Aalto University
School of Business

Management Information Systems
37C00100 – Spring 2019 – Feb 26

Department of **Information and Service Management (ISM)**
Faculty of **Information Systems Science (ISS)**

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Teaching Assistants: Yanqing Lin & Maryam Roshan
Several visiting lecturers from companies

Topics in today's lecture

- Teacher's background
- Information age in broader perspective
  - Industrial revolutions
  - ICT utilization in Finland
  - digital maturity of organizations
  - future jobs and skills
- Motivation: Why should you study MIS?
- Information Systems Science (ISS) - a young discipline
- Practical information about the lectures & assignments
- Chapters 1 & 2 of the book (selectively)
  - Information Systems and the role of general and functional managers
  - IS Defined
- Wrap up
- Information on Aalto's Dynamic Feedback System (DFS) Pilot

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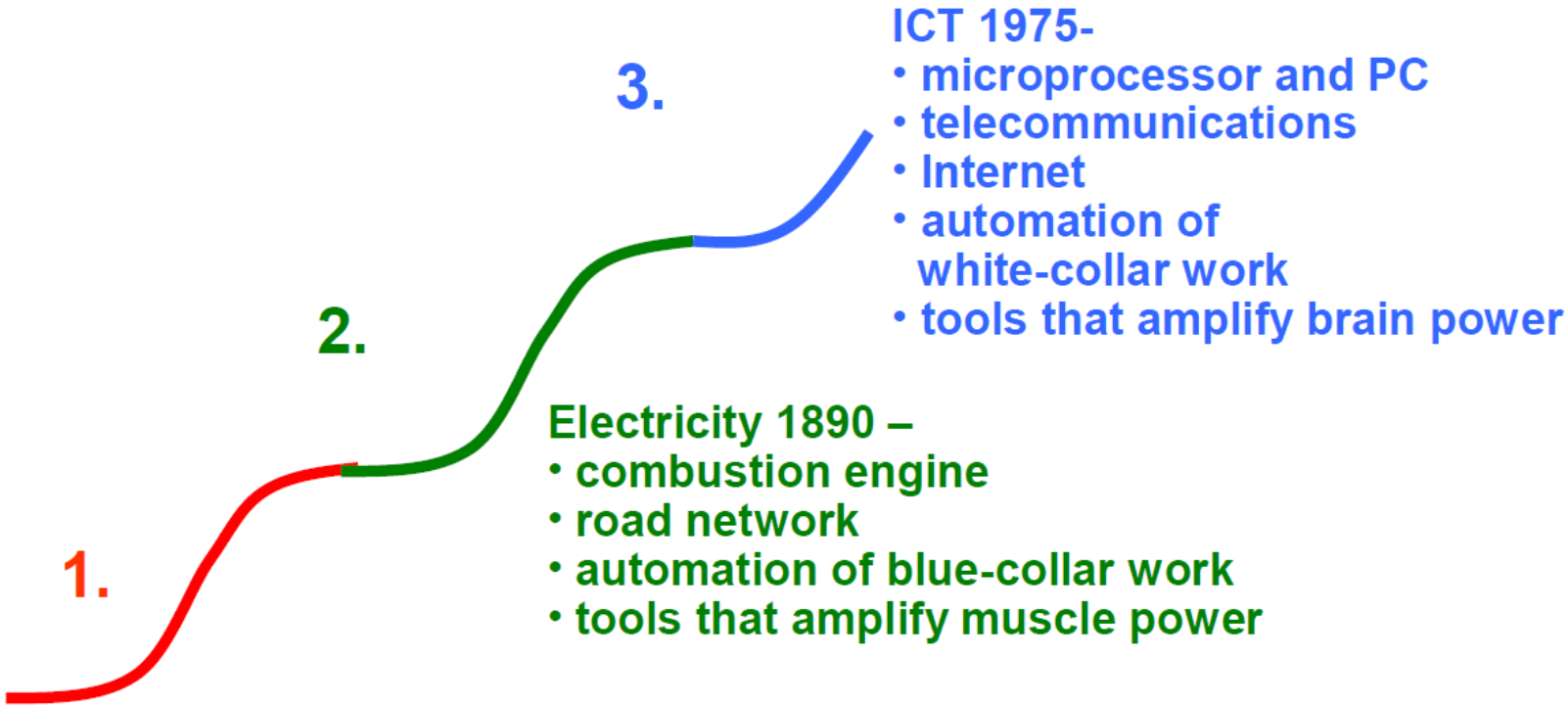
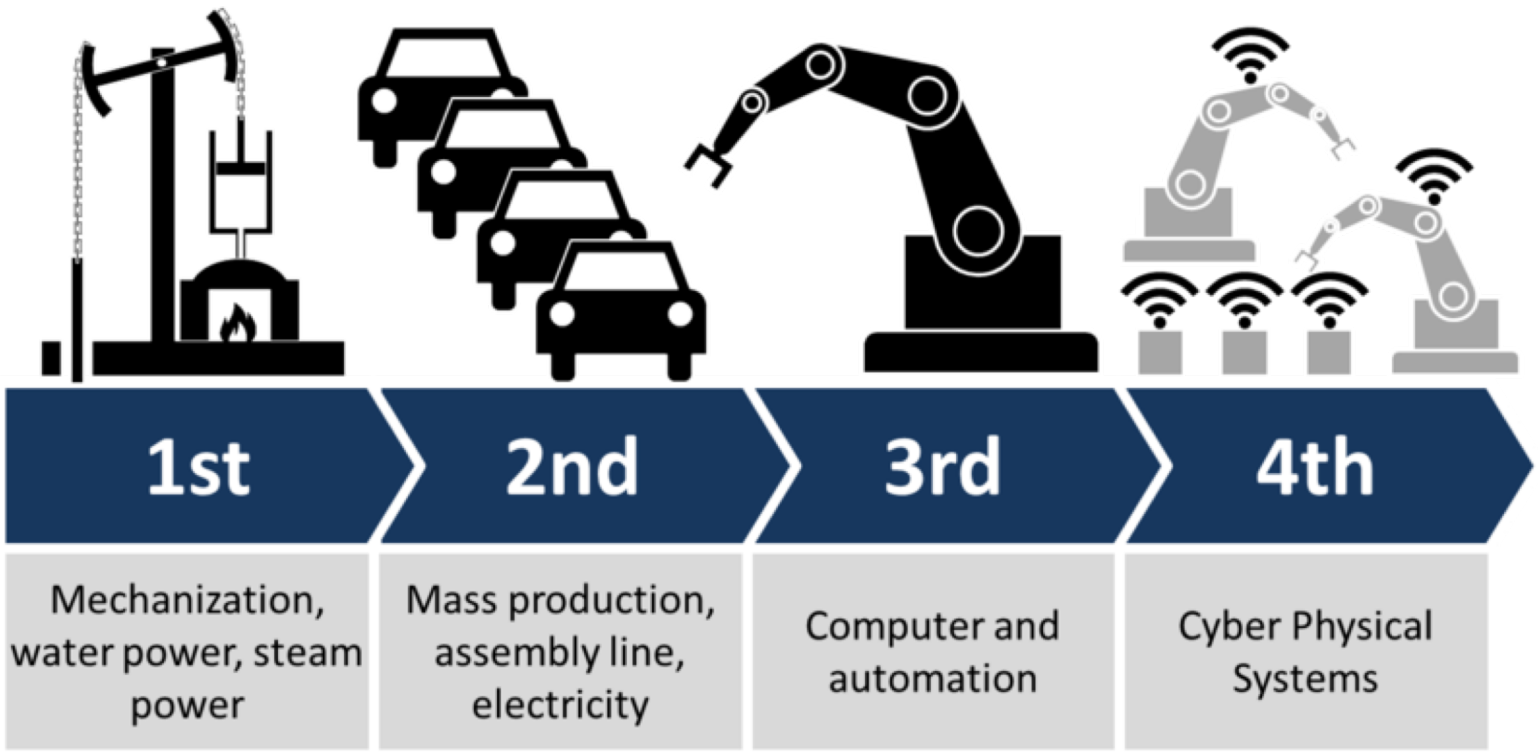
Industrial revolutions

3 industrial revolutions and general purpose technologies



Source: Aalto Prof. Matti Pohjola ”Increasing Welfare through the Interaction of Productivity and Employment Performance”, Presentation prepared for the Ministry of Labour

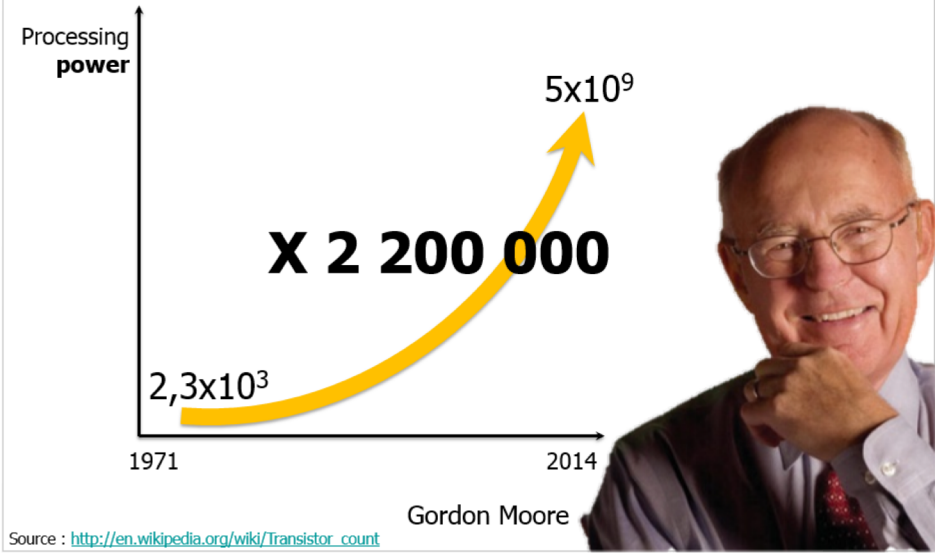
"Today, we are at the start of the **4th industrial revolution**. Built on the digital age, and distinguished by a **ubiquitous and mobile internet**, small powerful cheap **sensors**, **artificial intelligence** and **machine learning**. It's suggested we're at an inflection point for change."



