 67.1 in 2021) and Denmark's 69.3 (was 70.1 in 2021), while the EU average is 52.3 in 2022 (was 50.7 in 2021).

# Overview of 4 DESI dimensions 2022

DESI Dimension	Indicators related to the Path to the Digital Decade proposal
1 Human capital	At least basic digital skills ICT specialists Female ICT specialists
2 Connectivity	Gigabit for everyone (Fixed very high capacity network coverage) 5G coverage
3 Integration of digital technology	SMEs with a basic level of digital intensity AI Cloud Big data
4 Digital public services	Digital public services for citizens Digital public services for businesses

Source: European Commission

# Details on DESI dimensions 1(2)

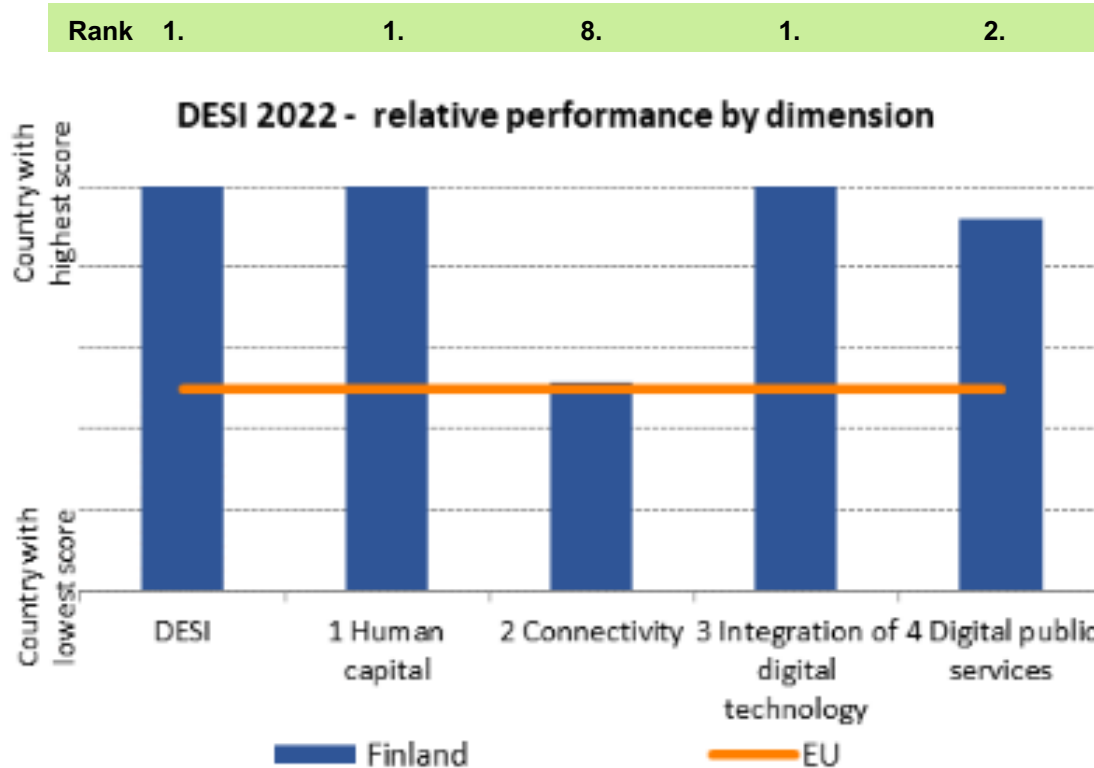
Dimension	Sub-dimension	Indicator
1 Human capital	1a Internet user skills	1a1 At least basic digital skills
		1a2 Above basic digital skills
		1a3 At least basic digital content creation skills
	1b Advanced skills and development	1b1 ICT specialists
		1b2 Female ICT specialists
		1b3 Enterprises providing ICT training
		1b4 ICT graduates
	2 Connectivity	2a Fixed broadband take-up
2a2 At least 100 Mbps fixed broadband take-up		
2a3 At least 1 Gbps take-up		
2b Fixed broadband coverage		2b1 Fast broadband (NGA) coverage
		2b2 Fixed Very High Capacity Network (VHCN) coverage
2c Mobile broadband		2c1 5G spectrum
		2c2 5G coverage
		2c3 Mobile broadband take-up
2d Broadband prices		2d1 Broadband price index



# Details on DESI dimensions 2(2)

3 Integration of digital technology	3a Digital intensity	3a1 SMEs with at least a basic level of digital intensity
	3b Digital technologies for businesses	3b1 Electronic information sharing
		3b2 Social media
		3b3 Big data
		3b4 Cloud
		3b5 AI
		3b6 ICT for environmental sustainability
		3b7 e-Invoices
	3c e-Commerce	3c1 SMEs selling online
		3c2 e-Commerce turnover
3c3 Selling online cross-border		
4 Digital public services	4a e-Government	4a1 e-Government users
		4a2 Pre-filled forms
		4a3 Digital public services for citizens
		4a4 Digital public services for businesses
		4a5 Open data

# Finland's DESI performance by dimension in 2022



# Finland's **Human capital** indicators in DESI 2022 vs. EU average

Finland ranks **1<sup>st</sup>** in the Human capital indicators, followed by the Netherlands, Ireland and Sweden.

	DESI 2020	Finland DESI 2021	DESI 2022	EU DESI 2022
<b>1a1 At least basic digital skills</b> % individuals	NA	NA	79% 2021	54% 2021
<b>1a2 Above basic digital skills</b> % individuals	NA	NA	48% 2021	26% 2021
<b>1a3 At least basic digital content creation skills<sup>2</sup></b> % individuals	NA	NA	83% 2021	66% 2021
<b>1b1 ICT specialists</b> % individuals in employment aged 15-74	6.8% 2019	7.6% 2020	7.4% 2021	4.5% 2021
<b>1b2 Female ICT specialists</b> % ICT specialists	21% 2019	23% 2020	24% 2021	19% 2021
<b>1b3 Enterprises providing ICT training</b> % enterprises	37% 2019	38% 2020	38% 2020	20% 2020
<b>1b4 ICT graduates</b> % graduates	7.0% 2018	7.4% 2019	7.5% 2020	3.9% 2020

# Finland's **Connectivity** indicators in DESI 2022

Finland ranks **8<sup>th</sup>** in connectivity - the leaders are Denmark, the Netherlands and Spain.

	Finland			EU
	DESI 2020	DESI 2021	DESI 2022	DESI 2022
<b>2a1 Overall fixed broadband take-up</b>	<b>57%</b>	<b>57%</b>	<b>61%</b>	<b>78%</b>
% households		2020	2021	2021
<b>2a2 At least 100 Mbps fixed broadband take-up</b>	<b>23%</b>	<b>26%</b>	<b>29%</b>	<b>41%</b>
% households	2019	2020	2021	2021
<b>2a3 At least 1 Gbps take-up</b>	<b>0.90%</b>	<b>0.95%</b>	<b>1.45%</b>	<b>7.58%</b>
% households	2019	2020	2021	2021
<b>2b1 Fast broadband (NGA) coverage</b>	<b>75%</b>	<b>75%</b>	<b>75%</b>	<b>90%</b>
% households	2019	2020	2021	2021
<b>2b2 Fixed Very High Capacity Network (VHCN) coverage</b>	<b>62%</b>	<b>67%</b>	<b>68%</b>	<b>70%</b>
% households	2019	2020	2021	2021
<b>2b3 Fibre to the Premises (FTTP) coverage</b>	<b>35%</b>	<b>38%</b>	<b>40%</b>	<b>50%</b>
% households	2019	2020	2021	2021
<b>2c1 5G spectrum</b>	<b>67%</b>	<b>99%</b>	<b>99%</b>	<b>56%</b>
Assigned spectrum as a % of total harmonised 5G spectrum	04/2020	09/2021	04/2022	04/2022
<b>2c2 5G coverage<sup>3</sup></b>	<b>NA</b>	<b>12%</b>	<b>72%</b>	<b>66%</b>
% populated areas		2020	2021	2021
<b>2c3 Mobile broadband take-up</b>	<b>92%</b>	<b>92%</b>	<b>96%</b>	<b>87%</b>
% individuals	2018	2018	2021	2021
<b>2d1 Broadband price index</b>	<b>75</b>	<b>74</b>	<b>79</b>	<b>73</b>
Score (0-100)	2019	2020	2021	2021

Many sparsely populated areas still do not have any VHCN (very high capacity network) availability or are served by only one VHCN. Although Finland's rate of fixed VHCN coverage is close to the EU average (68% vs. 70%), it **scores low (12.4%) in rural areas.**

# Finland's Integration of digital technology indicators in DESI 2022

Finland ranks 1<sup>st</sup> in the Integration of digital technology, followed by Denmark, Sweden and the NL.

	Finland			EU
	DESI 2020	DESI 2021	DESI 2022	DESI 2022
<b>3a1 SMEs with at least a basic level of digital intensity</b>	NA	NA	82%	55%
% SMEs			2021	2021
<b>3b1 Electronic information sharing</b>	43%	43%	48%	38%
% enterprises	2019	2019	2021	2021
<b>3b2 Social media</b>	44%	44%	51%	29%
% enterprises	2019	2019	2021	2021
<b>3b3 Big data</b>	19%	22%	22%	14%
% enterprises	2018	2020	2020	2020
<b>3b4 Cloud</b>	NA	NA	66%	34%
% enterprises			2021	2021
<b>3b5 AI</b>	NA	NA	16%	8%
% enterprises			2021	2021
<b>3b6 ICT for environmental sustainability</b>	NA	77%	77%	66%
% enterprises having medium/high intensity of green action through ICT		2021	2021	2021
<b>3b7 e-Invoices</b>	79%	83%	83%	32%
% enterprises	2018	2020	2020	2020
<b>3c1 SMEs selling online</b>	22%	18%	23%	18%
% SMEs	2019	2020	2021	2021
<b>3c2 e-Commerce turnover</b>	NA	NA	NA	12%
% SME turnover	2019	2020	2021	2021
<b>3c3 Selling online cross-border</b>	9%	9%	8%	9%
% SMEs	2019	2019	2021	2021

Source: <https://ec.europa.eu/digital-single-market/en/desi> , 2022.

# Finland's Digital public services indicators in DESI 2021

Finland ranks 2<sup>nd</sup> in the digital public services, after Estonia, followed by Malta and the Netherlands.

	Finland			EU
	DESI 2020	DESI 2021	DESI 2022	DESI 2022
<b>4a1 e-Government users</b>	<b>91%</b>	<b>91%</b>	<b>92%</b>	<b>65%</b>
% internet users	2019	2020	2021	2021
<b>4a2 Pre-filled forms</b>	<b>NA</b>	<b>NA</b>	<b>90</b>	<b>64</b>
Score (0 to 100)			2021	2021
<b>4a3 Digital public services for citizens</b>	<b>NA</b>	<b>NA</b>	<b>90</b>	<b>75</b>
Score (0 to 100)			2021	2021
<b>4a4 Digital public services for businesses</b>	<b>NA</b>	<b>NA</b>	<b>93</b>	<b>82</b>
Score (0 to 100)			2021	2021
<b>4a5 Open data</b>	<b>NA</b>	<b>NA</b>	<b>86%</b>	<b>81%</b>
% maximum score			2021	2021

*“Finland scores 87.4, well above the EU average (67.3). Online interaction between government authorities and the public is approaching the maximum level with 92% of Finnish internet users using e-government services. Finland performs very well on pre-filled forms (90%), and on providing online services for both individuals and businesses. Finland scores above the EU average on open data, too.”*

# Aalto students have contributed also!

ISM has organized the **Public service hackathon** aka Digitalism Challenge course 5 times with Accenture and Fjord.

The course was about solving real challenges related to digitalization at the public sector.

Last time, the client was **Nordic Smart Government** project (PRH, State Treasury and Tax). Also 3 SME's from the food chain were invited as case companies (Fat Lizard brewery, Tapola farm, Organic Association)

Ca. 100 students from **5 Aalto Schools** in 20 teams.

Previous clients: HUS, Population Register Centre, Finnish Customs, Finnish Defence Forces, National Police Board, Finnish Border Guard, Ministry of the Interior, Government Shared Services Centre for Finance and HR, the Apotti Project, City of Helsinki's Disability Services, Eteva, Helsinki's Family Centres and Nordea with Tax Admin.

<https://www.whatif.aalto.fi/pshack>

<https://www.aalto.fi/en/news/solutions-innovated-during-the-digitalism-challenge-course-are-put-into-practice>



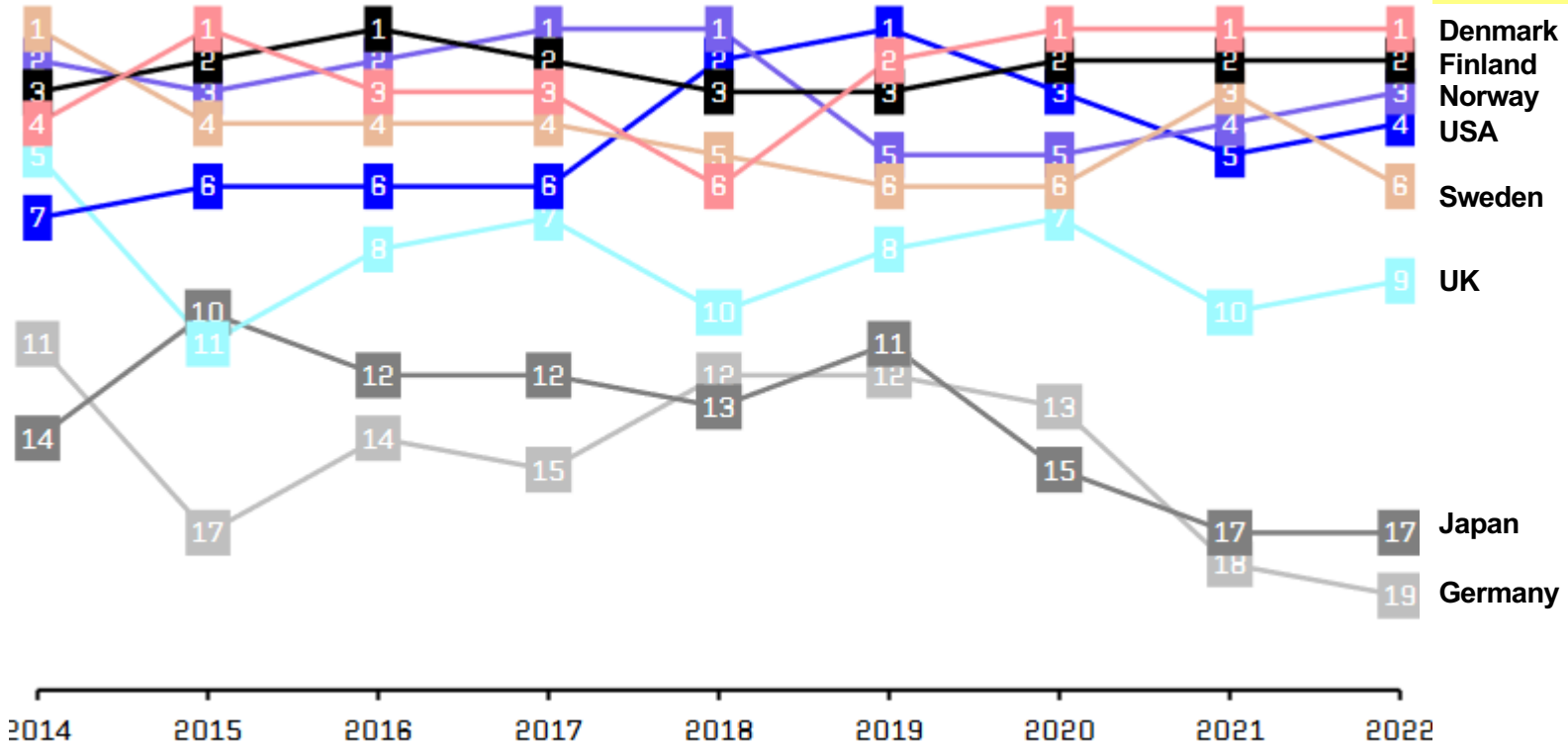






# Digi barometer 2022, **Finland** is 2<sup>nd</sup> overall

Finland has fared steadily throughout 2014-2022



The barometer measures the **utilization of digital capabilities** in 22 countries with a composite index of 36 variables. The measurement is done on **three levels** (capabilities, utilization, and implications) and across **three sectors** (company, civic, and public).