Source: Shankar, U. (2016), **"Industry 4.0 - The fourth industrial revolution"**, https://www.linkedin.com/pulse/industry-40-fourth-industrial-revolution-umang-shankar, Nov 28, 2016.

Enabling trends

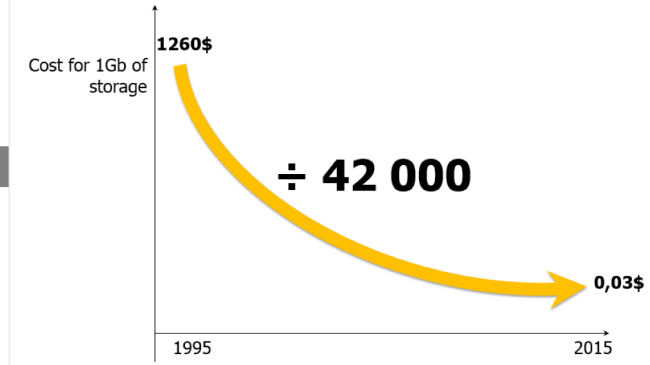
Moore's law



Source : http://en.wikipedia.org/wiki/Transistor_count

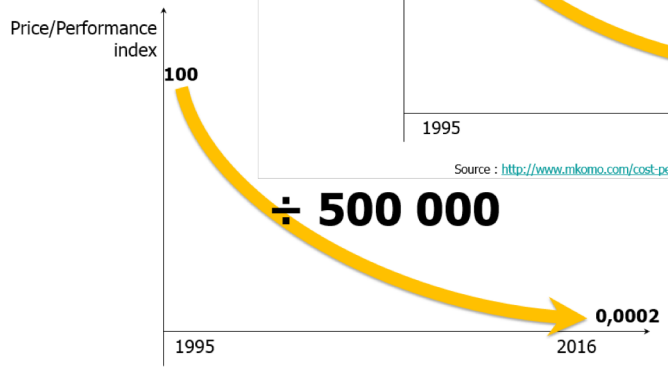
http://celebslists.com/images/gordon-moore-04.jpg

Dropping storage costs



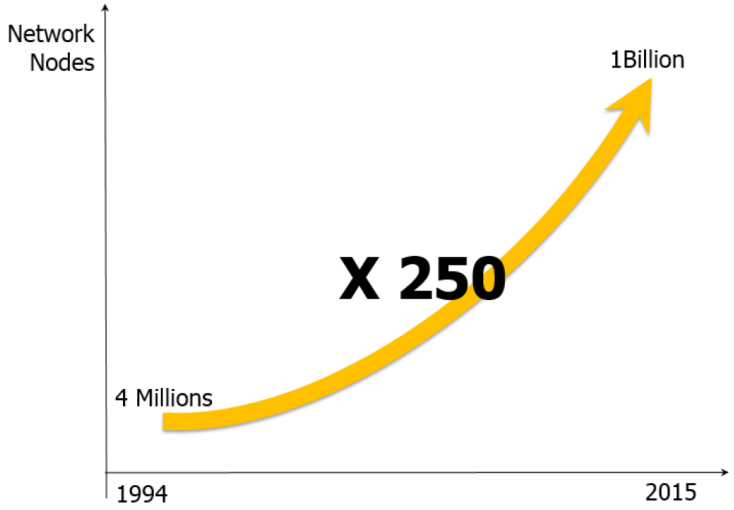
Source : http://www.mkomo.com/cost-per-gigabyte-update

Dropping prices!



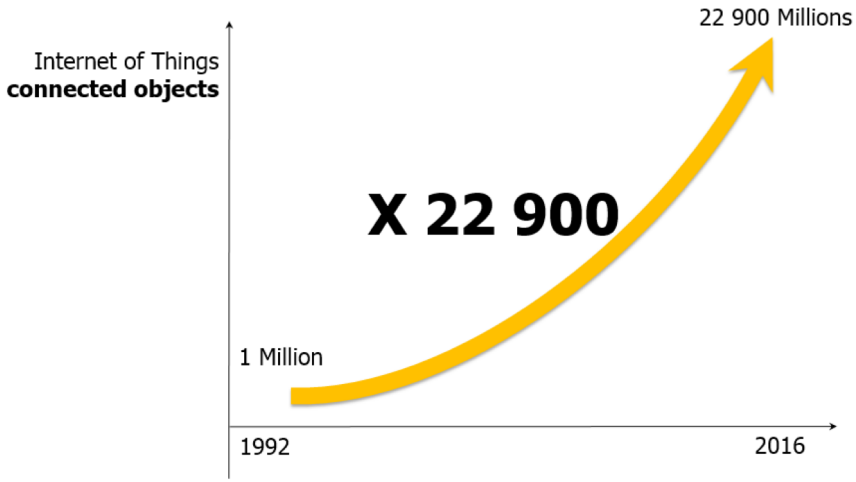
Source : http://www.singularity.com/charts/page62.html

The explosion of the net



Source : Internet Systems Consortium

The IoT pervasivness



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

MIT professors Brynjolfsson and McAfee, books 2011 and 2014

”The root of our problems is not that we’re in a Great Recession, or a Great Stagnation, but rather that we are in the early throes of a Great Restructuring.
***Our technologies are racing ahead but many of our skills and organizations are lagging behind**.” (2011)*

*”**The role of humans as the most important factor of production is bound to diminish** in the same way that the role of horses in agricultural production was first diminished and then eliminated by the introduction of tractors.”* (2014)

Brynjolfsson, E. and McAfee, A. (2011) *Race against the machine. How the digital revolution is accelerating innovation, driving productivity, and irreversibly transforming employment and the economy*.

Brynjolfsson, E. and McAfee, A. (2014) *The Second Machine Age*

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** (e.g. self-driving cars, online translation).
  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.

McAfee and Brynjolfsson (2017), *Machine, Platform, Crowd: Harnessing our Digital Future*. W.W. Norton; 402 p.
https://www.economist.com/news/books-and-arts/21724976-two-experts-mit-analyse-business-implications-our-digital-future-what-will

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ICT utilization in Finland

Prof. Pohjola's report to Teknologiateollisuus

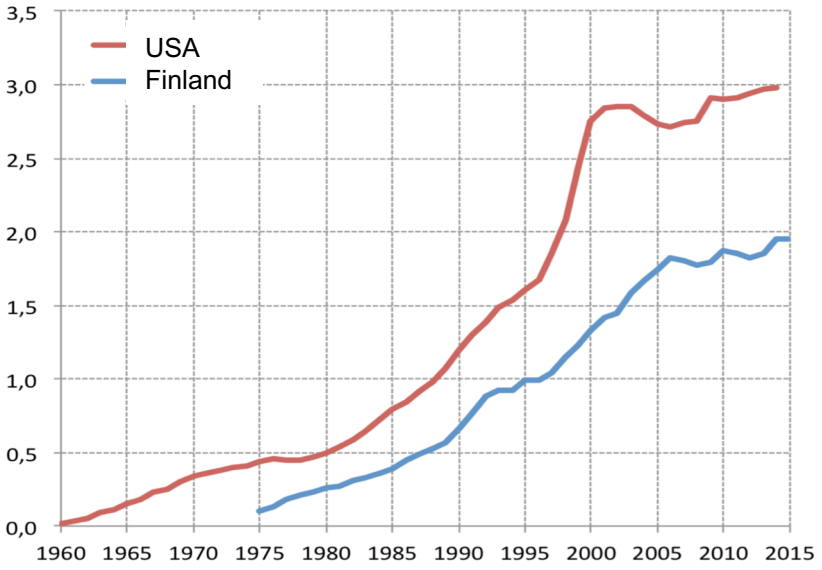
"Regarding the utilization of ICT, we are at the same phase as how electricity was used in the 1930's. The greatest productivity gains from electricity accrued from the ***new ways of operating*** *that it enabled."*

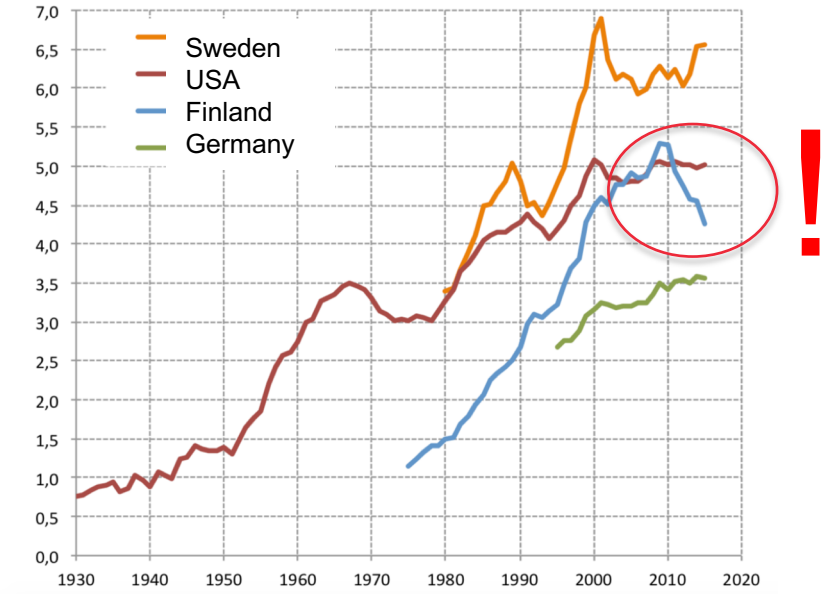
"Why ICT would revolutionize the world only now? Because digital technology is only now so cheap that everybody can afford it. The computing power of a tablet is the same as that of a 10-15 year-old supercomputer, which cost millions."

"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."*

Pohjola, M. (2014), "Finland to a new rise. ICT and digitalization as the sources of productivity and economic growth", available at http://teknologiateollisuus.fi/sites/default/files/file_attachments/pohjola_tuottavuusraportti2014_web_0.pdf

Prof. Pohjola's presentation on ICT, productivity and economic growth (31.1.2019)





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

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

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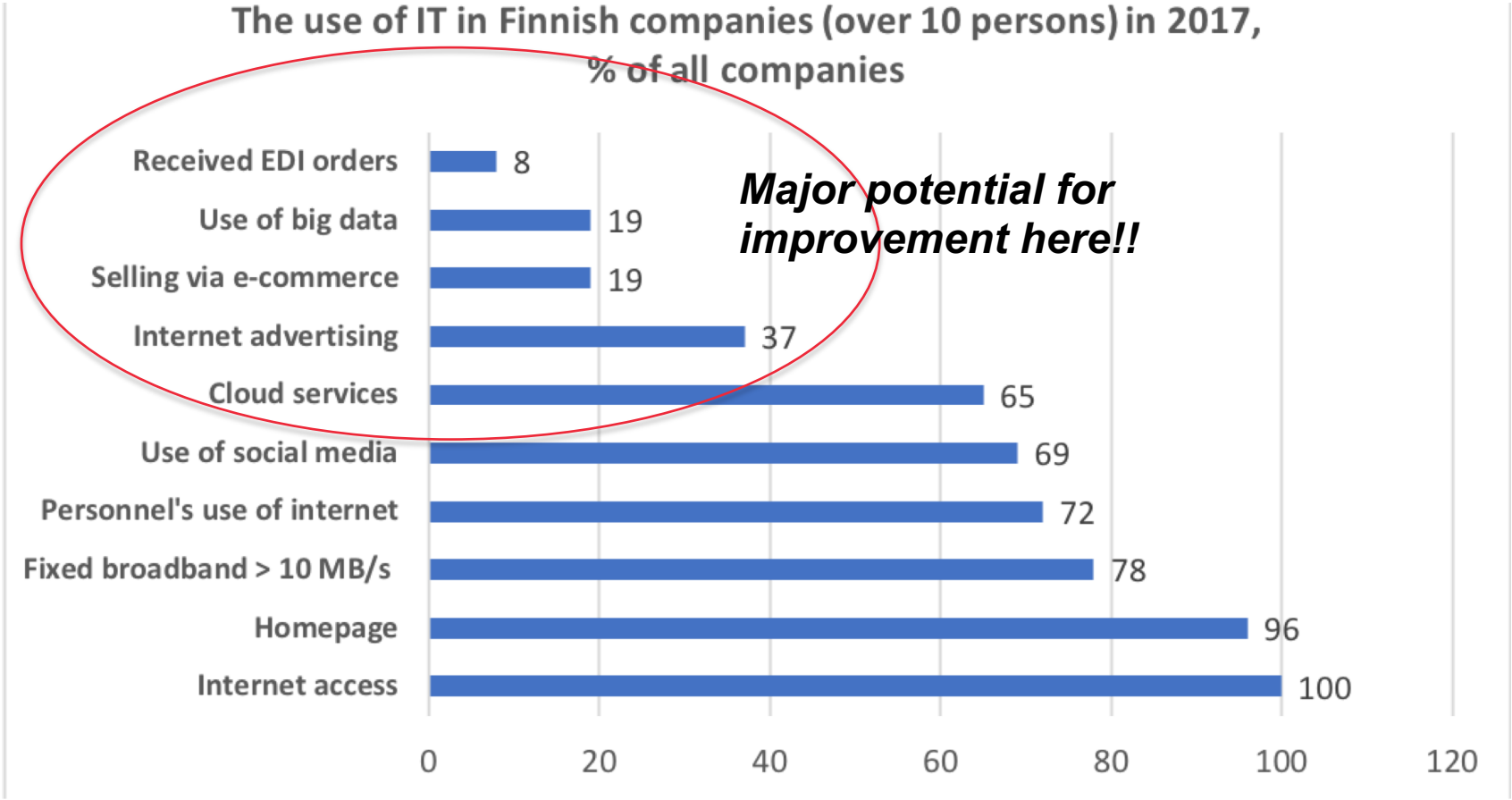
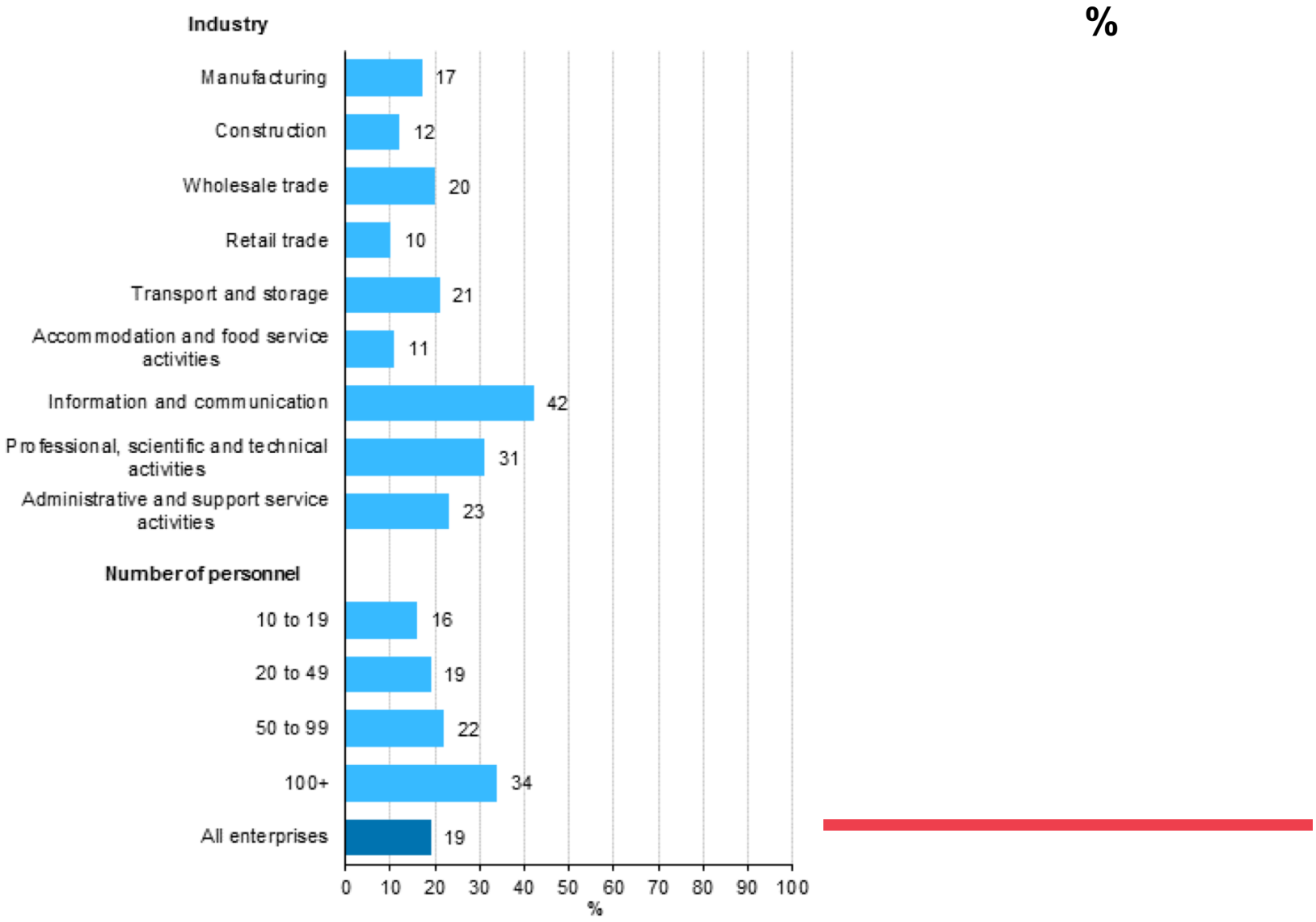
Source:
http://ilf.fi/sites/ilf/files/yhdistys/tuottavuus-31012019/ILF-IT-tuottavuus-iltapuhde-190131-4-Matti-Pohjola.pdf