Source: <https://www.etla.fi/en/publications/other-publications/digibarometri-2022-digivihrea-siirtyma/> Etlatiety Oy

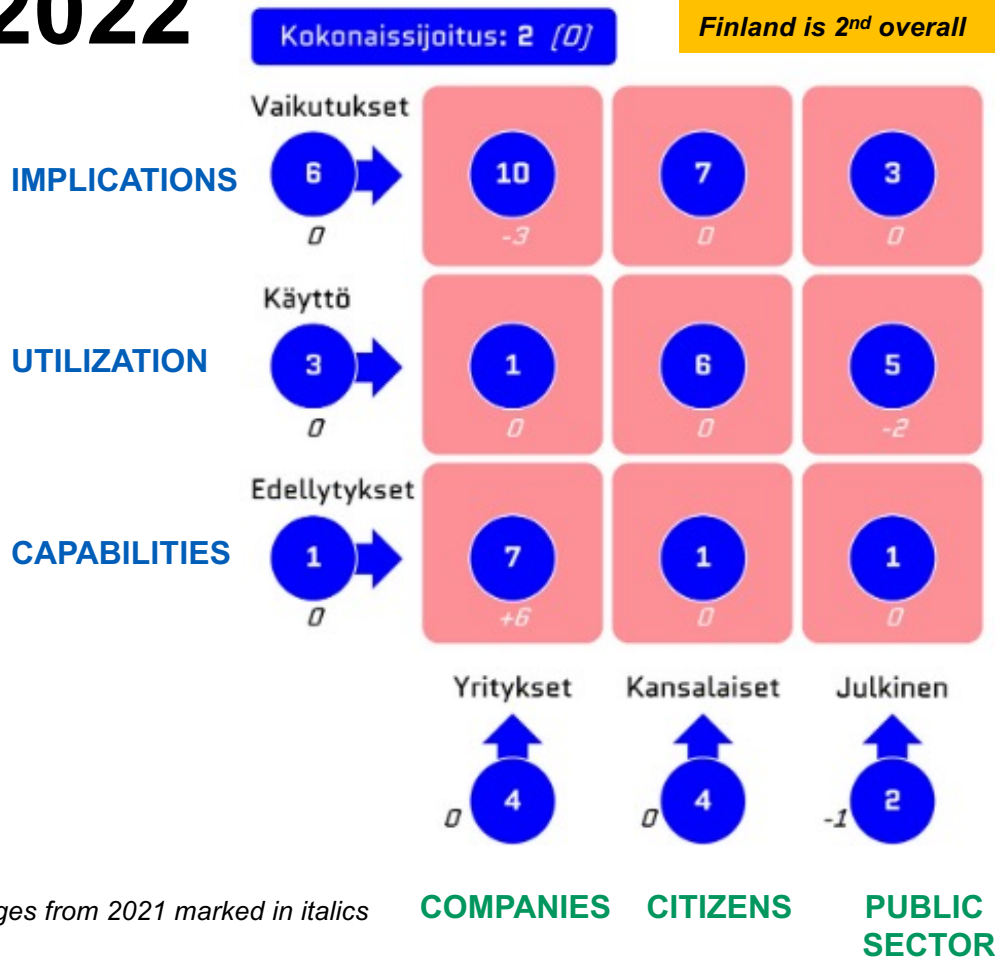
# Digi barometer 2022

**DIGIBAROMETER** measures the utilization of digitalization.

It is measured on **three levels** (capabilities to utilize digitalization, actual utilization, and implications) and in **three sectors** (companies, citizens and public sector).

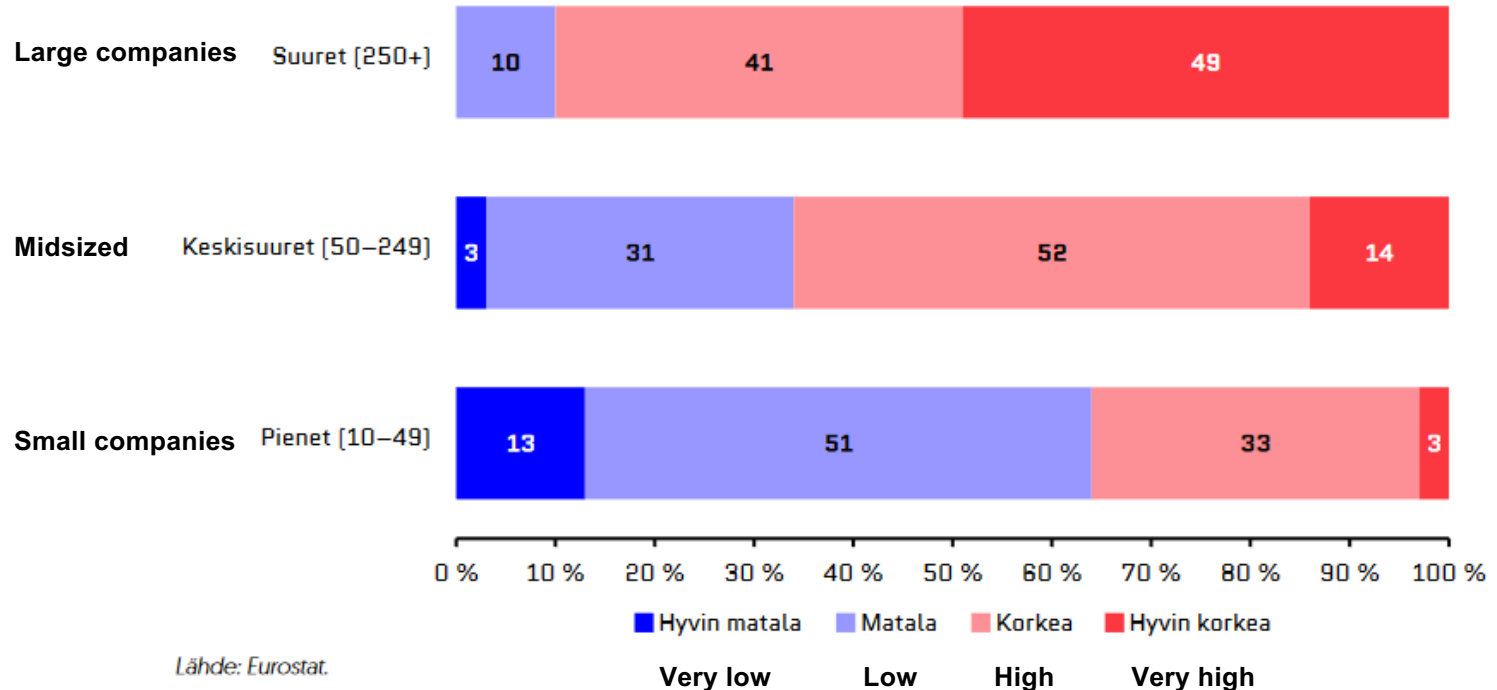
Finland fares very well in the capabilities (1<sup>st</sup>) and in actual utilization (3<sup>rd</sup>). **In the implications Finland fares weakest** (6<sup>th</sup>).

In the sectors, Finland is 2<sup>nd</sup> in the public sector and 4<sup>th</sup> both in companies and civic sector.



*Changes from 2021 marked in italics*

# Digital intensity levels in Finnish industry by company size in 2021, SMEs fare much worse compared to large companies > lots of potential for improvement!



# Previous results compared to Pohjola's studies on ICT investments

Finland fares much worse in Pohjola's *ICT investment comparisons* than in DESI and other similar indexes regarding the digital economy and society. In 2022, the Desi Index ranks Finland 1<sup>nd</sup> and Sweden 4<sup>th</sup> of EU countries.

**WHY the discrepancy??**

*“DESI and other similar indexes **measure the readiness and ability of citizens, businesses and other communities in utilizing and producing digital services.** They do not evaluate how ICT and digital services **increase both labour productivity and the demand for work,** and thereby accelerating economic growth.”*

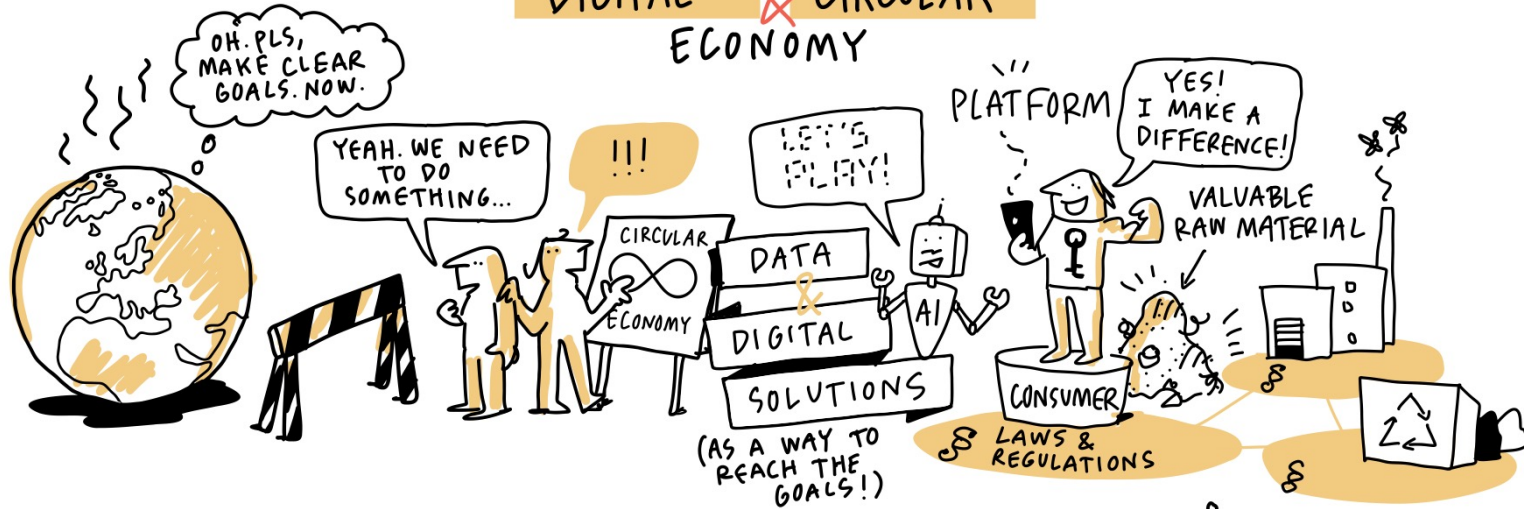
# EU-related recent initiatives

# EU's **Twin transition** (in Finnish kaksoissiirtymä or digivihreä siirtymä/kehitys)

**DATA4**  
CIRCULARITY

*Annika Hedberg*  
EU'S TWIN TRANSITION  
TOWARDS

DIGITAL & CIRCULAR  
ECONOMY



➔ TOWARDS TWIN TRANSITION  
WITH A JOINED AGENDA (?)

THE MOMENTUM IS NOW!



*Annika Hedberg*  
REDANREDAN.FI

# Finland aims to be a forerunner in circular economy

## DATA<sup>4</sup> CIRCULARITY

SARI TASA, TEM

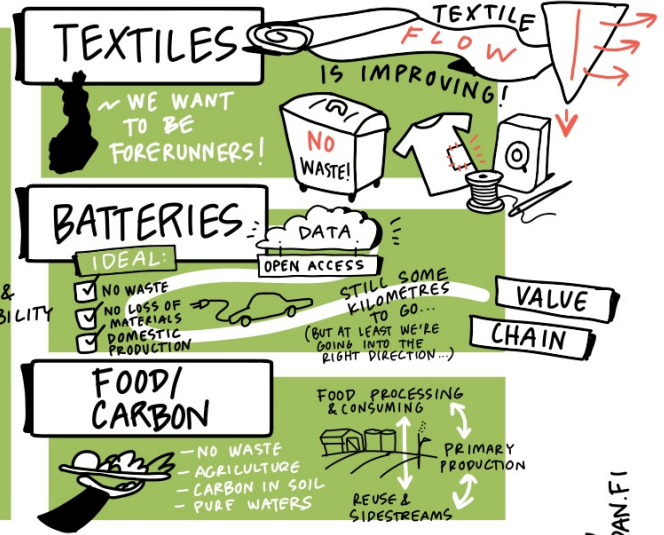
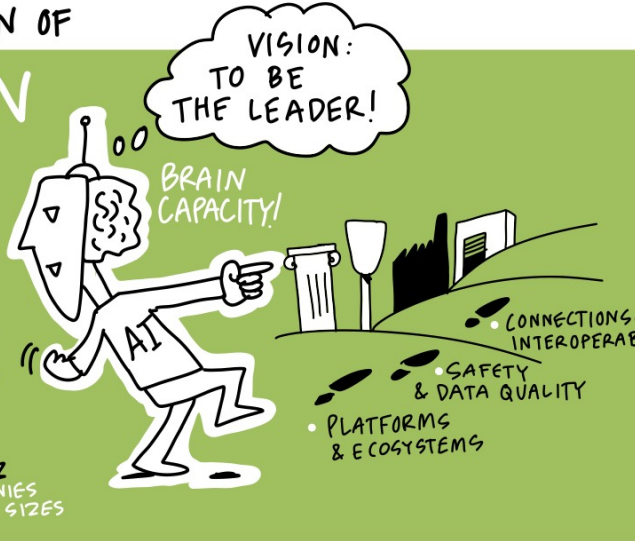
PIRJO HEIKKILÄ, VTT  
SONJA LAVIKKO, GTK  
EEVA LEHTONEN, LUKE

### Cases:

THE STATE & PROMOTION OF

DATA-DRIVEN  
CIRCULAR  
ECONOMY

IN FINLAND



Circular Design Network



Circular Design Innovation



Motiva Services

REDANREDAN.FI



# EU's Data Act proposal

The Data Act will make **more data available** for use. It sets up **rules on who can use and access what data for which purposes** across all economic sectors in EU.

Part of EU's Strategy for Data.

Follow the EU developments in Finland e.g. via **SITRA**

<https://www.sitra.fi/tapahtumat/datatalouden-tilannehuone/>

[https://www.sitra.fi/en/archive/?search\\_term=data%20act](https://www.sitra.fi/en/archive/?search_term=data%20act)

or

via **MyData.org** and conference:

<https://www.mydata.org/>

## The growth potential of the data economy

Data is the basis for many **new digital products and services**. The use of connected objects (Internet of Things) increasingly **generates data**.

**Global data volume will grow**

2018

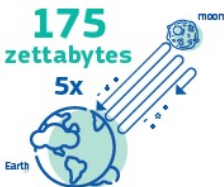
**33 zettabytes**



Stored on 512 GB tablets, it would form a tower that reaches the moon.

2025

**175 zettabytes**



Enough to make the journey to the moon and back five times.

**A growth equivalent to 1260 tablets per second.**

**€5-11 trillion**



Internet of things value and services by 2030 globally

**€ 120 billion**



**Savings in the EU health sector** per year

**10-20%**



**Savings in the transport, buildings and industry sectors** with real-time analytics of data

**€270 billion**



Expected **EU-27** additional GDP by 2028 thanks to new Data rules

**5% to 10%**

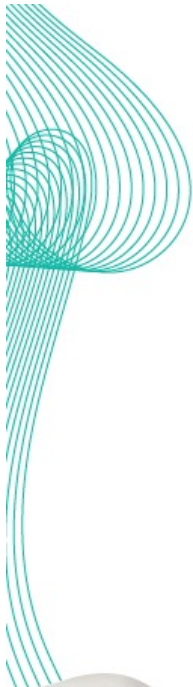


Companies investing in **data-driven innovation** exhibit faster productivity growth by 5% to 10%





# Example benefits of the Data Act



Consumers and businesses generate data by using products and services. With the Data Act, they will benefit from:

◆ **Cheaper prices** for aftermarket services and reparation of their **connected objects**.

*A factory robot breaks down.*



**TODAY**

*Only the manufacturer can access the data, leaving no alternative for the company but to call them for repairing.*

**TOMORROW**

*The user could request that a repair service that may be cheaper also gets access to the data.*

◆ **New opportunities** to use services relying on access to this data.

*A farmer has equipment from different manufacturers (tractor, automatic irrigation system).*



*He cannot outsource the data analytics of its different equipment, the data is locked with each manufacturer.*

*He could receive customised advices from a company gathering data from the different equipment.*

◆ **Better access** to data collected or produced by a device.

*A bar owner wants to serve better coffee, and the coffeemaker company wants to improve its product.*



*Only the company can access the data produced by the machine to design the next generation of coffeemakers but the bar owner cannot access information such as the quantity and temperature of water or coffee strength.*

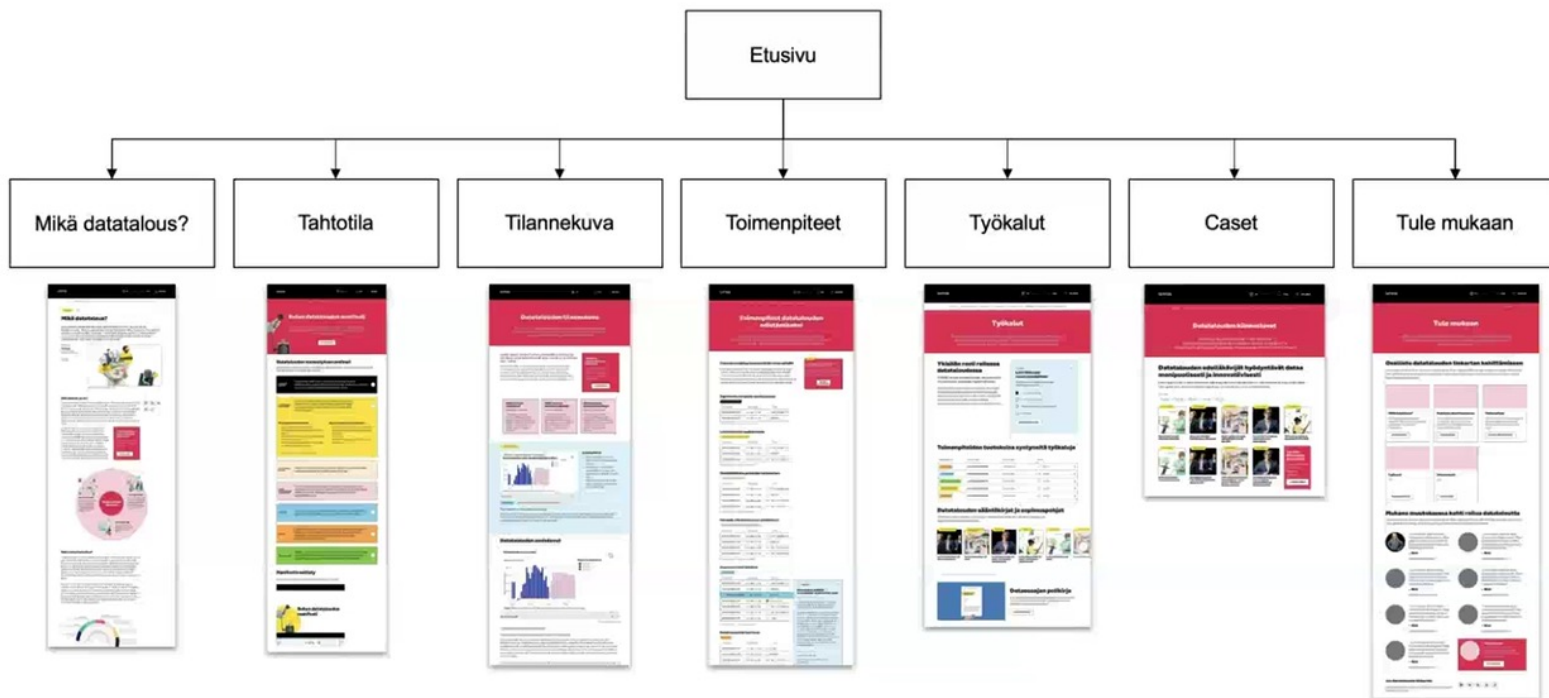
*The Data Act clarifies that both parties can access all data collected by the machine.*



SITRA is launching in Spring '23 a new **website** and PowerBI dashboard for **Fair Data Economy**

“Datatalouden verkkosivusto”

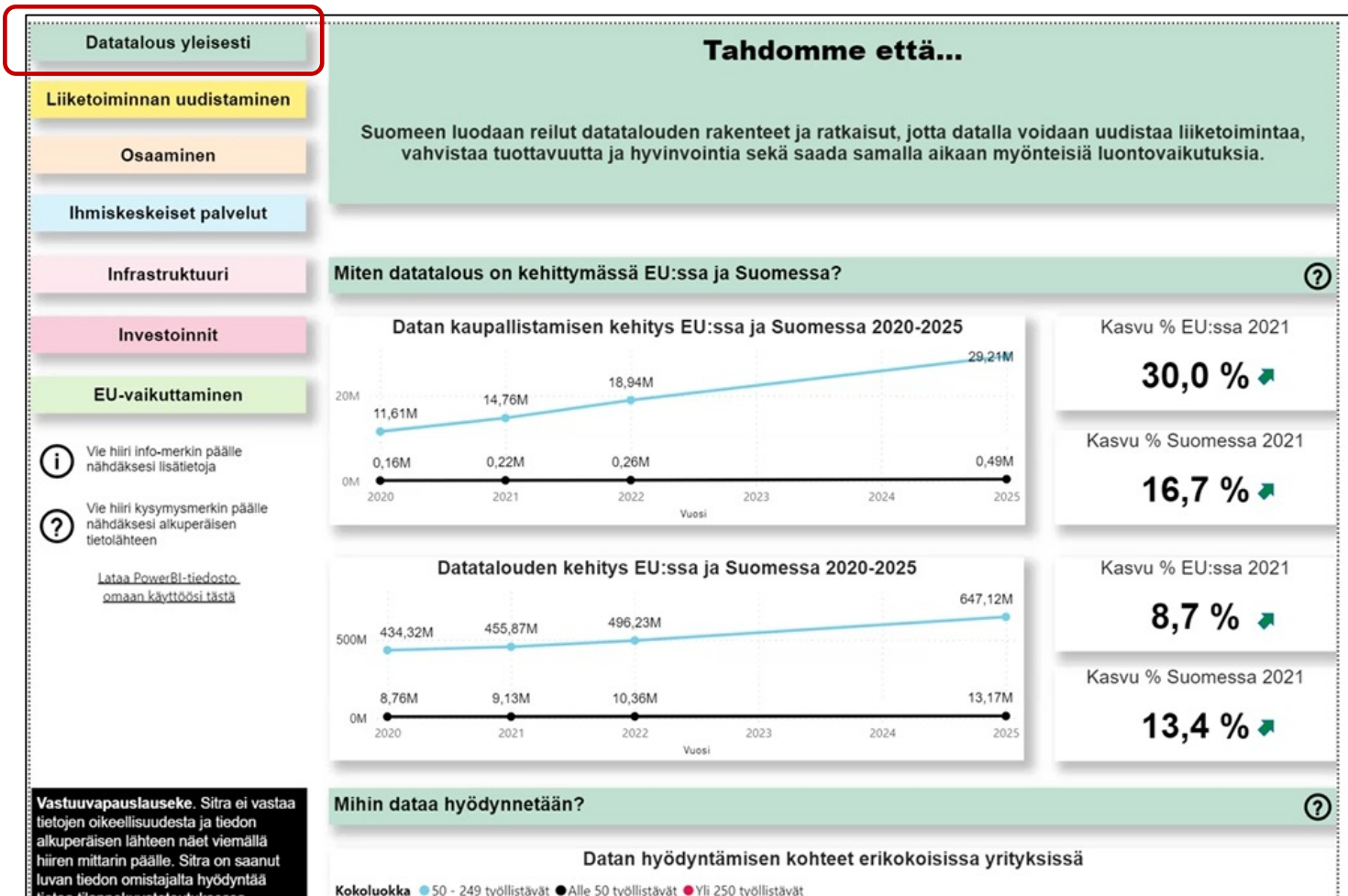
## Verkkosivusto sisältää mm. artikkeleita, analyysyjä ja case-esimerkkejä eri organisaatioista



SITRA

# PowerBI dashboard for Fair Data Economy, 7 areas

“Datatalouden tilannekuva”



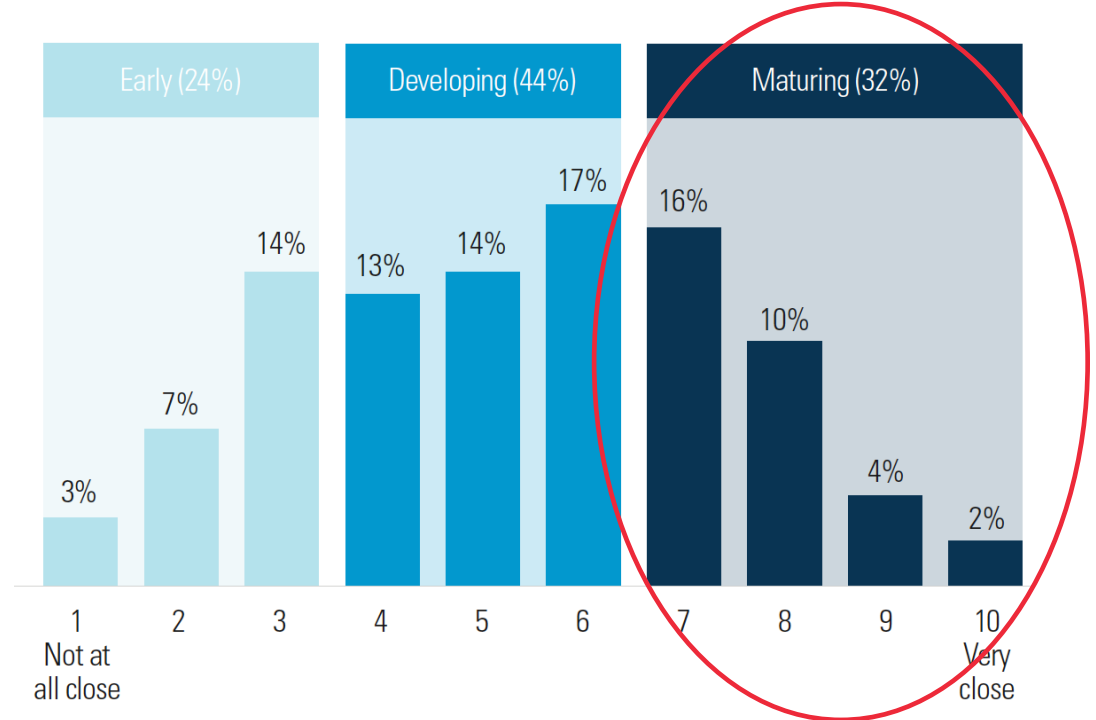
# Digital maturity at the global level

# Global survey\* on companies' digital maturity

The respondents were asked to imagine **an ideal organization utilizing digital technologies and capabilities to improve processes, engage talent across the organization, and drive new value-generating business models.**

They were then asked to **rate their company against that ideal on a scale of 1 to 10.**

Three maturity groups were observed: **early** (1-3), **developing** (4-6), and **maturing** (7-10).



# Deloitte's US-survey\* on companies' digital maturity

Organizations should do far more than simply implement new techs.

**Successful digital transformation requires coordinated integration of technology-related assets and capabilities – “digital pivots”.**

The 7 digital pivots drive an organization's progress toward digital maturity.

Digital pivot	Description
Flexible, secure infrastructure	Implementing technology infrastructure that balances security and privacy needs with the ability to flex capacity according to business demand.
Data mastery	Aggregating, activating, and monetizing siloed, underutilized data by embedding it into products, services, and operations to increase efficiency, revenue growth, and customer engagement.
Digitally savvy, open talent networks	Retooling training programs to focus on digital competencies, and staffing teams through flexible, contingent talent models to rapidly access in-demand skill sets and flex the organization's workforce based on business need.
Ecosystem engagement	Working with external business partners including R&D organizations, technology incubators, and startup companies to gain access to resources such as technology, intellectual property, or people to increase the organization's ability to improve, innovate, and grow.
Intelligent workflows	Implementing and continuously recalibrating processes that make the most of both human and technological capabilities to consistently produce positive outcomes and free up resources for higher-value actions.
Unified customer experience	Delivering a seamless customer experience built around a 360-degree view of the customer that is shared companywide so that customers experience coordinated digital and human interactions that are useful, enjoyable, and efficient in immersive, engaging environments.
Business model adaptability	Expanding the organization's array of business models and revenue streams by optimizing each offering to adapt to changing market conditions and augment revenue and profitability.

Source: Gurumurthy et al. (2020) Uncovering the connection between digital maturity and financial performance”,

<https://www2.deloitte.com/us/en/insights/topics/digital-transformation/digital-transformation-survey.html>

\*Survey of 1200 US-based executives in November 2019.



# Deloitte's digital maturity survey— maturity defined

## DIGITAL MATURITY LEVELS: WHAT DOES IT MEAN TO BE MORE OR LESS DIGITALLY MATURE

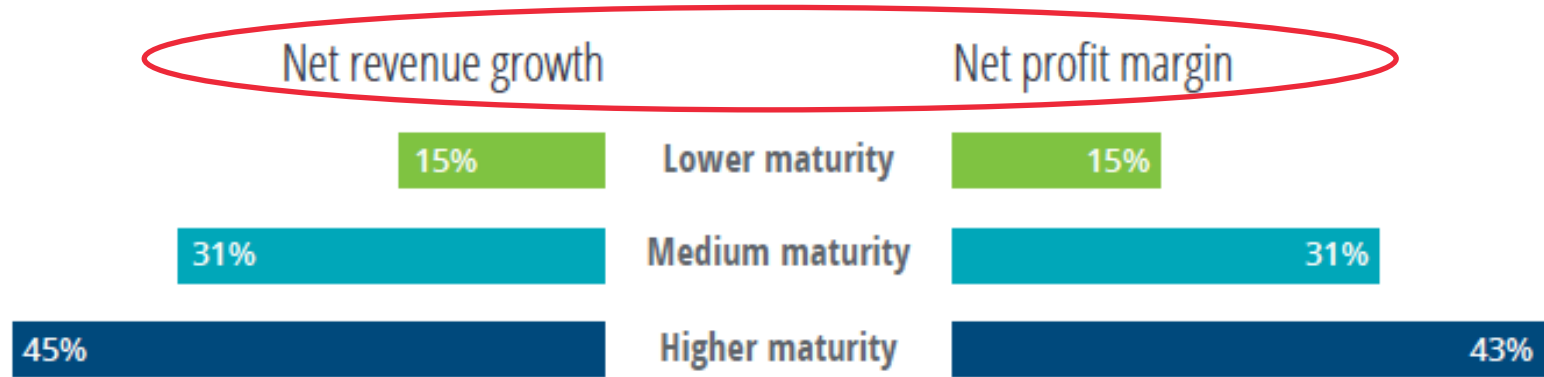
For our analysis, we considered an organization to be digitally mature to the extent that it experienced a positive business impact from its digital transformation initiatives. For each digital pivot, respondents were asked the degree to which they saw a positive business impact from the application of that pivot within their organization. Responses to this question for each of the seven pivots were aggregated to classify organizations as higher-, medium-, or lower-maturity according to a distribution by the degree of business benefit they said their digital efforts had yielded:

- Organizations that scored in the top 25 percent of the impact distribution were classified as “higher maturity”
- Organizations in the middle 54 percent were classified as “medium maturity”
- Organizations in the bottom 21 percent were classified as “lower maturity”

# Deloitte's digital maturity survey (2)

Higher-maturity companies reported industry-leading **revenue growth** and **profit margins**.