Use of IT in Finnish companies in 2017, Statistics Finland



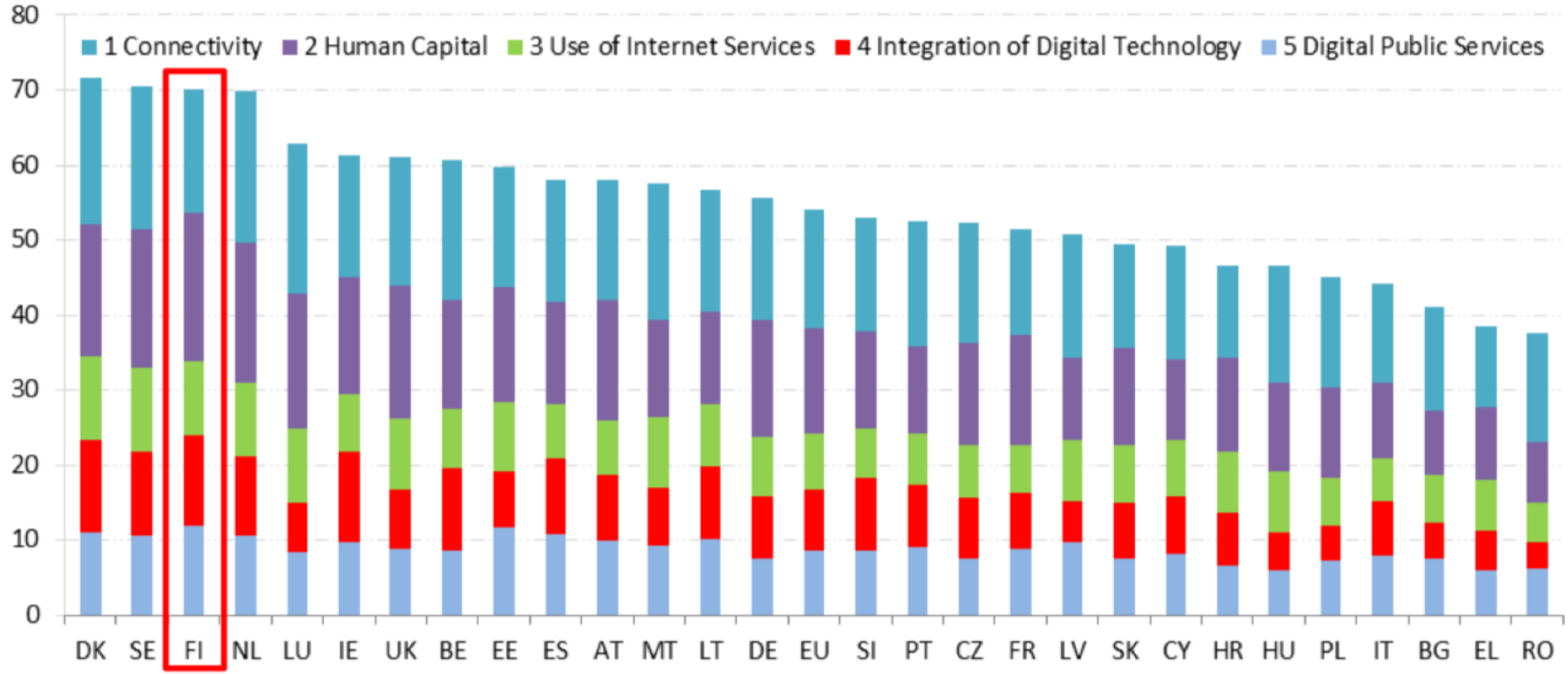
Data from https://www.stat.fi/til/icte/2018/icte_2018_2018-11-30_fi.pdf, 30.11.2018

Utilization of big data is utilized more in the ICT industry and in larger firms



Source: http://www.stat.fi/til/icte/2018/icte_2018_2018-11-30_tie_001_en.html, November 30, 2018.

Finland is 3rd in the **Digital Economy and Society Index** DESI 2018



In addition to its leadership position in digital skills, which Finland has already held for several years, it also became the top scorer in digital public services. Moreover, it improved its score on the integration of digital technologies, where it is closing in on the frontrunner. While it remained steady in 5th place for the use of Internet services, it went down two places in the connectivity dimension, which is partly due to the introduction of a new indicator on ultra-fast broadband, where Finland does not score very well.

Source: http://ec.europa.eu/information_society/newsroom/image/document/2018-20/fi-desi_2018-country-profile_eng_B4400116-A9B9-4D17-9137969FEFF24981_52222.pdf , 2018.

DESI Index 2018 components

The DESI report tracks the progress made by Member States in terms of their digitalization. It is structured around five chapters:

1 Connectivity	Fixed broadband, mobile broadband and prices
2 Human Capital	Internet use, basic and advanced digital skills
3 Use of Internet Services	Citizens' use of content, communication and online transactions
4 Integration of Digital Technology	Business digitisation and e-commerce
5 Digital Public Services	eGovernment and eHealth

Source: http://ec.europa.eu/information_society/newsroom/image/document/2018-20/fi-desi_2018-country-profile_eng_B4400116-A9B9-4D17-9137969FEFF24981_52222.pdf, 2018.

Finland scores high in digital public services

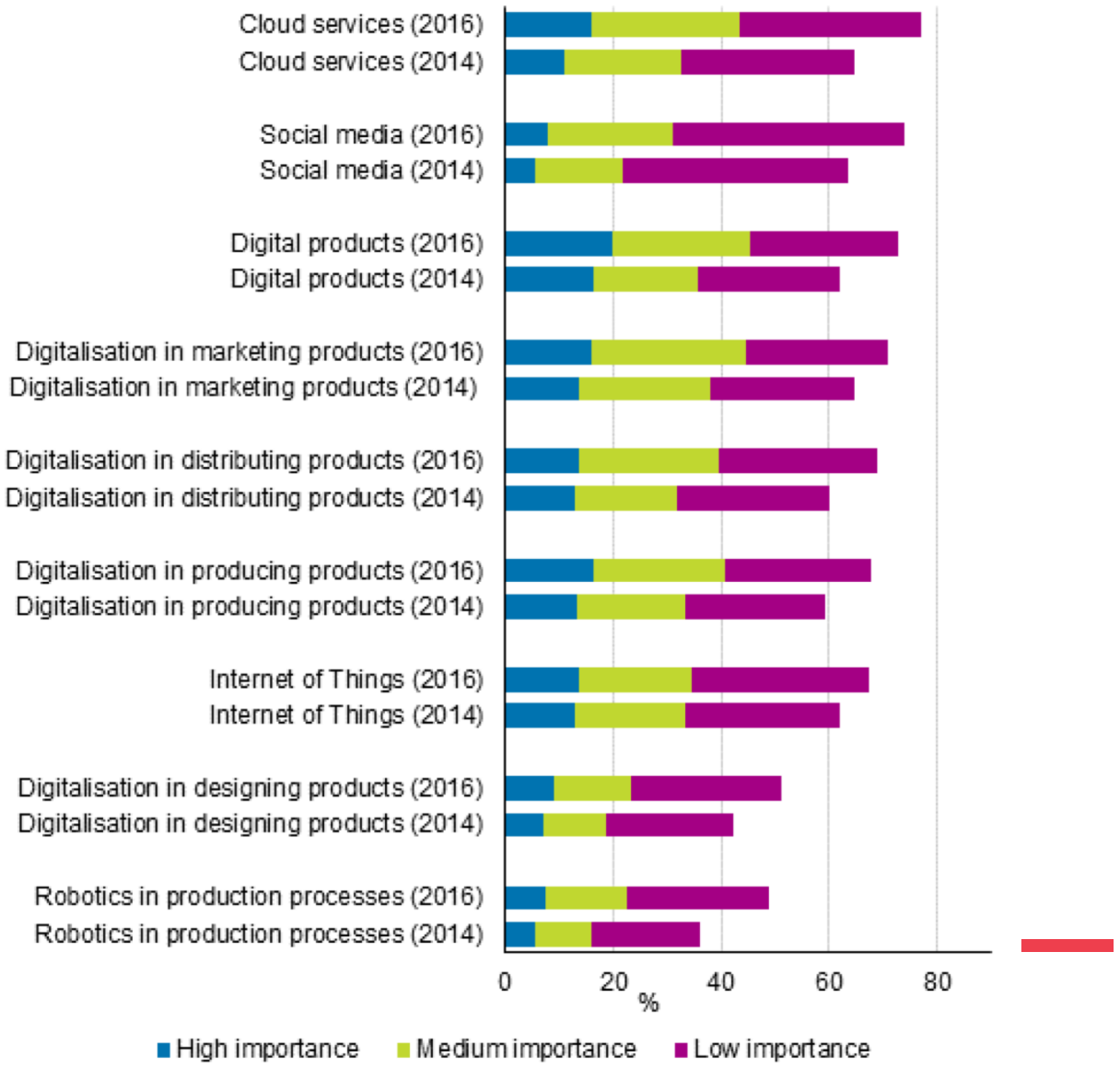
Cluster = High-performing countries that are Denmark, Sweden, Finland, the Netherlands, Luxembourg, Ireland, the UK, Belgium and Estonia.