Percentage of respondents reporting metrics significantly above industry average, by level of digital maturity



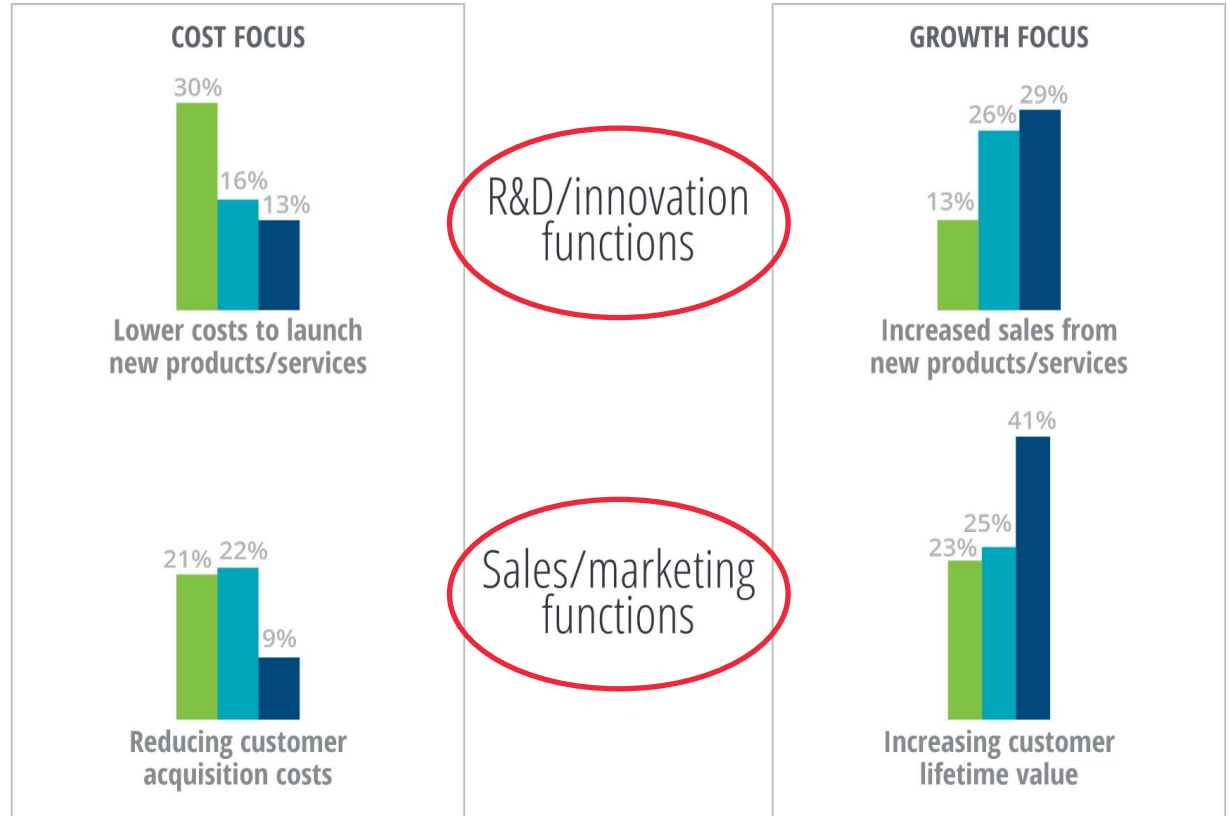


# Deloitte's digital maturity survey (3)

Executives from higher-maturity organizations more likely to emphasize digital transformation's benefits for **growth and innovation** than on **cost savings**

Percentage of respondents reporting positive impacts on specific functions, by digital maturity level

■ Lower maturity ■ Medium maturity ■ Higher maturity

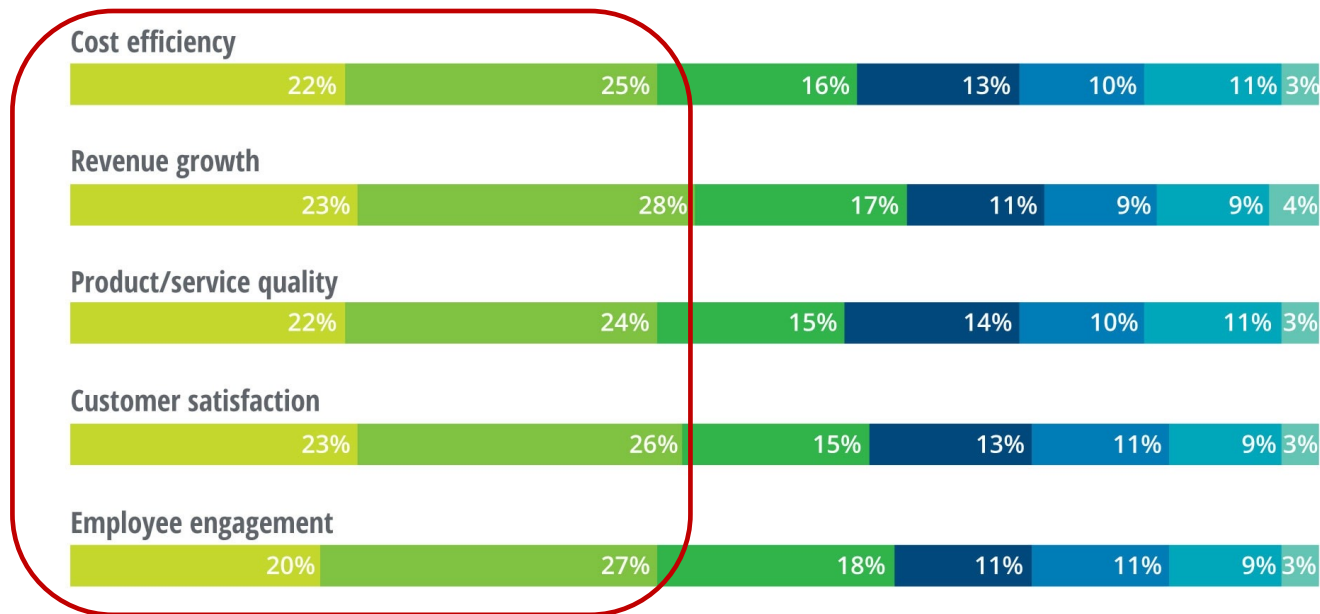


# Deloitte's digital maturity survey (4)

The **data mastery** and **intelligent workflows** pivots have the strongest measurable impact on business outcomes

Relative importance of individual pivots in driving business outcomes

■ Data mastery ■ Intelligent workflows ■ Open talent networks ■ Ecosystem engagement  
■ Unified customer experience ■ Infrastructure ■ Business model adaptability



Note: Percentages refer to each pivot's share of the total impact that organizations report seeing from their digital transformations in line with the benefits mentioned above. For instance, 23 percent of the revenue growth that organizations received from their digital transformations was seen to be the result of their investments in data mastery. Percentages may not add up to 100 due to rounding.

# Deloitte's digital maturity survey (5)

In all maturity levels, most companies are using digital technologies to address **environmental sustainability!**

Percentage of respondents using digital technologies to improve environmental sustainability, by digital maturity level

Using digital technologies to lower consumption of natural resources



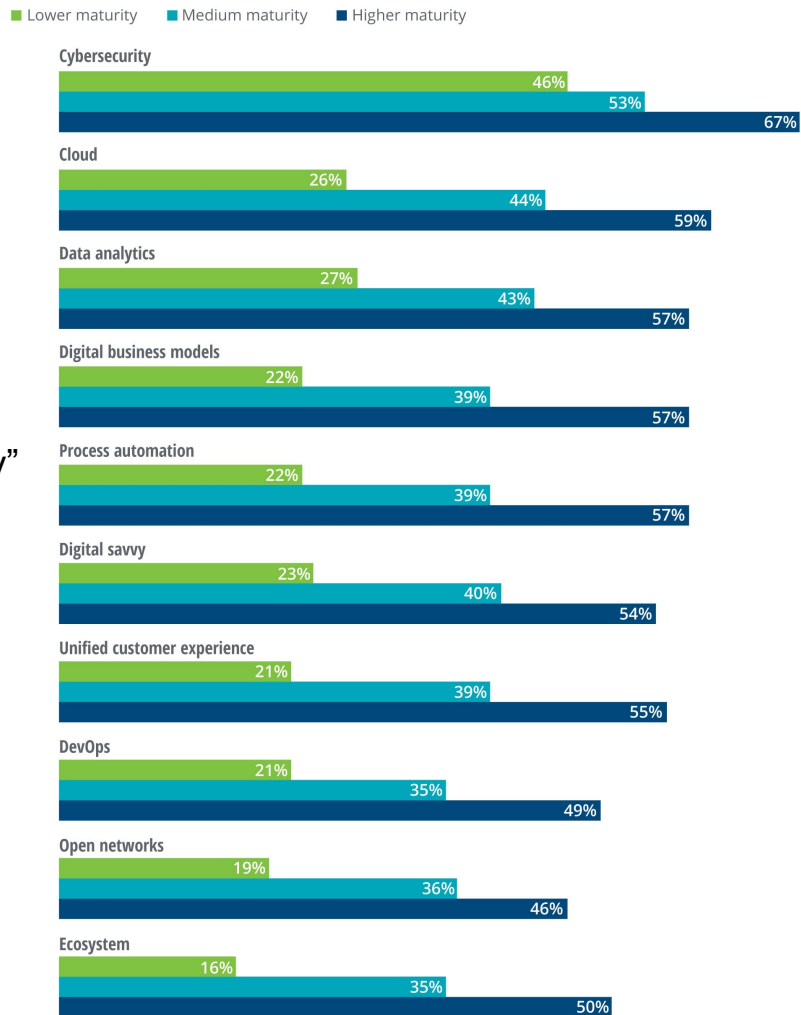
Using digital technologies to reduce carbon emissions



# Deloitte's digital maturity survey (6)

## Cybersecurity tops investment priorities across all 3 maturity levels.

\* Share of respondents citing an area as a “very high priority” for investment over the next 12 months.



# Global Boardroom Program survey '22

## More recent tech investment and improvement priorities

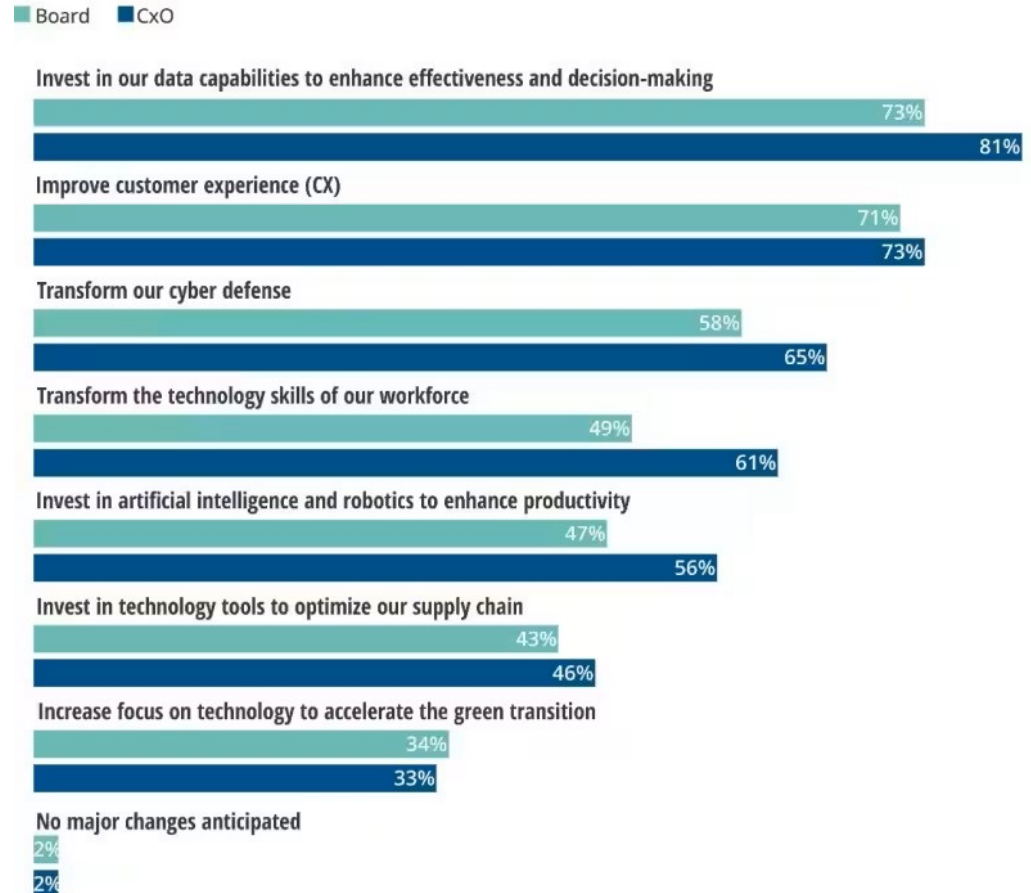
Deloitte Global Boardroom Program surveyed in 2022 over 550 directors and C-suite executives (CxOs) from companies based in 55 countries to understand the **degree of board engagement in technology** today.

The survey revealed underinvestment in technology and uncovered gaps in board understanding and engagement on digital transformation!

Note: this was a multiple-choice question

## Data, digital (CX), and cyber are top tech priorities

Over the next three years, my organization plans to:



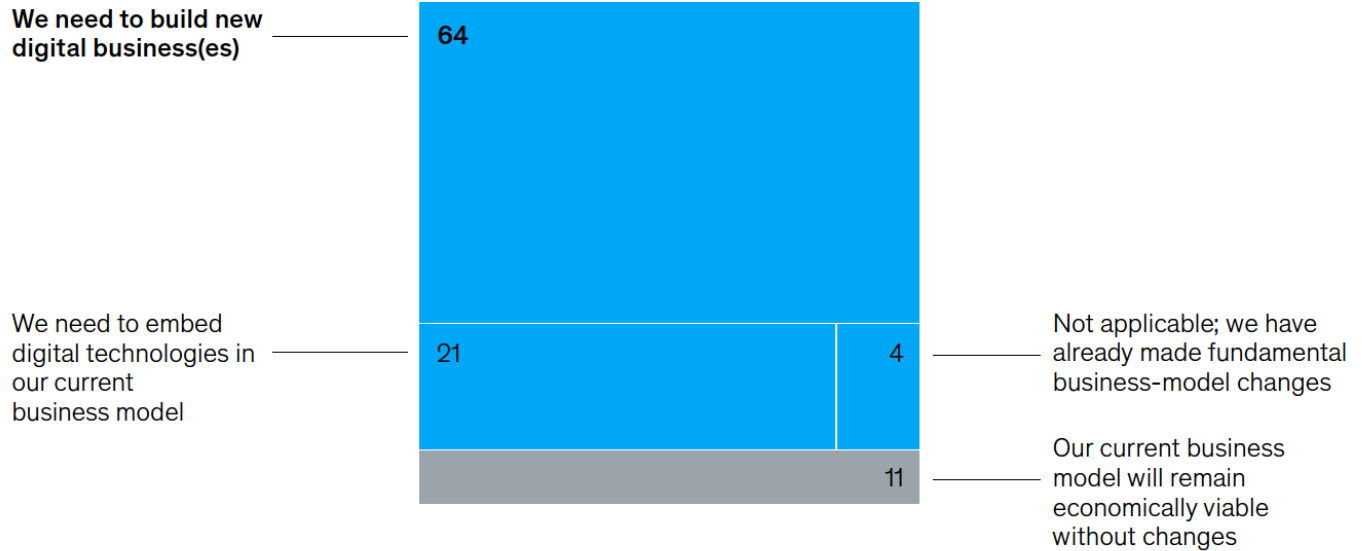
# McKinsey Global Survey

## Necessity to change business model / build new digital businesses

Looking toward 2023, most companies will need to build new digital businesses to stay economically viable.

Changes needed to make company's business model economically viable by 2023, % of respondents<sup>1</sup>

Nearly 9 in 10 respondents think that the business model needs to change (or has changed already)



<sup>1</sup>Respondents who answered "don't know" are not shown; n = 1,140.

# Digital transformation ambitions range a lot!

CEO's Role					
Digital vision	Level 0 Incremental digitization	Level 1 Advanced digitization	Level 2 New markets	Level 3 New products	Level 4 New business models
What changes?	<ul style="list-style-type: none"><li>• Same business model</li><li>• Same capability</li><li>• Same market</li><li>• Digitization of some existing internal data and operating processes</li><li>• Incremental cost/operational improvements</li></ul>	<ul style="list-style-type: none"><li>• New digital platforms</li><li>• Same business model</li><li>• Same capability</li><li>• Same market</li><li>• Radical digitization of processes and/or platform</li><li>• Revenue generation alongside radical cost/efficiency improvements</li></ul>	<ul style="list-style-type: none"><li>• Same business model</li><li>• Same capability</li><li>• New market or channel</li><li>• Similar operating model (eases change)</li></ul>	<ul style="list-style-type: none"><li>• Same business model</li><li>• New capability resulting in new product/service offering(s)</li><li>• Same market</li></ul>	<ul style="list-style-type: none"><li>• New business model</li><li>• New, innovative capability resulting in products or services that disrupt and transform industry standard</li><li>• Likely involves ecosystem model</li><li>• New KPI's likely needed</li></ul>

## Incremental spectrum

These levels build incrementally. The more levels a CEO's vision encompasses, the more likely it is to require enterprisewide transformation, including a new operating model and organizational structure.

Source: Deloitte Global CEO Program and Center for Integrated Research analysis, 2022.

Source: Smith et al. (2022), "How to lead digital transformation from the top" <https://www2.deloitte.com/us/en/insights/topics/strategy/how-to-lead-digital-transformation.html>

# Deloitte data- & text-mining study on 4651 US and global firms listed in NYSE

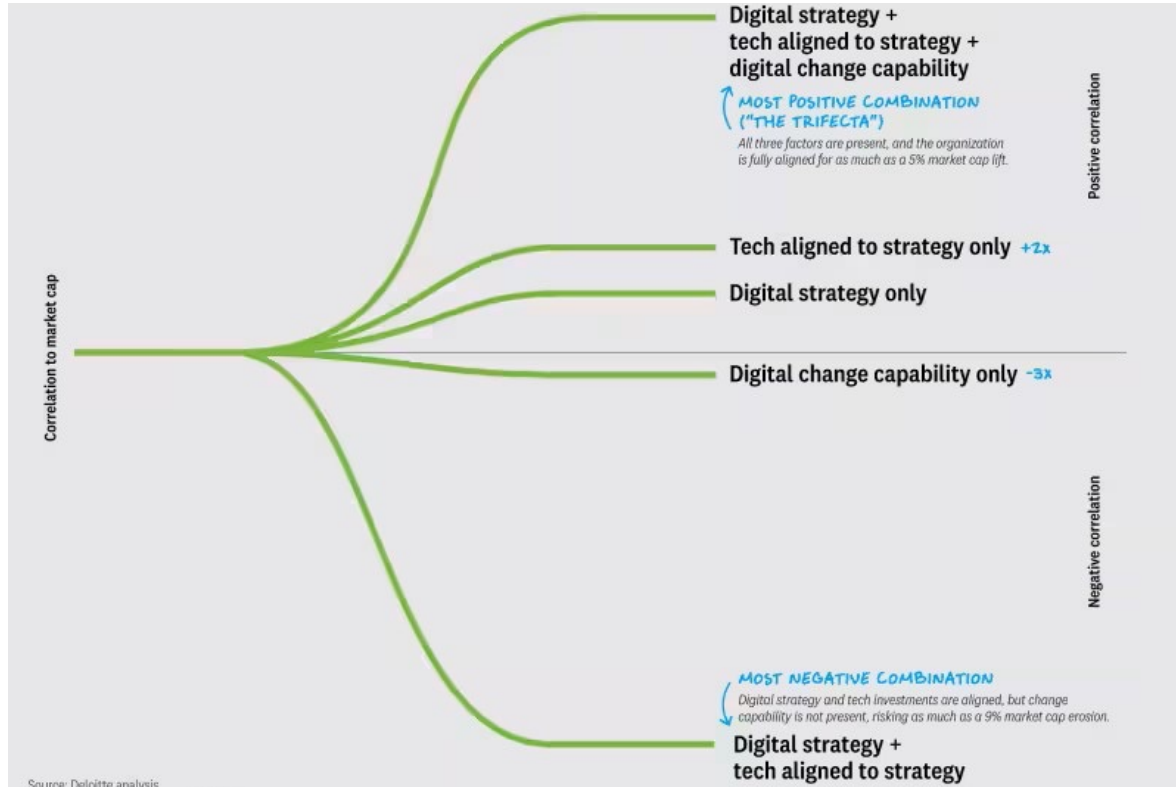
Analyzed financial disclosures to ascertain how companies talked about their digital transformation actions—i.e., how they spoke to

- (1) implementing a **digital strategy**;
- (2) their discrete, **strategically aligned technology investments**;
- (3) their efforts to **prepare their people and processes for digital transformation**.

The link between strategy and action was found the determining factor in a company's ability to derive the most value from its digital transformation. Research showed these actions can increase enterprise value if executed with intent, yet not all actions are created equal.



# Deloitte: How digital transformation factors correlate to market capitalization



Source: Smith et al. (2023) "Unleashing value from digital transformation: Paths and pitfalls", available at <https://www2.deloitte.com/us/en/insights/topics/digital-transformation/digital-transformation-value-roi.html>

**Future jobs and skills...**

**and why you should study MIS**

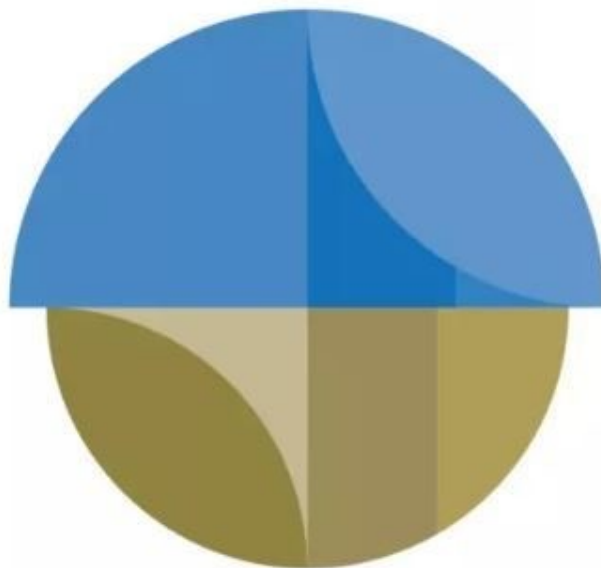
# Jobs landscape by 2025

97 million

**97 million new job roles may emerge that are more adapted to the new division of labour between humans, machines and algorithms**

**while at the same time**

**85 million current job roles may be displaced by the shift in the division of labor.**



85 million

## Growing job demand:

1. Data Analysts and Scientists
2. AI and Machine Learning Specialists
3. Big Data Specialists
4. Digital Marketing and Strategy Specialists
5. Process Automation Specialists
6. Business Development Professionals
7. Digital Transformation Specialists
8. Information Security Analysts
9. Software and Applications Developers
10. Internet of Things Specialists

## Decreasing job demand:

1. Data Entry Clerks
2. Administrative and Executive Secretaries
3. Accounting, Bookkeeping and Payroll Clerks
4. Accountants and Auditors
5. Assembly and Factory Workers
6. Business Services and Administration Managers
7. Client Information and Customer Service Workers
8. General and Operations Managers
9. Mechanics and Machinery Repairers
10. Material-Recording and Stock-Keeping Clerks

# Top 15 skills for 2025



- |   |   |
|---|---|
| 1 | Analytical thinking and innovation      |
| 2 | Active learning and learning strategies |
| 3 | Complex problem-solving                 |
| 4 | Critical thinking and analysis          |
| 5 | Creativity, originality and initiative  |
| 6 | Leadership and social influence         |
| 7 | Technology use, monitoring and control  |
| 8 | Technology design and programming       |

- |    |  |
|----|--|
| 9  | Resilience, stress tolerance and flexibility |
| 10 | Reasoning, problem-solving and ideation      |
| 11 | Emotional intelligence                       |
| 12 | Troubleshooting and user experience          |
| 13 | Service orientation                          |
| 14 | Systems analysis and evaluation              |
| 15 | Persuasion and negotiation                   |

# Working in future (article in HS 22.1.2021)

*“Artificial intelligence is already partially replacing doctors, journalists, lawyers, therapists and even writers and artists. It will continue to be a data crunching power assistant.*

*The ever-faster development of technology means that the **society must adapt faster.***

*According to Risto Linturi, future experts should be taught skills that teachers themselves do not know or master properly. They become like coaches, and they learn at the same time as the students.*

**WHAT SKILLS** *does a new kind of working life require?*

*Elina Hiltunen and Linturi highlight **creativity, critical thinking, good technology skills, interaction and teamwork skills**, as well as **learning to learn.***

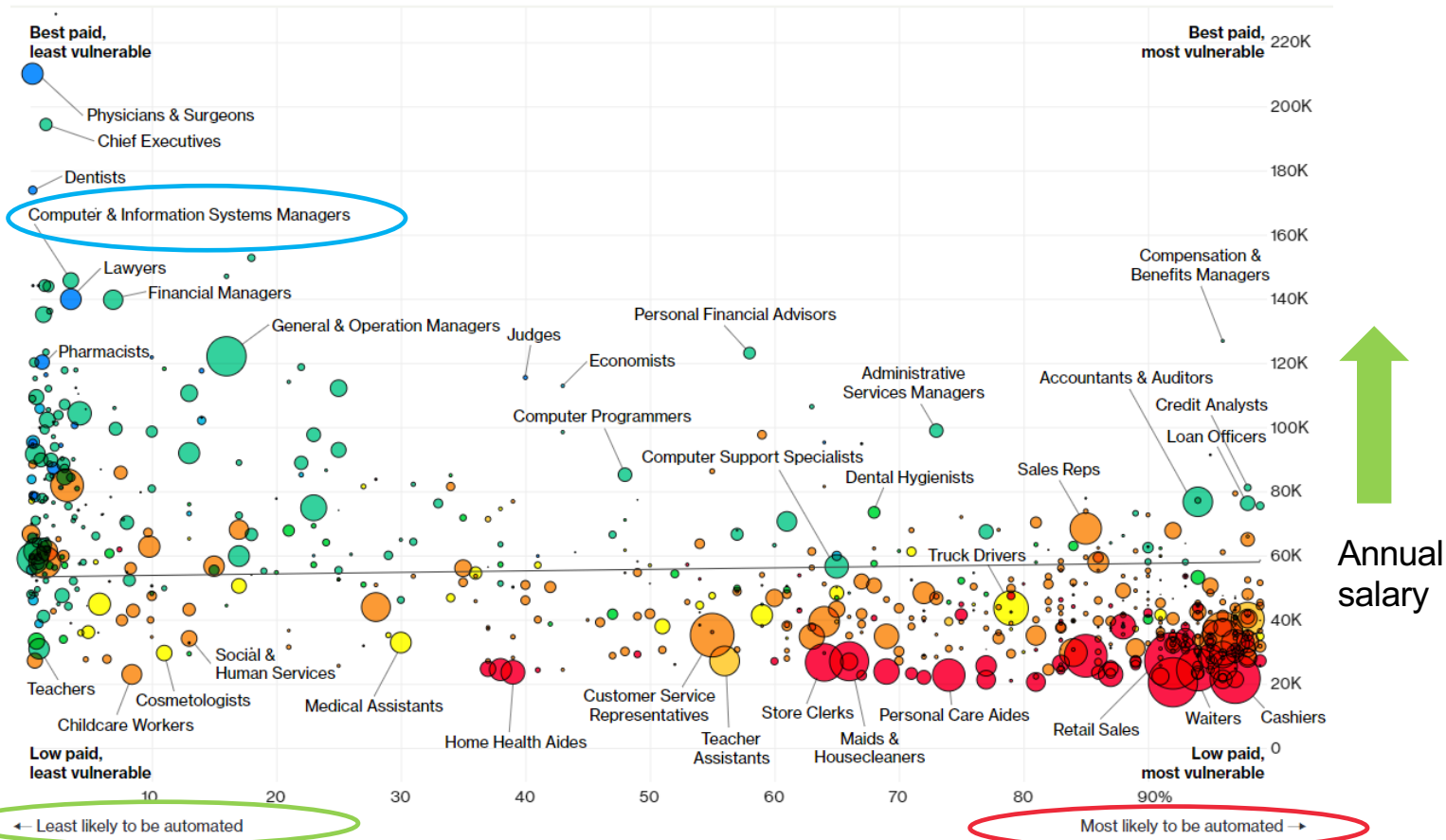
*Hiltunen also mentions **media literacy, presentation skills, cultural competence, empathy, self-knowledge and entrepreneurial skills.***

*‘Robots, artificial intelligence, and the virtual world should be more familiar than pen and paper.’ ”*