5 Digital Public Services	Finland		Cluster	EU
	rank	score	score	score
DESI 2018	1	78.6	63.0	57.5
DESI 2017	2	75.8	60.2	53.7

	Finland					EU
	DESI 2018			DESI 2017		DESI 2018
	value		rank	value	rank	value
5a1 eGovernment Users[11]	**91%**	→	**2**	**91%**	**2**	**58%**
% internet users needing to submit forms	2017			2016		2017
5a2 Pre-filled Forms	**86**	↑	**3**	**82**	**3**	**53**
Score (0 to 100)	2017			2016		2017
5a3 Online Service Completion	**93**	→	**8**	**93**	**6**	**84**
Score (0 to 100)	2017			2016		2017
5a4 Digital Public Services for Businesses	**80**	→	**21**	**80**	**16**	**83**
Score (0 to 100) - including domestic and cross-border	2017			2016		2017
5a5 Open Data	**90%**	↑	**5**	**76%**	**7**	**73%**
% of maximum score	2017			2016		2017
5b1 eHealth Services	**49%**		**1**	**NA**		**18%**
% individuals	2017					

Source: http://ec.europa.eu/information_society/newsroom/image/document/2018-20/fi-desi_2018-country-profile_eng_B4400116-A9B9-4D17-9137969FEFF24981_52222.pdf , 2018.

Importance of digitalization in enterprises' business activity: in 2012 to 2014 and in 2014 to 2016 (share of enterprises)



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Source: https://www.stat.fi/til/inn/2016/inn_2016_2018-04-12_kat_009_en.html , April 12, 2018.

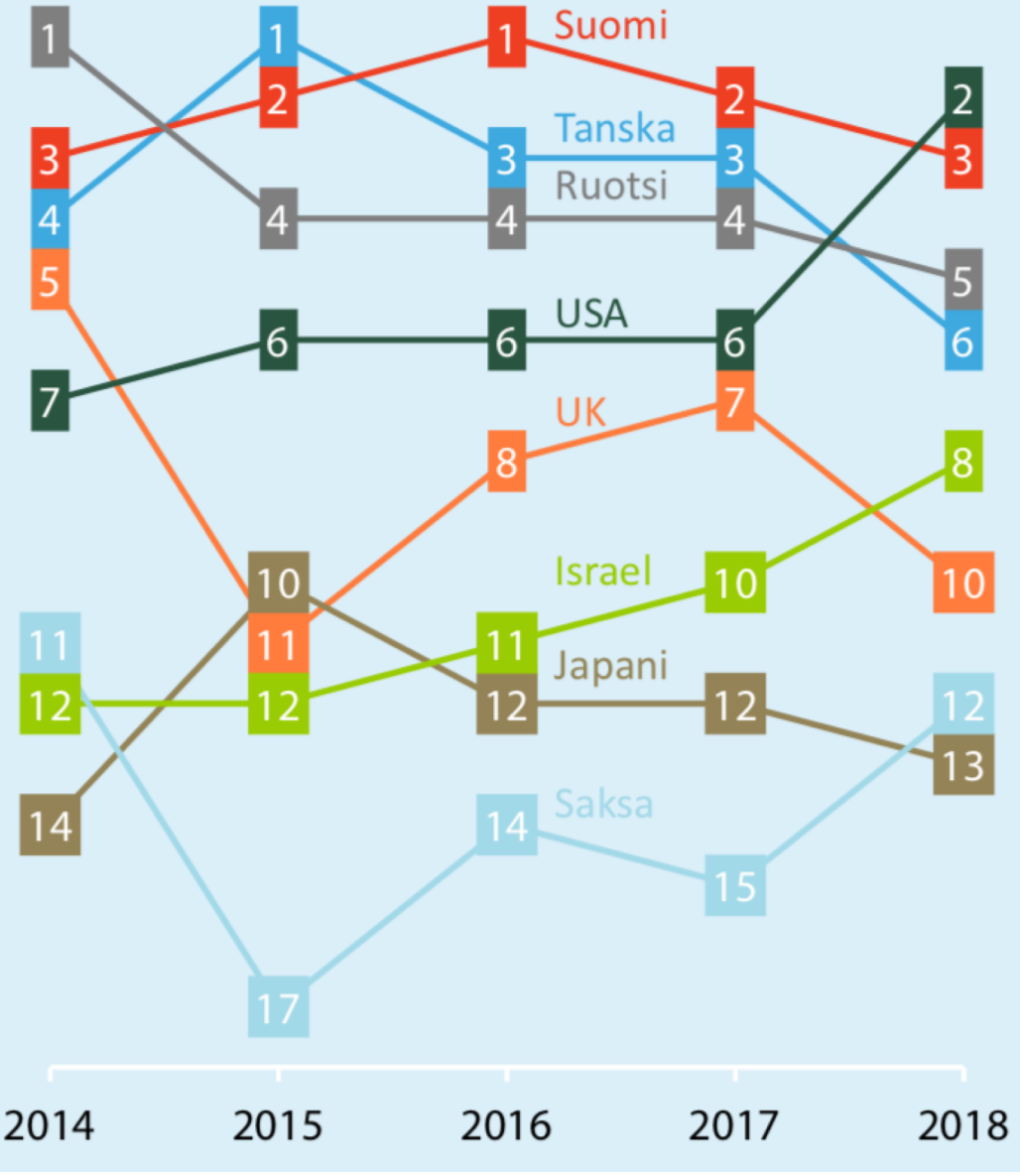
Digi barometer 2018, Finland scores 3rd overall

Kuvio 2

Digibarometri: Eräiden vertailumaiden sijoitukset vuosina 2014–2018.

Suomi on ollut tasaisen varma suorittaja Digibarometrissä. Sijoitustaan ovat eniten nostaneet vuodesta 2014 Yhdysvallat ja Israel. Eniten asemiaan ovat menettäneet Iso-Britannia ja Ruotsi.

Lähde: Digibarometrit 2014–2018.



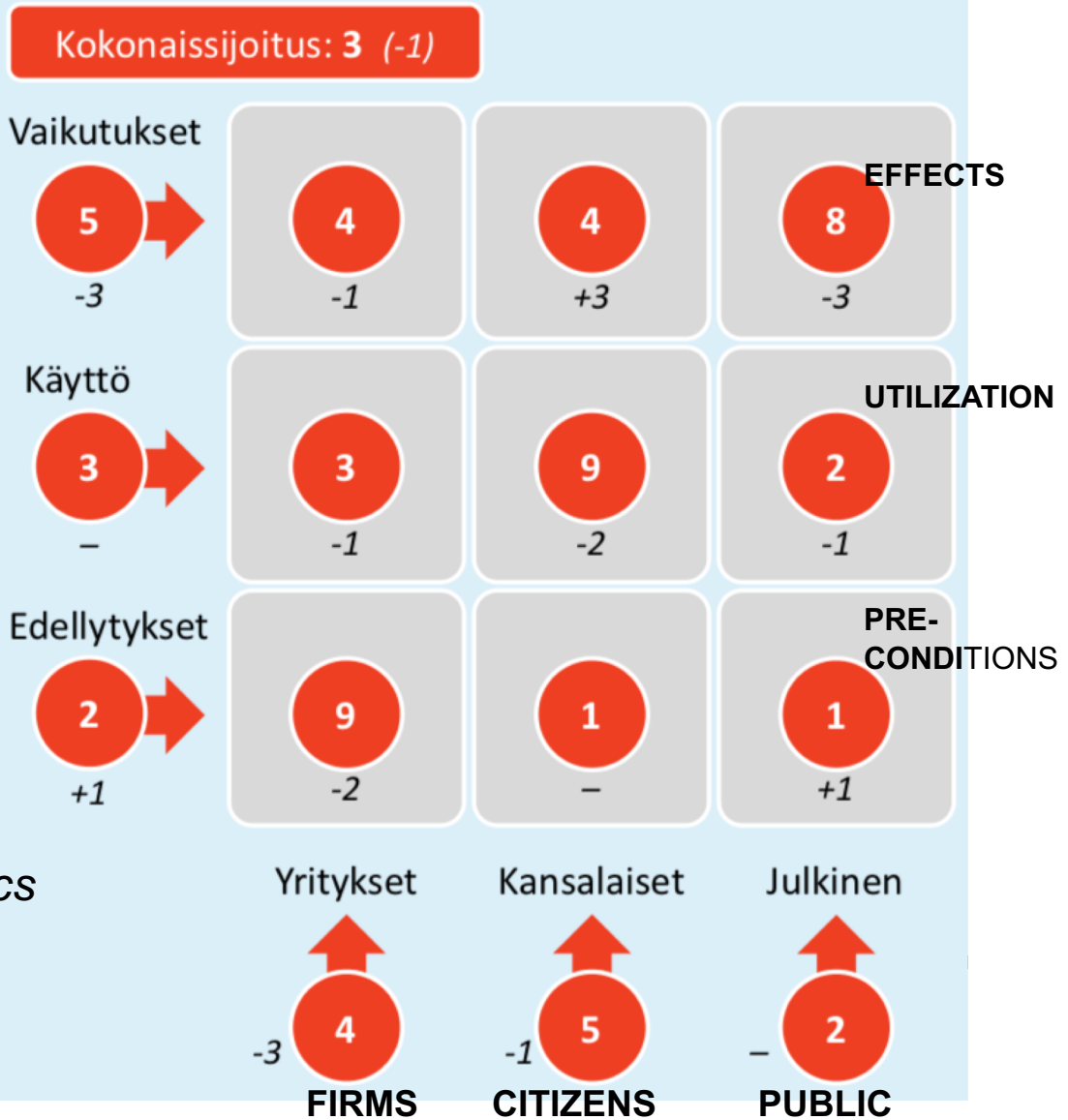
Source: http://www.digibarometri.fi/, Etlatieto Oy

Digi barometer 2018

Liitekuvio 39

Suomen kokonais-, taso-, sektori- ja solukohtaiset sijoitukset Digibarometrissä.