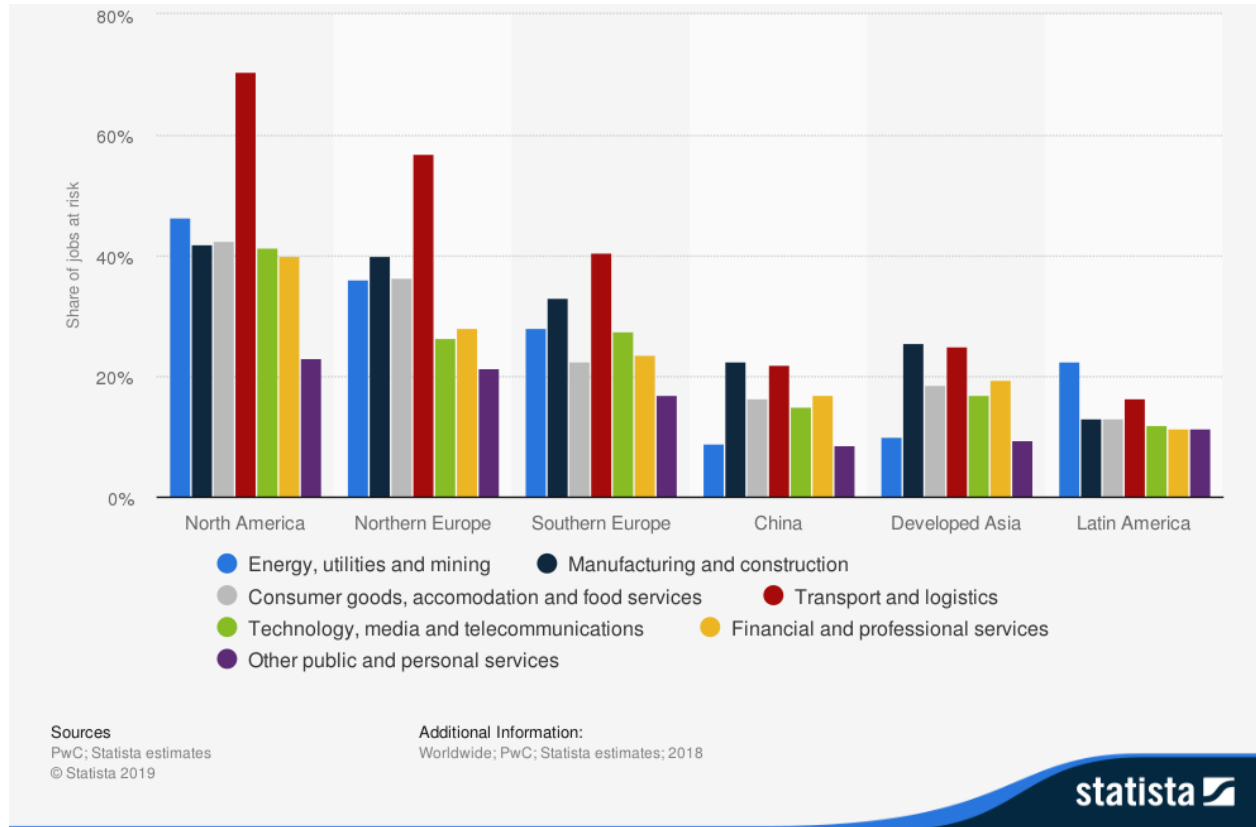
# Jobs that are least & most likely to be automated

Bloomberg

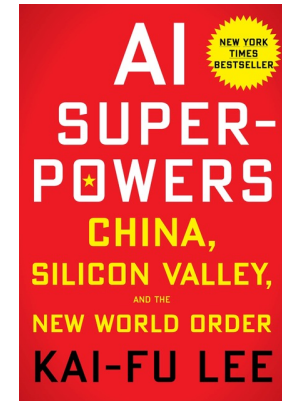
Find Out If Your Job Will Be Automated



# Share of jobs at high risk of automation by 2030



*Recommended  
book on the topic!*



Source: World Economic Forum (2020), “Jobs will be very different in 10 years. Here's how to prepare”, available at: <https://www.weforum.org/agenda/2020/01/future-of-work/>

# Motivation to study MIS - Why we need to manage information in organizations?

Effective management of information and related IT is critically important to the survival and success of an organization due to:

- increasing **dependence** on information and information systems,
- increasing **vulnerabilities** and a wide spectrum of **cyber threats**,
- increasing amounts of information causing **information overload**,
- **scale and cost** of the current and future **investments** in information and information systems,
- potential for technologies to dramatically **change organizations and business practices, create new opportunities and reduce costs.**



# National Association of Colleges and Employers (NACE): MIS degree is the best paid business major both at BSc & MSc levels

## BACHELOR'S DEGREE SALARIES BY MAJOR

ACADEMIC MAJOR	MEAN
Finance	\$60,776
Human Resources	\$57,357
International Business	\$57,841
Logistics/Supply Chain	\$61,798
Management Information Systems	\$66,117
Marketing	\$59,652
Sales	\$59,452

## MASTER'S DEGREE SALARIES BY MAJOR

ACADEMIC MAJOR	MEAN
<b>BUSINESS MAJORS</b>	
Accounting	\$69,232
Actuarial Science	\$67,800
Business Administration/Management	\$73,318
Finance	\$72,778
Human Resources	\$70,314
International Business	\$63,500
Logistics/Supply Chain	\$70,950
Management Information Systems	\$76,171
Marketing	\$68,370
Sales	\$66,400

Starting salary projections for Class of 2022 new college graduates by academic major, Winter 2022 survey

Source: [https://careers.unc.edu/wp-content/uploads/2022/02/NACE-Salary-Survey\\_Winter-2022.pdf](https://careers.unc.edu/wp-content/uploads/2022/02/NACE-Salary-Survey_Winter-2022.pdf)

# Top Degrees for the Highest-Paying Business Careers

1. Master of Business Administration (MBA)

2. Bachelor's in MIS (IS Management)

“Some of the highest-paying jobs in the business world revolve around technology. A degree in computer science or information systems science can help prepare students for the technological roles that play an important part in the success of modern businesses. **If you want to eventually attain one of the most prestigious and profitable positions in the business world, however, you will need more than just computer knowledge.** You must develop **a thorough background in business theory and practices** so you can apply that computer knowledge to help your company achieve its goals. A bachelor's degree in management information systems (MIS) is a great choice because it combines business classes with the mathematics, software development and computer programming courses of a computer science program. By the time you graduate from an undergraduate MIS degree program, you will understand not only how computer coding and technology works but also how to use computer technology to solve an organization's problems.”

3. Bachelor's in Marketing

4. Master's in Finance

5. Bachelor's in Supply Management

# MaCuDE – Phase 1 report

*“What sets Information Systems apart from other computing disciplines is the degree to which it is embedded in an organizational context (typically business), and the extent to which it emphasizes the application of technology to organization-specific problems.*

*IS graduates are often positioned at the interface between more functional business disciplines (for instance, Marketing or Finance), and more technical computing disciplines (e.g., Software Engineering or Computer Science). **As translators between disciplines they must be able to understand the capabilities of new technology, assess its impact on an organization, its relationship to the established tools, processes and structures, and develop plans for the deployment of such technology in an organization.***

*They must also understand the utility of various technologies in the context of business applications, and be conversant in how strategic and operational changes of an organization may alter its need for technology solutions. As such, **IS students focus on Digital Transformation, i.e., the process through which organizations change using computing capabilities.**”*

# Management of data, information and knowledge in organizations: Data as an asset needs also a strategy, similar to other org. assets!



Information & communication technologies (ICT)

Information systems (IS),  
Information technology (IT)

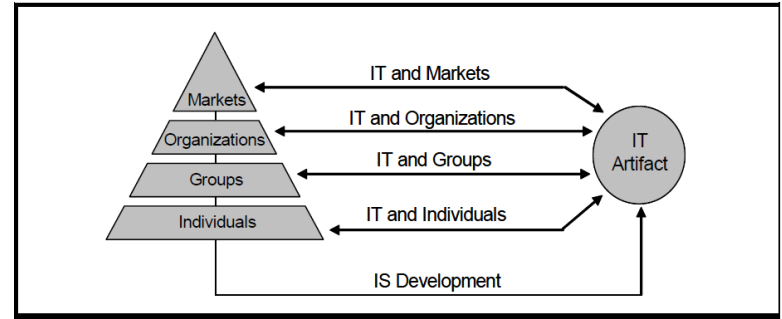
Management of data,  
information and knowledge

Marketing, Accounting,  
HR, Strategic Management

Business economics /  
Management

Discipline behind MIS is **Information Systems Science (ISS)**, which is a relatively young business school discipline (ca. 50 years).

Main research themes in ISS:

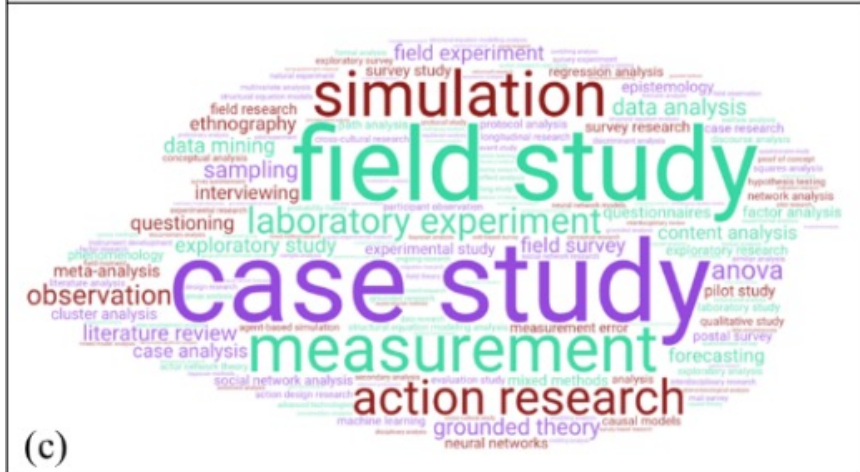


**Table A1. High-Loading Terms for the 5-Factor Solution**

F5.#	F5 Label	Top 30 Terms
F5.1	IT and Organizations	plan, strateg, busi, firm, organiz, execut, competit, issu, organ, resourc, success, invest, industri, chang, project, system, coordin, role, implement, innov, integr, advantag, technologi, compani, knowledg, inform, corpor, factor, capabl, valu
F5.2	IS Development	dss, decision, design, system, problem, approach, method, requir, databas, techniqu, methodologi, expert, applic, analysi, tool, support, gener, framework, propos, prototyp, base, knowledg, evalu, structur, softwar, object, solv, maker, environ, plan
F5.3	IT and Individuals	instrum, valid, measur, construct, perceiv, satisfac, usag, accept, reliabl, user, factor, eas, influenc, test, job, variabl, survei, comput, behavior, empir, success, individu, inten, attitud, scale, adop, train, relationship, determin, find
F5.4	IT and Markets	price, market, consum, product, seller, custom, buyer, onlin, cost, invest, electron, servic, supplier, firm, trade, network, valu, transac, trust, profit, internet, commerc, econom, optim, strategi, industri, vendor, increas, offer, reduc
F5.5	IT and Groups	gss, team, meet, task, commun, collabor, outcom, gdss, trust, facilit, work, particip, social, experi, support, interac, instrum, electron, learn, virtual, influenc, comput, individu, behavior, idea, perceiv, affect, em, structur, mediat

Source: Sidorova et al. (2008), "Uncovering the Intellectual Core of the IS Discipline", *MIS Quarterly*, 32(3), 467-482.

# Word Clouds of Topics, Theories, and Methods in ISS research (1999-2018)



(a): Topics  
(b): Theories  
(c): Methods

# Practical issues of the course

# Practical issues

## Lectures

- On Tuesdays and Thursdays (on campus in Otakaari 1 Hall U8 or in Zoom) at 13:15 – 14:45
- **NOTE: 2 of the lectures are extra and held on Mon or Wed at 10-12 o'clock at BI course (Ekonominaukio 1, V001-2)**
- Most of the live lectures will also be recorded (depending on guest lecturers' preferences)

## Course book

- **Information Systems for Managers (without cases)**, Piccoli & Pigni, 2021, Ed. 5 or 4
- <https://www.prospectpressvt.com/textbooks/piccoli-information-systems-for-managers-5-0>
- Availability in library:  
[https://primo.aalto.fi/discovery/search?query=any,contains,37C00100&tab=Everything&search\\_scope=MyInst+and+CI&vid=358AALTO\\_INST:VU1&offset=0](https://primo.aalto.fi/discovery/search?query=any,contains,37C00100&tab=Everything&search_scope=MyInst+and+CI&vid=358AALTO_INST:VU1&offset=0)

## Final grade

- Assignments = **60%** (60 points)
- Exam = **40 %** (40 points)
  - Scheduled exams: April 20 and re-take in June 8 (both at 9-12 o'clock)
  - **Minimum of 50% of BOTH assignments (30 p) AND exam (20 p) required!**
  - *Possibility to earn 10 bonus points by being present in guest lectures! (lectures 3-11)*

**Course website:** <https://mycourses.aalto.fi/course/view.php?id=37001>

News of the course are sent via MyCourses **Announcements** (> notifications to your email)

Also **Zulip chat** is used in peer-to-peer communications! Register in <https://mis2023.zulip.aalto.fi>



# Contents of the course book, Ed. 5.0

## PART I: FOUNDATIONS

Ch. 1 : Information Systems (IS) and the Role of General and Functional Managers

Ch. 2 : IS Defined

Ch. 3 : Organizational IS and Their Impact

## PART II: COMPETING IN THE DIGITAL AGE

Ch. 4 : Digital Disruption and the Competitive Environment

Ch. 5 : Digital Transformation, Innovation, and Entrepreneurship

## PART III: THE STRATEGIC USE OF IS

Ch. 6 : Strategic IS Planning

Ch. 7 : Value Creation & Strategic IS

Ch. 8 : Digital Value Creation

Ch. 9 : Digital Value Capture

## PART IV: GETTING IT DONE

Ch. 10 : Managing IS

Ch. 11 : Creating IS in the Digital Age

Ch. 12 : IS Trends

Ch. 13 : Cybersecurity, Privacy & Ethics



**Information Systems for Managers  
in the Digital Age**

Gabriele Piccoli | Federico Pigni



# 2023 lecture plan

*Note that last-minute changes (e.g. lectures moved to Zoom) might be announced in case of sickness!*

*Follow the MyCourses announcement notifications in your email!!*

#	Date	Topic	Assignment DL's
1	28.2. Tue	<b>Introduction to the MIS course &amp; Chapters 1-2 (IS and the role of general and function managers; IS defined)</b> / Bragge	<b>3.3.2023</b>
2	2.3. Thu	<b>Collaborative IS and groupware technologies</b> / Bragge	<i>other weekly</i>
3	7.3 Tue	<b>Organizational change in the digitalization era—how to bring myth to life?</b> / Business Design Lead Milja Nohynek, Zure Ltd. & Modern Work Lead Karoliina Kettukari, Meltlake (part of Futurice)	<i>deadlines are listed in MyCourses</i>
4	9.3. Thu	<b>Knowledge work and knowledge management</b> / PhD Antti Salovaara, Senior University Lecturer, Aalto ARTS, Department of Design	
5	14.3. Tue	<b>The role of data in the modern business</b> / Iiris Lahti, AI Roots, Founder	
6	16.3. Thu	<b>Service design and human-centred design methods in healthcare</b> Assistant Prof. Johanna Viitanen, Post-doc Kaisa Savolainen and Doctoral Researcher Paula Valkonen, Aalto SCI or Aalto ARTS	
7	21.3. Tue	<b>Challenges with big data analytics</b> / Doctoral researcher Sampsa Suvivuo, ISM, Aalto BIZ	
8	23.3. Thu	<b>Beyond ERP—digital innovation driving sustainability transformation</b> / Glen Koskela, Portfolio Strategy & Alliance, Uvance CX, Fujitsu <b>NOTE: Watch Koskela's previous lecture recording (ERP &amp; business applications) BEFORE attending or watching this new lecture!</b> Log in to Panopto, don't use Safari: <a href="https://aalto.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=0952eabc-07b1-4fd1b-bacf-ab5a00b33cc2">https://aalto.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=0952eabc-07b1-4fd1b-bacf-ab5a00b33cc2</a>	
9	28.3. Tue	<b>Experiences from global e-Commerce and use of Business Intelligence at Reima</b> / Heikki Lempinen, PhD, Head of Europe, Reima	
10	30.3. Thu	<b>IT Security and Privacy</b> / Mikko Karikytö, Chief Product Security Officer, and Dario Casella, Head of Product Privacy Office, Ericsson Finland.	
Ext ra	3.4. Mon at 10-12, BI course	<b>Why Tableau? demo</b> / Janne Lind, Lead Solutions Engineer, Tableau, a Salesforce company, <i>Joint lecture with our Business Intelligence course.</i>	Ekonominaukio 1, Hall V001-2
11	4.4. Tue	<b>Data, text and web-mining, data visualization</b> / Bragge	
Ext ra	5.4. Wed at 10-12 BI course	<b>State of Business Analytics</b> / Juha Teljo, Vice President of Solution Engineering in EMEA, Tableau, a Salesforce company.	Ekonominaukio 1, Hall V001-2
		<b>EASTER BREAK 6.4. - 12.4.</b>	
12	13.4. Thu	<b>Course wrap-up and hints for the exam</b> / Bragge	

# About the assignments

- Instructions are provided at MyCourses Instructions for Assignments tab & to be returned to Assignment Submissions
  - Some text-based assignments are automatically scanned via Turnitin plagiarism detection software - you are able to see the originality reports and resubmit\* if needed.
  - **Points are deducted from late assignments (grace period 2 days): -1p**
- The first, "2023 Tech trends" assignment to be returned by **March 3**:
  - Read **Forbes**' writings on technology trends and ChatGPT, plus one chapter of your choice either from **Accenture**'s Life Trends 2023, **Deloitte**'s Tech Trends 2023 or **Futurist Bernard Marr**'s Future skills 2022 book, and answer the six questions for Assignment 1 (provided at MyCourses)
- Remember proper citing conventions (no copy-pasting, mention the sources).

# Schedule & points for assignments

Nr.	Assignment	Deadlines	Max points
1	Business technology trend reports 2023	Fri 3.3.	6
2	Python programming starters	Fri 10.3.	10
3	SQL data management language for querying databases	Fri 17.3.	6
4	Building your own chatbot (IBM Watson assistant)	Fri 24.3.	10
5	Data Literacy for All (resource by Tableau)	Tue 28.3.	6
6	Exploring and visualizing data with Tableau Online	Fri 31.3.	10
7	Research profiling with Scopus and Text-mining with Leximancer (or an alternative tool)	Fri 14.4.	10
Diary	Course diary in MyCourses (short reflections on the tools and assignments)	Fri 14.4.	2
Extra	Answering to Aalto's course feedback survey	wks 15-17	2
	<b>Above assignments, diary and feedback survey in total</b>		<b>62</b>
Bonus	Points from being present at guest lectures at campus, (or in zoom in case the live lecture is shifted to zoom. 1 bonus point / guest lecture	Thu 7.4.	10

	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Course summary
<p><b>Lecture schedule</b></p> <p><i>Lectures on Tuesdays &amp; Thursdays at 13-15, except two extra BI lectures on Mon or Wed at 10-12</i></p>	<p><b>L1: Tue 28.2.</b> Introduction to course &amp; book's chapters 1-2</p> <p><b>L2: Thu 2.3.</b> Collaborative IS and groupware technologies</p>	<p><b>L3: Tue 7.3.</b> Organizational change in digitalization era</p> <p><b>L4: Thu 9.3.</b> Knowledge work and knowledge management</p>	<p><b>L5: Tue 14.3.</b> Role of data in modern business</p> <p><b>L6: Thu 16.3.</b> Service Design and Human-centered methods in healthcare</p>	<p><b>L7: Tue 21.3.</b> Challenges with Big Data Analytics</p> <p><b>L8: Thu 23.3.</b> Beyond ERP - digital innovation driving sustainability transformation</p>	<p><b>L9: Tue 28.3.</b> Experiences from global e-Com &amp; use of BI at Reima</p> <p><b>L10: Thu 30.3.</b> IT Security and Privacy</p>	<p><b>Ext1: Mon 3.4.</b> Why Tableau? Demo</p> <p><b>L11: Tue 4.4.</b> Data, text and web-mining, data viz.</p> <p><b>Ext2: Wed 5.4.</b> State of Business Analytics</p>	<p><b>EASTER HOLIDAY</b> Thu 6.4. – Wed 12.4.</p> <p><b>L12: Thu 13.4.</b> Course wrap-up and hints for the exam</p>	<p><b>12 MIS + 2 extra BI lectures</b></p> <p><i>The 2 extra lectures are arranged jointly with our BI course on Mon or Wed at 10-12 o'clock in Ekonominaukio 1, hall V001-002</i></p>
<b>Presence in classes</b>	<i>Gather bonus</i>	<i>points from</i>	<i>being present</i>	<i>in the guest</i>	<i>lectures!</i>			Possibility to gather 10 bonus points
<p><b>Assignments 60% of grade (deadlines)</b></p> <p><i>Gather at least 30/60 points</i></p>	<p><b>A1 (6 p):</b> Business Technology trend reports (3.3.)</p> <p><i>NOTE that this assignment is compulsory!</i></p>	<p><b>A2 (10 p):</b> Python programming starters (programming-23.mooc.fi) (10.3.)</p>	<p><b>A3 (6 p):</b> SQL data management language for querying databases (codecademy.com/learn/learn-sql) (17.3.)</p>	<p><b>A4 (10 p):</b> Building a Chatbot with IBM's Watson Assistant, CC.ai mini course (cognitiveclass.ai/courses/chatbot-course) (24.3.)</p>	<p><b>A5 (6 p):</b> Data Literacy mini course by Tableau (28.3.)</p> <p><b>A6 (10 p):</b> Data exploration &amp; visualization with Tableau Online (31.3.)</p>	<p><b>A7 (10 p):</b> Text-mining research from Scopus with Leximancer (14.4.)</p> <p><b>Diary (2 p):</b> Assignment reflections (14.4.)</p>		<p><b>A1-A7 assignments + Diary: Gather at least 30/60 pts</b></p> <p><b>Extra: Course Feedback survey (2.5.) (worth 2 pts)</b></p>
<p><b>Exam 40%</b></p> <p><i>Gain at least 20/40 points</i></p>								<p><b>Exam in MyCourses on 20.4. at 9-12</b></p>

# Course feedback from previous years and impacts

80% of the students have praised the **hands-on assignments** and the tools introduced in them

- *"The versatile assignments added value to the lectures and gave me lots of tips for the rest of my studies."*
- *"For the first time assignments on the course were interesting."*

Assignments will be **published early on** for students to better allocate time for them

- **New software** in assignments (this year SQL basics assignment was added based on student wishes)
- **Assignments account now 60%** of the course grade (previously 40%), based on course feedback

50% have complimented the **variety and high quality** of **guest lectures** > keeping the concept, but adding lectures by main teacher and Aalto faculty

- *"Some of the lecturers were amazingly interesting and inspiring."*
- *"Overall, the course had the best guest lectures I have seen in Aalto and I think this is the only way to arrange such an extensive course."*

Students appreciate **flexibility in studying**

- All **lectures were recorded** already in 2019 and provided for students as an alternative to campus lectures.
- As students appreciated the flexibility in watching according to their own schedule, the practice has continued since
- Possibility to **submit assignments late**, to enable working on them during the weekends (as some students wish so)

# Completion progress bar in use

This tool in MyCourses **follows your progress on the course and shows you the deadlines** (with direct links to activities when clicking the bar). Some items are marked **automatically done** (green) when submitting an assignment. In other cases you must **manually mark** the assignment as done

Mark as done

## Completion Progress

▾ NOW



BOX 1 - Submission of Assignment 1 - Tech trends (DL 3.3.)

Not completed

Expected: 3 March 2023

# Course Diary

You can input your feelings and reflect on the assignments & tools used at the course via Mycourses' Course Diary plugin (or using its new mobile app: <https://www.aalto.fi/en/coursediaries>). Diary use is worth **2/100 points**. See brief instructions for the tool if needed, at <https://wiki.aalto.fi/pages/viewpage.action?pageId=151496898>

Course diary on the assignments (worth 2 points, DL 14.4.) Export CSV

A1: BUSINESS TECHNOLOGY  
TREND REPORTS

A2: PYTHON PROGRAMMING  
STARTERS

A3: SQL DATABASE QUERYING  
BASICS

A4: CHATBOT BUILDING WITH  
WATSON ASSISTANT

A5: DATA LITERACY FOR ALL

A6: EXPLORING AND  
VISUALIZING DATA WITH  
TABLEAU ONLINE

A7: TEXT-MINING RESEARCH  
FROM SCOPUS WITH  
LEXIMANCER

Competence level ⓘ

1	2	3	4	5
0.00%	0.00%	0.00%	0.00%	0.00%

Topic difficulty ⓘ

1	2	3	4	5
0.00%	0.00%	0.00%	0.00%	0.00%

Feeling ⓘ

- 😄 Excited
- 😊 Relaxed
- 😐 Neutral
- 😞 Bored
- 😟 Anxious

100%	0.00%	0.00%
------	-------	-------

The teacher will see your inputs and written reflections already during the course (= dynamic feedback), but not your personal *notes*!

Short diary reflections (a few sentences) are sufficient.



# Briefing for Assignment 1

## A1: Current technology trends

# Top technology trends for 2023 – Assignment 1

## Accenture



01 I will survive  
1 - 14



02 I'm a believer  
15 - 30



03 As It was  
31 - 44

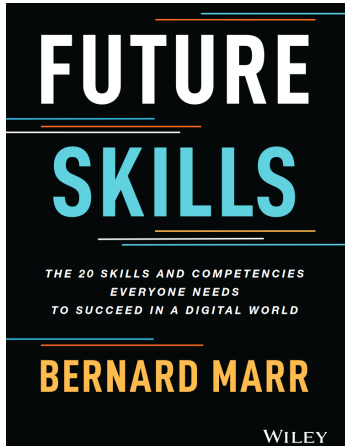


04 OK, Creativity  
45 - 57



05 Signed, sealed, delivered  
58 - 72

<https://www.accenture.com/us-en/insights/song/accenture-life-trends>



Futurist  
Bernard Marr

<https://bernardmarr.com/wp-content/uploads/2022/09/Future-Skills-ESampler.pdf>

## Deloitte

INTERACTION

Through  
the glass

INFORMATION

Opening  
up to AI

Above the  
clouds

COMPUTATION

2023

Flexibility,  
the best ability

BUSINESS OF  
TECHNOLOGY

In us  
we trust

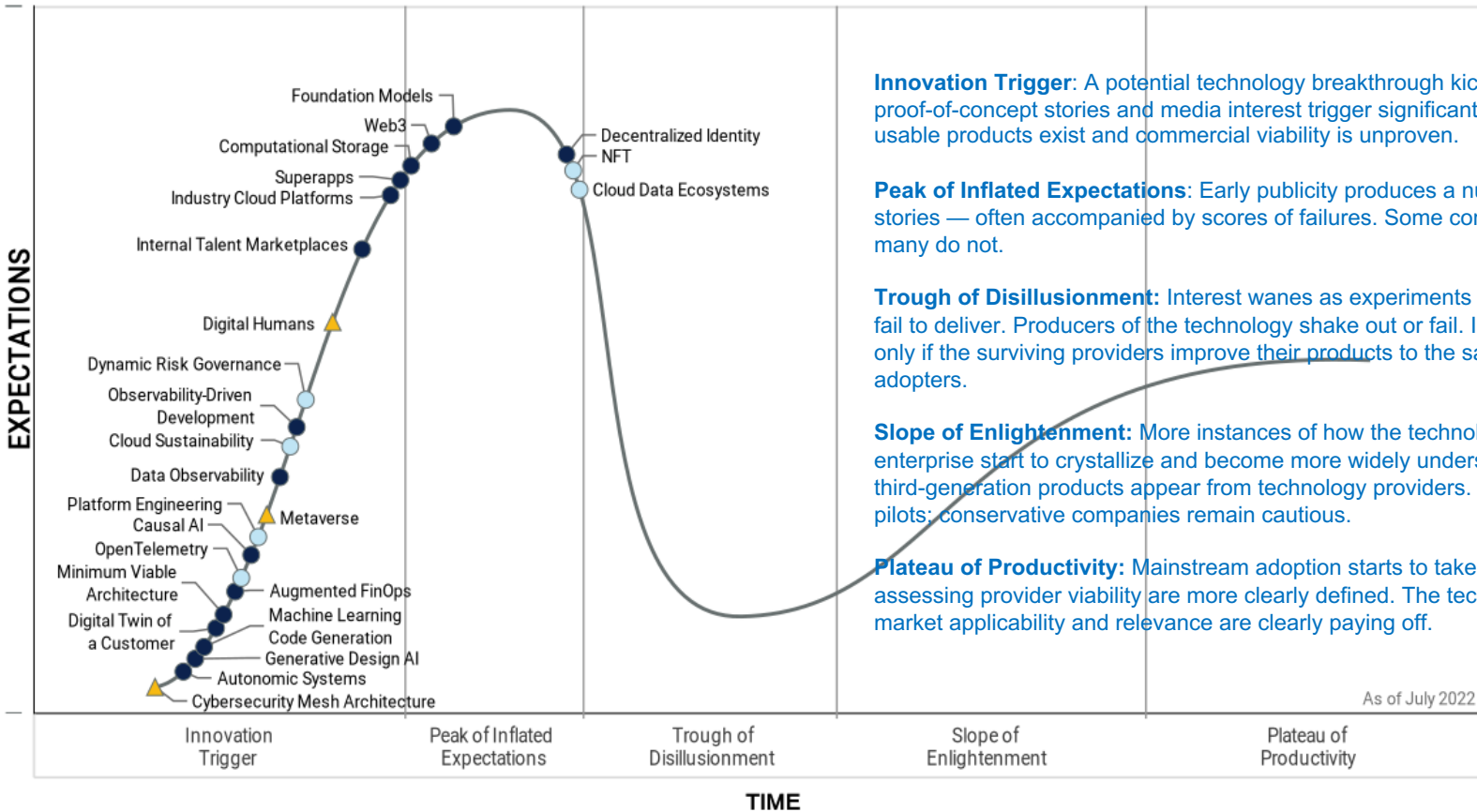
CYBER  
AND TRUST

Connect  
and extend

CORE  
MODERNIZATION

<https://www2.deloitte.com/us/en/insights/focus/tech-trends.html>

# Gartner's hype cycle for Emerging technologies 2022



**Innovation Trigger:** A potential technology breakthrough kicks things off. Early proof-of-concept stories and media interest trigger significant publicity. Often no usable products exist and commercial viability is unproven.

**Peak of Inflated Expectations:** Early publicity produces a number of success stories — often accompanied by scores of failures. Some companies take action; many do not.

**Trough of Disillusionment:** Interest wanes as experiments and implementations fail to deliver. Producers of the technology shake out or fail. Investments continue only if the surviving providers improve their products to the satisfaction of early adopters.

**Slope of Enlightenment:** More instances of how the technology can benefit the enterprise start to crystallize and become more widely understood. Second- and third-generation products appear from technology providers. More enterprises fund pilots; conservative companies remain cautious.