Suomi sijoittuu kolmanneksi Digibarometrin kokonaisindeksissä. Suomi menestyy parhaiten edellytyksissä ja julkisessa sektorissa. Sijoitusten muutos viimevuotiseen verrattuna kursiivilla. Suomen merkittävin parannus on tapahtunut kansalaisvaikutuksissa. Suurin tippuminen liittyy julkisen sektorin vaikutuksiin.



Change from 2017 marked in italics

Source: http://www.digibarometri.fi/, Etlatieto Oy

https://youtu.be/eZbfm9RVQ4g

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https://www.businessfinland.fi/en/do-business-with-finland/explore-finland/ict-digitalization/

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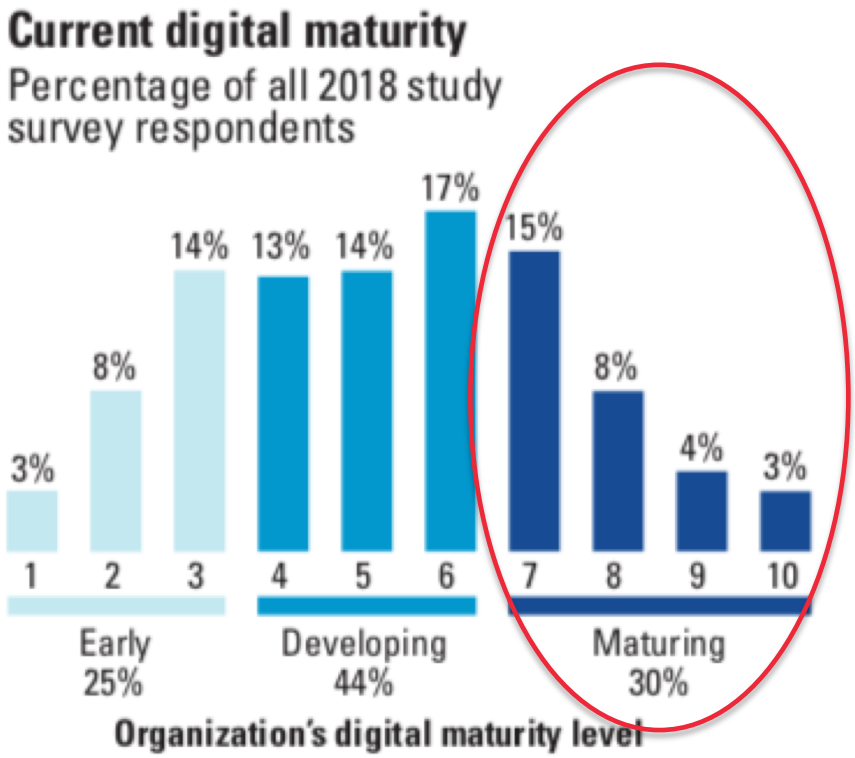
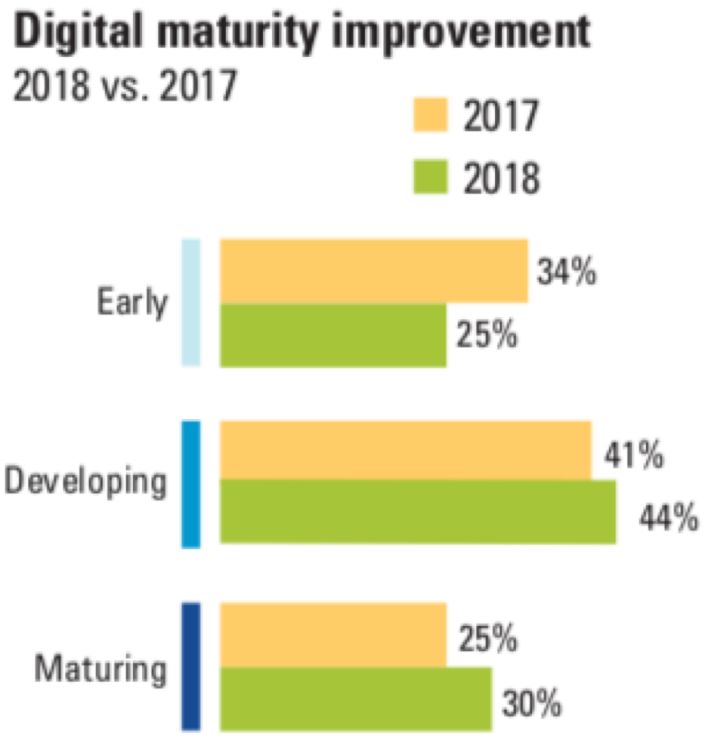
Digital maturity at the global level

Global survey* on companies' digital maturity



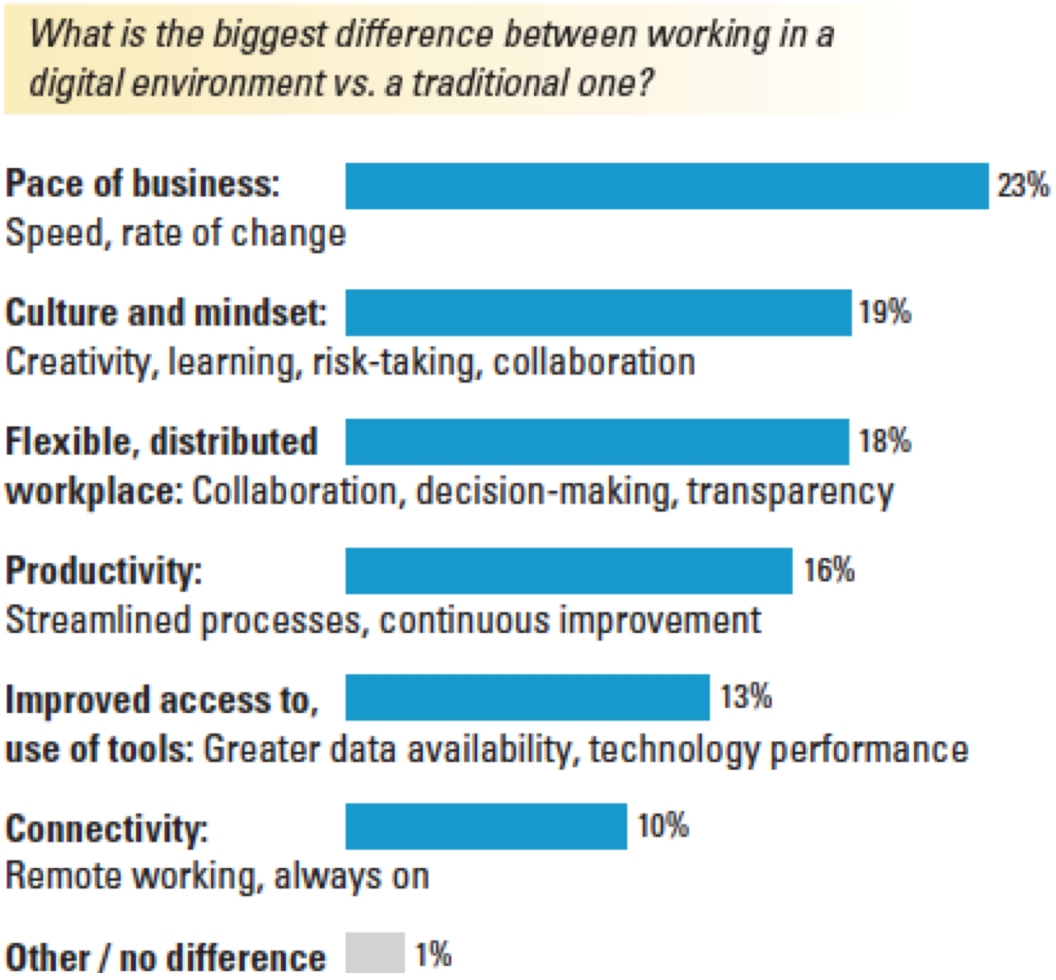


The respondents were asked to **imagine an ideal organization utilizing digital technologies and capabilities to improve processes, engage talent across the organization, and drive new value-generating business models.** They were then asked to **rate their company against that ideal on a scale of 1 to 10**.
Three maturity groups were observed: early (1-3), developing (4-6), and maturing (7-10).