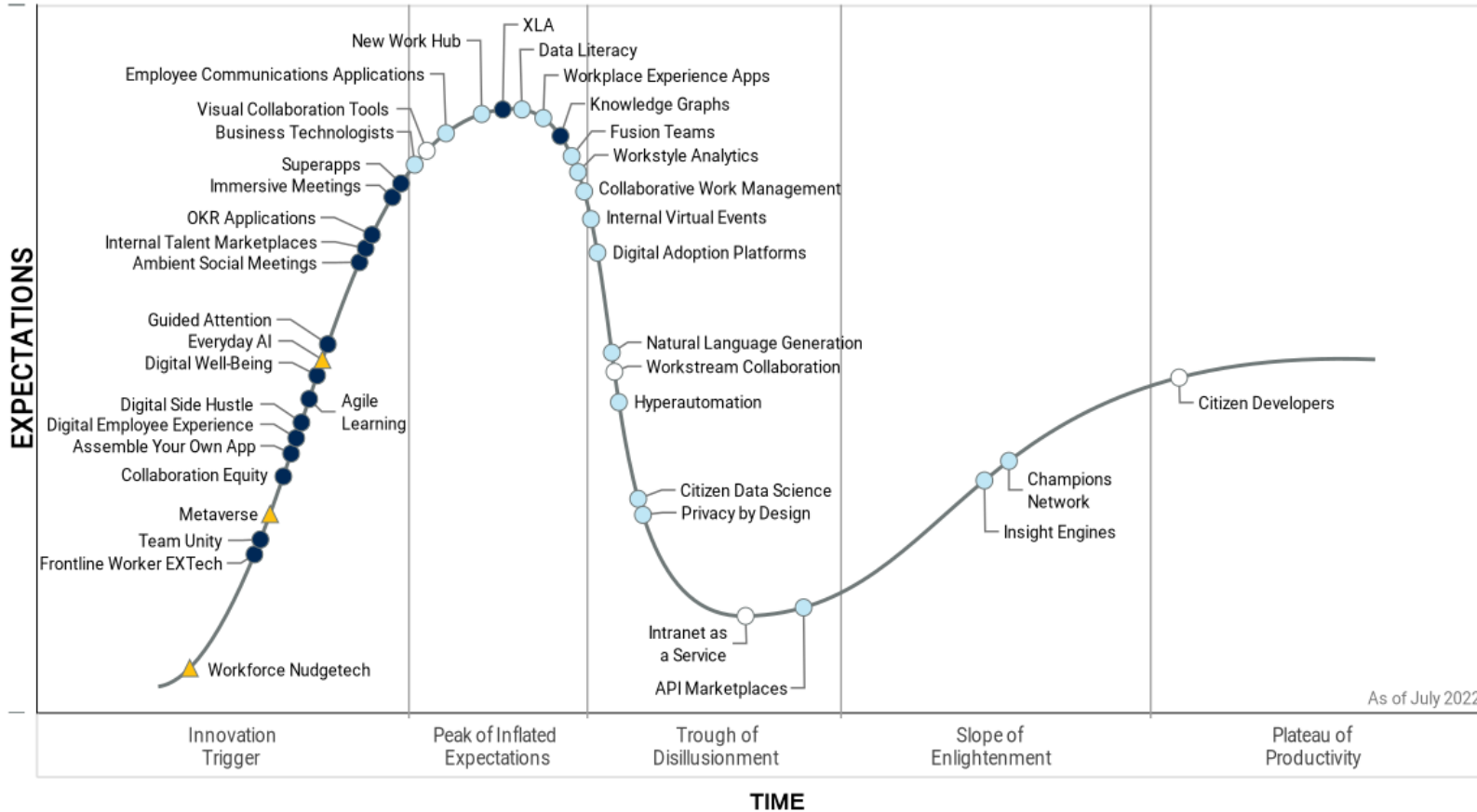
**Plateau of Productivity:** Mainstream adoption starts to take off. Criteria for assessing provider viability are more clearly defined. The technology's broad market applicability and relevance are clearly paying off.

As of July 2022

TIME

Plateau will be reached: ○ <2 yrs. ○ 2-5 yrs. ● 5-10 yrs. ▲ >10 yrs. ⊗ Obsolete before plateau

# Gartner's hype cycle for Digital workplace apps 2022



Plateau will be reached: ○ <2 yrs. ● 2-5 yrs. ● 5-10 yrs. ▲ >10 yrs. ⊗ Obsolete before plateau

<https://www.gartner.com/en/information-technology/research/hype-cycle> NOTE: Gartner's research reports are available at <http://gartner.aalto.fi>

# Gartner's priority matrix for Emerging technologies 2022

Benefit	Years to Mainstream Adoption			
	↓ Less Than 2 Years	↓ 2 - 5 Years ↓	5 - 10 Years ↓	More Than 10 Years ↓
Transformational		Cloud Sustainability Dynamic Risk Governance NFT Platform Engineering	Augmented FinOps Autonomic Systems Decentralized Identity Digital Twin of a Customer Foundation Models Generative Design AI Industry Cloud Platforms Internal Talent Marketplaces Machine Learning Code Generation Minimum Viable Architecture Web3	Cybersecurity Mesh Architecture Metaverse
High		Cloud Data Ecosystems Open Telemetry	Causal AI Computational Storage Data Observability Observability-Driven Development Superapps	Digital Humans
Moderate				
Low				

# Gartner's priority matrix for Digital workplace 2022

Benefit	Years to Mainstream Adoption			
	↓ Less Than 2 Years	↓ 2 - 5 Years ↓	5 - 10 Years ↓	More Than 10 Years ↓
Transformational		Business Technologists Citizen Data Science Employee Communications Applications Fusion Teams Workplace Experience Apps	Agile Learning Collaboration Equity Digital Side Hustle Internal Talent Marketplaces	Metaverse
High	Citizen Developers Intranet as a Service Visual Collaboration Tools Workstream Collaboration	Champions Network Collaborative Work Management Data Literacy Digital Adoption Platforms Hyperautomation Insight Engines Natural Language Generation New Work Hub Workstyle Analytics	Assemble Your Own App Frontline Worker EXTech Guided Attention Immersive Meetings Knowledge Graphs Superapps Team Unity XLA	Everyday AI Workforce Nudgetech
Moderate		API Marketplaces Internal Virtual Events Privacy by Design	Digital Employee Experience Digital Well-Being OKR Applications	
Low			Ambient Social Meetings	

# Wrap up



# Course goal 1: SEE THE BIG PICTURE !







**Course goal 2: KNOWING IS RELAXING.**

**"T-SHAPED PEOPLE" ARE WANTED!**

# Lots of technology issues and "ABC" acronyms!

Also managers and other business people have to study these on a "need to know" basis

- *Only selected topics will be discussed during the classes –  
others are left to be independently read and studied from the course book.*

# Where to follow technology developments relevant for organizations?

CIO.com, TechCrunch.com, ZDNet.com, Mashable.com, TIVI.fi, itewiki.fi, Digitoday.fi, Tech twitterers and bloggers...

The screenshot shows the Twitter profile for Engadget (@engadget). The profile header features the Engadget logo in white on a dark blue background. Below the logo, the profile name 'Engadget' and handle '@engadget' are visible. The bio states: 'Engadget is the original home for technology news and reviews. youtube.com/engadget'. It also shows 'Global' location, 'engadget.com' website, 'Joined April 2008', and '56.6K Photos and videos'. The profile statistics are: 167K Tweets, 275 Following, 2.39M Followers, 1,485 Likes, 3 Lists, and 3 Moments. The main content area shows a tweet from Engadget (@engadget) dated Feb 15, with the text 'What to expect from Samsung's Galaxy S10 event engt.co/2Ec74VK'. The tweet features a video thumbnail with the text 'SAMSUNG UNPACKED: WHAT TO EXPECT' and a play button icon. Below the tweet, there are 10 replies, 24 retweets, and 64 likes. To the right of the tweet, there are sections for 'New to Twitter?' with a 'Sign up' button, 'You may also like' featuring links to Gizmodo, TechCrunch, WIRED, The Verge, and CNET, and 'Worldwide trends' with links to #LoveYourPetDay and #DialInternacionalDelGato.

The collage consists of three article thumbnails from CIO.com. The top thumbnail is the CIO.com header with the logo 'CIO FROM IDG' and a navigation menu including 'UNITED STATES', 'DIGITAL MAGAZINE', 'EVENTS', 'CIO THINK TANK', 'IDG TECH(TALK) COMMUNITY', 'RESOURCE LIBRARY', 'NEWSLETTERS', and 'INSIDER'. The middle thumbnail shows a laptop with a virus icon on the screen and the headline '7 ways COVID-19 has changed IT forever'. The bottom thumbnail shows a hand holding a credit card and the headline '5 ways to build trust between business and IT'. To the right of the middle and bottom thumbnails is another article thumbnail with the headline '16 technology winners and losers, post-COVID'.

# Next steps in the course



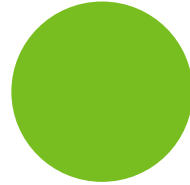
Watch the latter part of this intro lecture from the pre-recorded **Panopto video** 🎥 (Chapters 1 & 2 of the book)



Join the **MIS 2023 Spring** discussion board at Zulip!

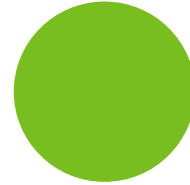
Use your **aalto email**, and register to Zulip when logging in first time:

<https://mis2023.zulip.aalto.fi>

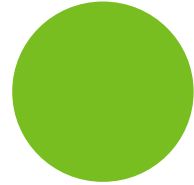


Start conducting **Assignment 1** (deadline Friday March 3 midnight) and the others according to their deadlines.

*Note: the assignment deadlines are flexible by a penalty of -1 point (2 days)*



Attend the lectures or start **watching the lecture videos regularly!** 2 lectures weekly, and (exceptions on Easter weeks). **Earn bonus points from presence.**



Give regular feedback and your **reflections on assignments & tools** used at the course with the **Course Diary** plugin at course main page!





- All messages
- Recent topics
- Private messages
- Mentions
- Starred messages
- Drafts

STREAMS

- # general
- # ICT news and articles
  - AI Ethics: Algorithmic Transpa...
  - EU's AI act article
  - Green data center news
- # lectures
- # MIS\_assignment1
- # MIS\_assignment2
- # MIS\_assignment3
- # MIS\_assignment4
- # MIS\_assignment5
- # MIS\_assignment6
- # MIS\_assignment7
- Subscribe to more streams

TOPICS are under #streams

ICT news and articles | Green data center news | Mar 17

ICT news and articles | EU's AI act article | Mar 28

**Johanna Bragge** 10:35

If you are interested in the EU's "AI act" and AI ethics, here is a recent open-access article written by Saidot's founder Meeri Haataja and professor of Ethics and Technology Joanna J. Bryson from the Hertie School of Government: <https://www.saidot.ai/post/reflections-on-the-eus-ai-act-and-how-we-could-make-it-even-better>. See also other recent articles by prof. Bryson on AI ethics [https://scholar.google.com/citations?hl=en&user=QOU1RTUAAAAJ&view\\_op=list\\_works&sortBy=pubdate](https://scholar.google.com/citations?hl=en&user=QOU1RTUAAAAJ&view_op=list_works&sortBy=pubdate)

ICT news and articles | AI Ethics: Algorithmic Transparency | Apr 09

**Johanna Bragge** 07:21

Wolt has published this week its first algorithmic transparency report. <https://explore.wolt.com/fin/fin/transparency>

Excerpt from the report: "As a digital platform, algorithms are a vital part of our work and facilitate millions of decisions everyday. Yet, today, in the digital age, many people associate algorithms with concern due to their non- transparency. In this section, we aim to dispel that concern by increasing the broader understanding of how algorithms are – or sometimes are not – used at Wolt. We hopefully provide enough context on what happens as part of a delivery order to give you a good understanding of the whole process.

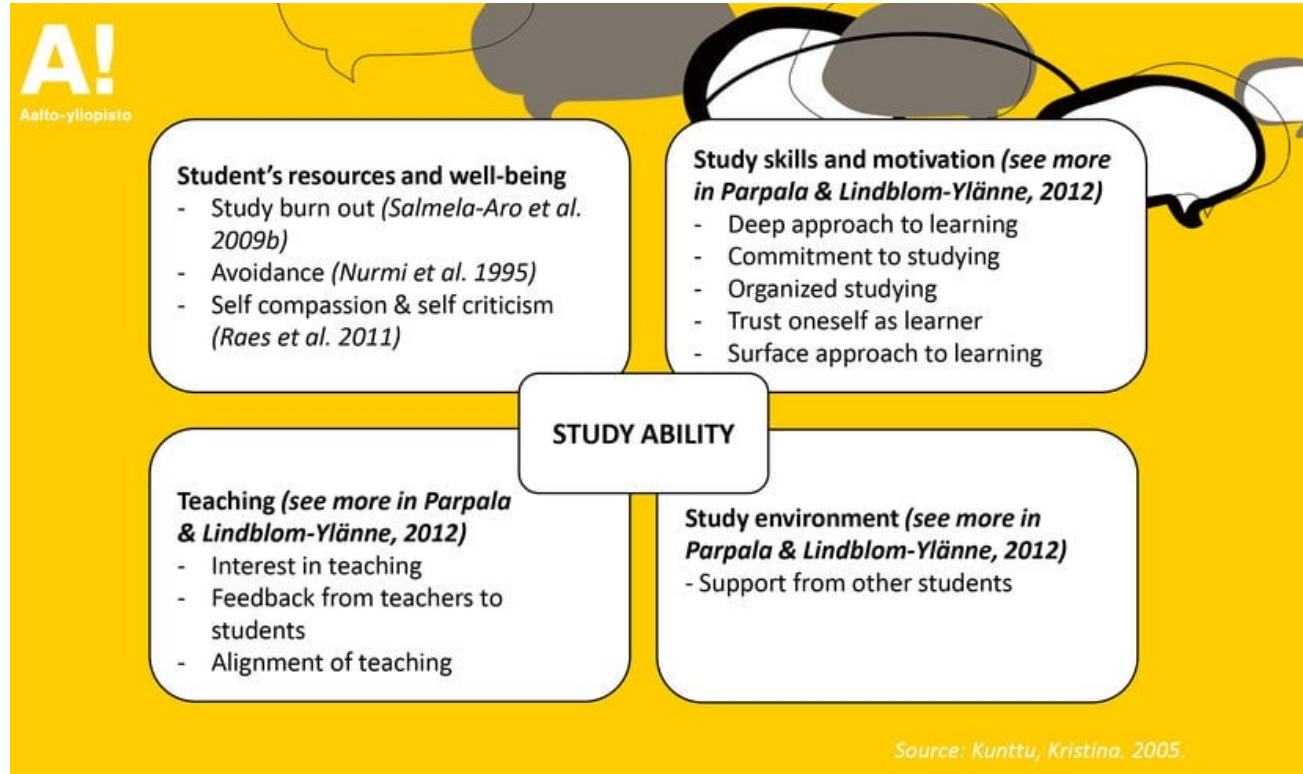
We have drawn inspiration from the UK Government's Algorithmic transparency template published by the Central Digital and Data Office, and also the City of Amsterdam's Algorithm register for explaining the algorithms they have in use. The following sections are based on the situation at Wolt in February 2022 and how we partner with self- employed couriers, i.e. courier partners, as they form the majority of couriers on our platform"

Start a new topic clicking **New topic**, after selecting the #stream. Check first that there is no existing topic already on your issue.

Message #ICT news and articles > AI Ethics: Algorithmic Transparency

# AllWell? survey, if you received it, please answer today!!

The AllWell? questionnaire on study wellbeing is sent to all of Aalto's second-year bachelor's and first-year master's students every year. Its purpose is to collect information on students' study abilities, motivation, teaching, and peer support. The questionnaire is open from 15 February to 1 March 2023.



The survey is anonymous and you will get **feedback on your own studying** after answering, besides helping the **university to support student wellbeing!**