Source: Kane et al. (2018), "Coming of age digitally", *MIT Sloan Management Review* with Deloitte Digital, https://www2.deloitte.com/content/dam/Deloitte/nl/Documents/technology/deloitte-nl-consulting-coming-of-age-digitally.pdf

***Survey of over 4300 respondents and 17 interviews in 123 countries & 28 industries in Fall 2017.**

Digital business requires companies to act and respond faster than they ever have before



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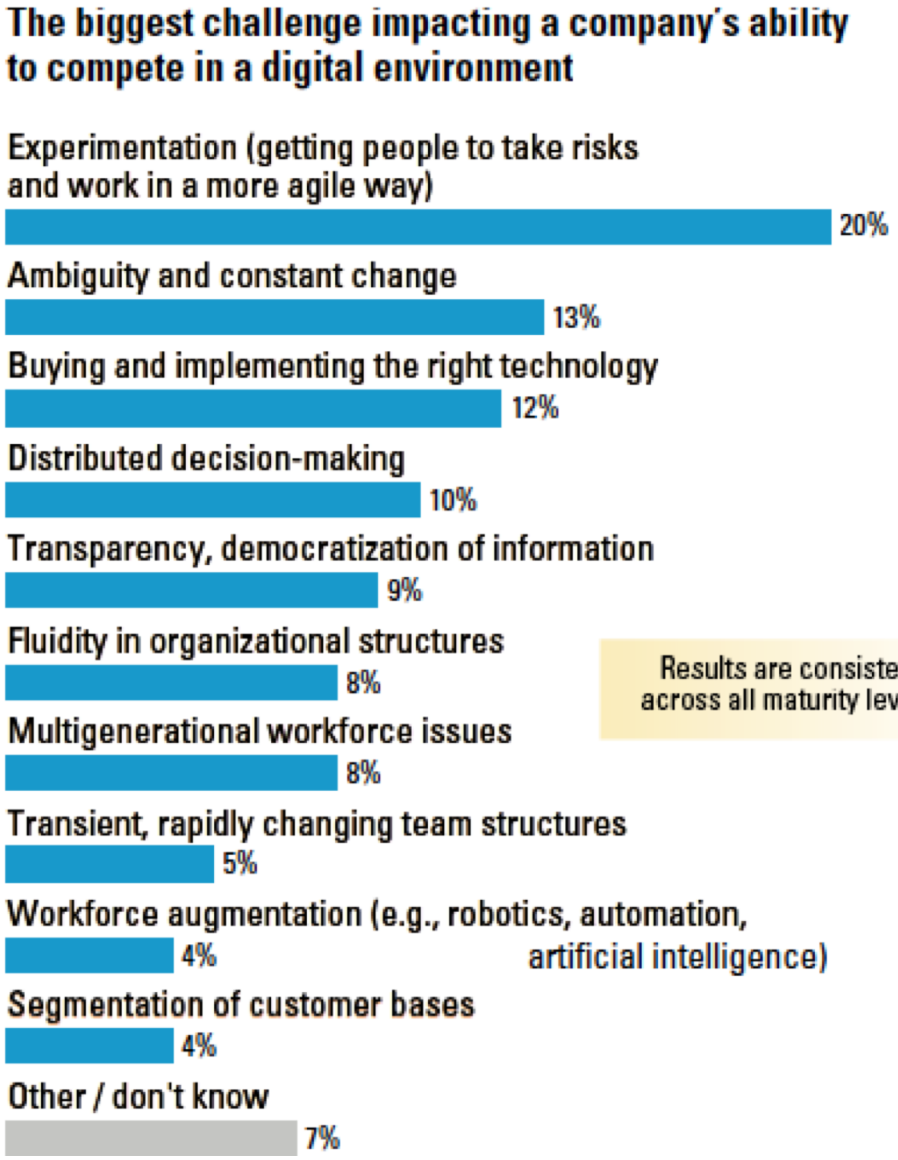
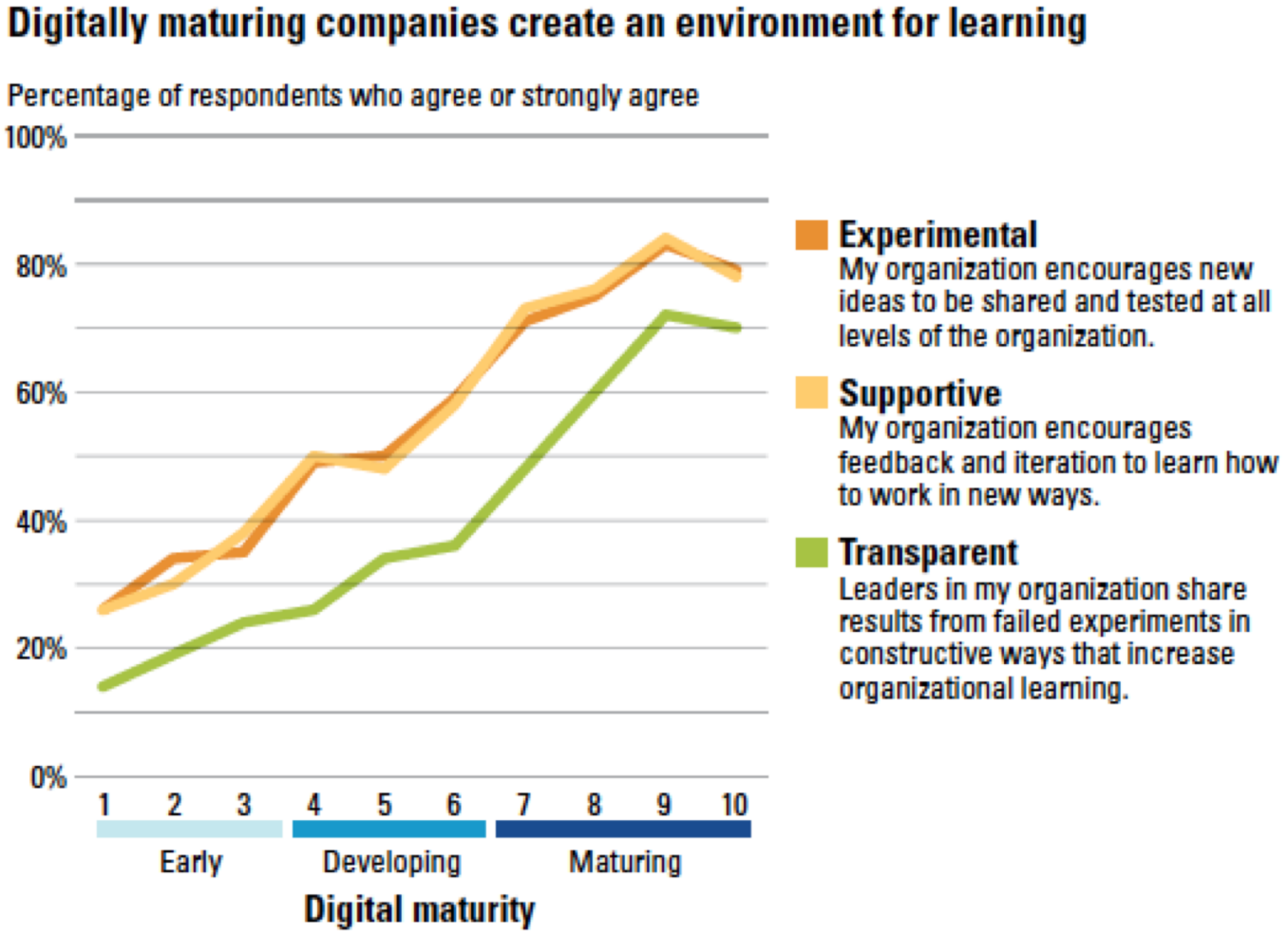
Source: Kane et al. (2018), “Coming of age digitally”, *MIT Sloan Management Review* with Deloitte Digital

Lack of experimentation is the biggest challenge in terms of competing in a digital environment



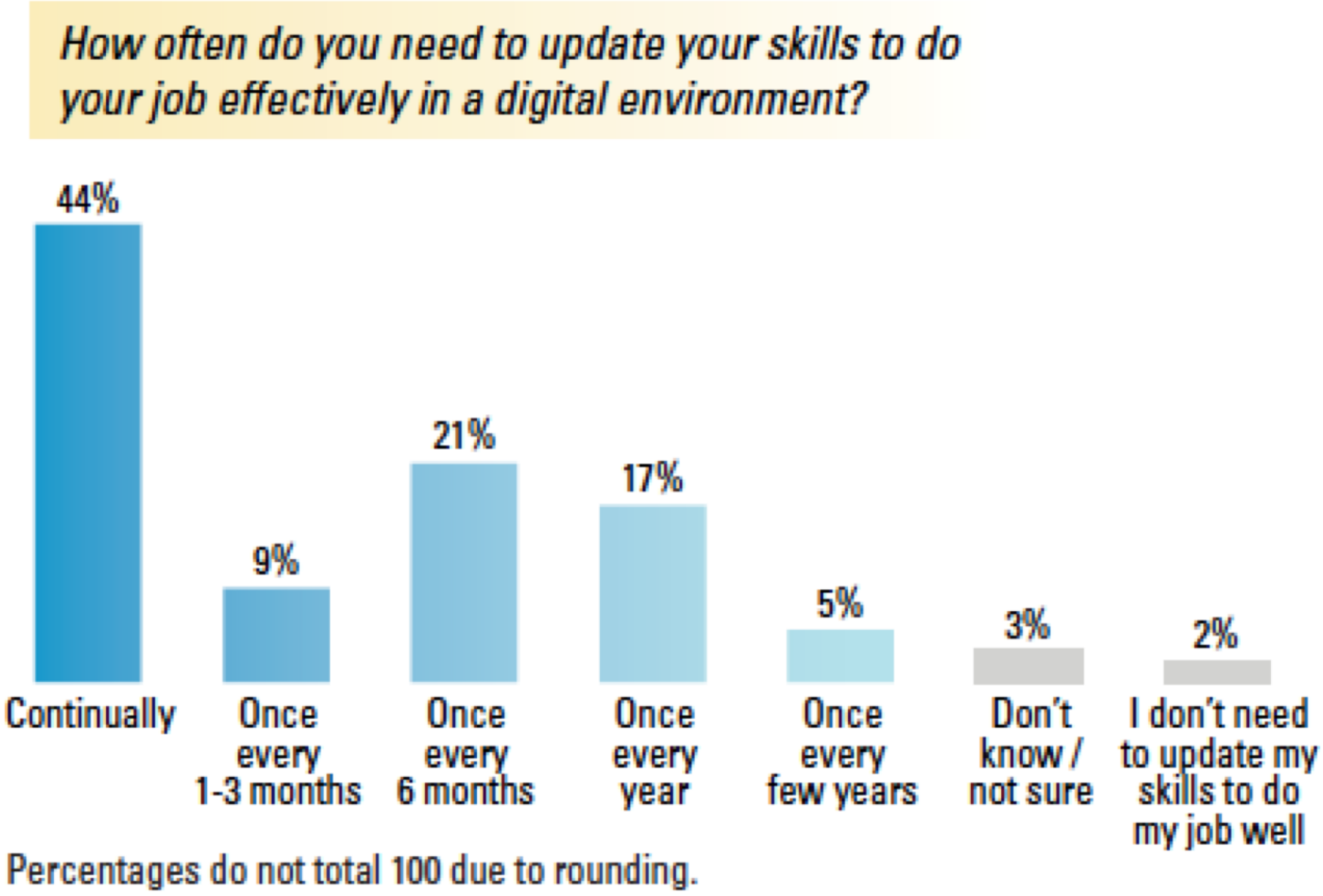
Source: Kane et al. (2018), "Coming of age digitally", *MIT Sloan Management Review* with Deloitte Digital

Experimentation is more common in digitally mature companies



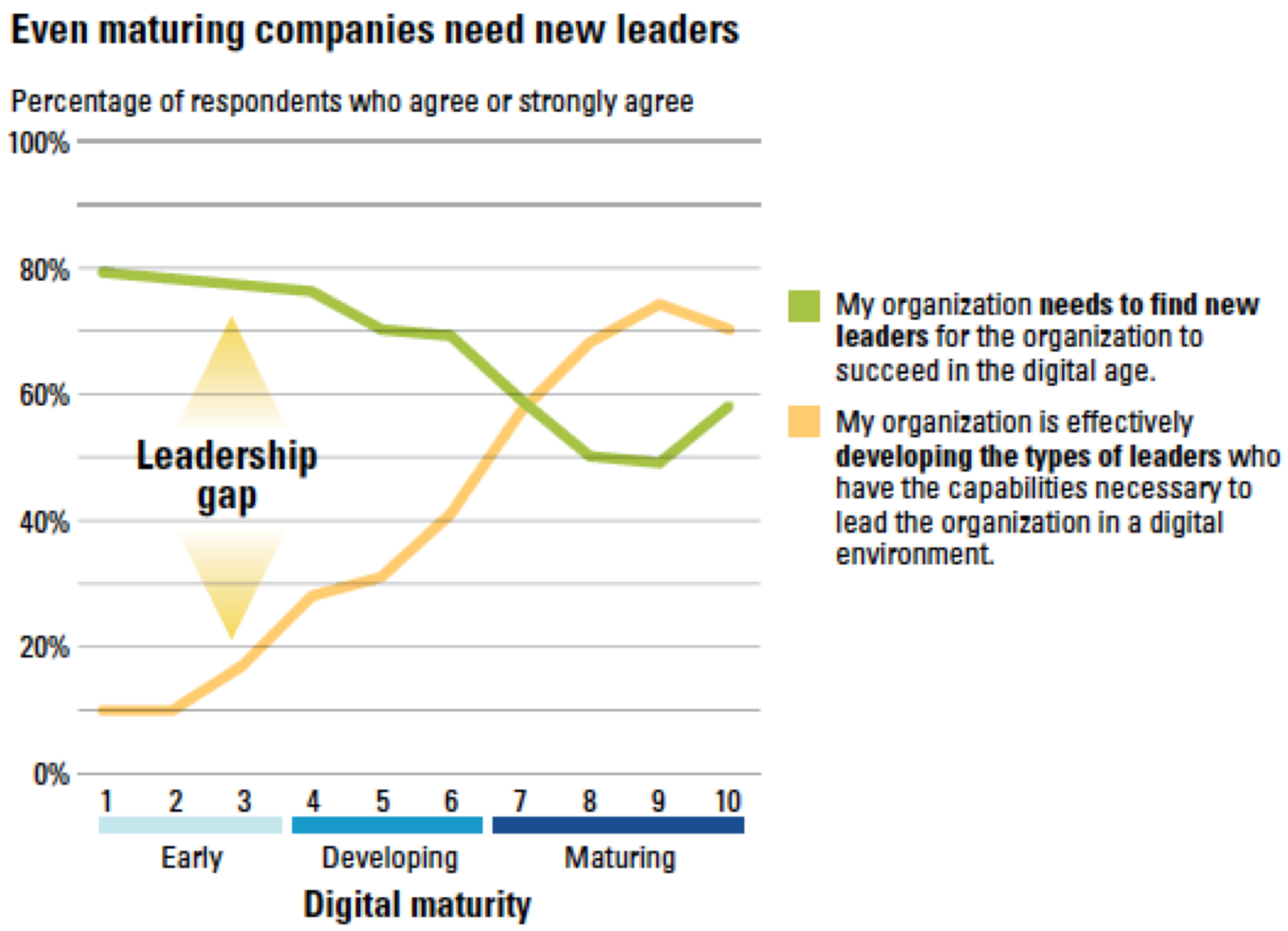
Source: Kane et al. (2018), “Coming of age digitally”, *MIT Sloan Management Review* with Deloitte Digital

Over 90% say they need to update their skills at least yearly to work effectively



Source: Kane et al. (2018), "Coming of age digitally", *MIT Sloan Management Review* with Deloitte Digital

Digitally maturing organizations are far more likely to be developing the types of leaders they need for the future



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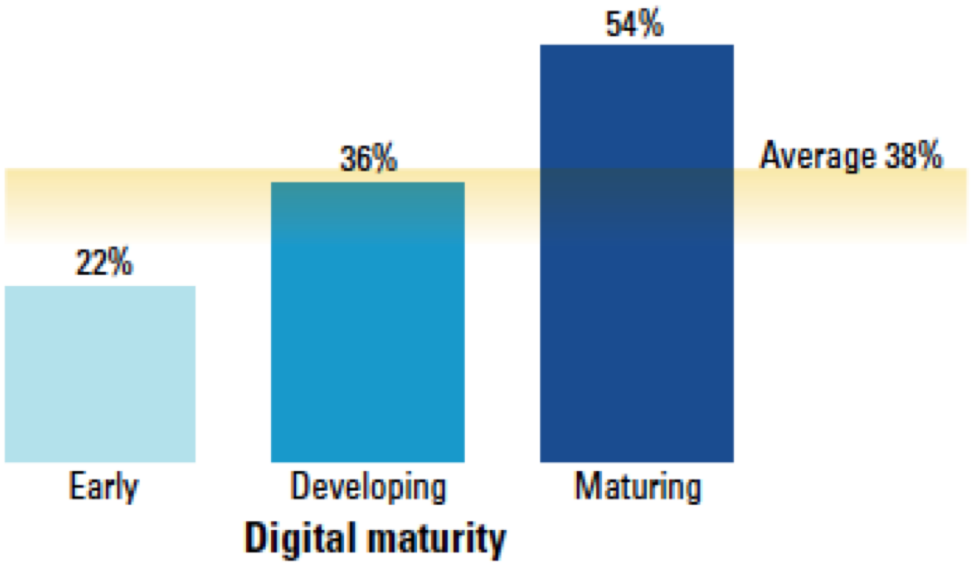
Source: Kane et al. (2018), “Coming of age digitally”, *MIT Sloan Management Review* with Deloitte Digital

Over 50% of digitally mature companies are pushing decision-making authority into lower levels of the organization

My organization is increasingly pushing decision-making authority down into lower levels of the organization in order to better execute in a digital environment.



Percentage of respondents who agree or strongly agree

Source: Kane et al. (2018), “Coming of age digitally”, *MIT Sloan Management Review* with Deloitte Digital

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Future jobs and skills

…. and why you should study MIS

The Jobs Landscape in 2022

WORLD ECONOMIC FORUM
COMMITTED TO IMPROVING THE STATE OF THE WORLD

emerging roles, global change by 2022

Top 10 Emerging

1. Data Analysts and Scientists
2. AI and Machine Learning Specialists
3. General and Operations Managers
4. Software and Applications Developers and Analysts
5. Sales and Marketing Professionals
6. Big Data Specialists
7. Digital Transformation Specialists
8. New Technology Specialists
9. Organisational Development Specialists
10. Information Technology Services

133 million new job roles may emerge

while at the same time

75 million current job roles may be displaced by the shift in the division of labour between humans, machines and algorithms

declining roles, global change by 2022

Top 10 Declining

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

Source: Future of Jobs Report 2018, World Economic Forum

https://www.weforum.org/agenda/2018/09/future-of-jobs-2018-things-to-know/

2022 Skills Outlook

WORLD ECONOMIC FORUM

COMMITTED TO IMPROVING THE STATE OF THE WORLD

Growing

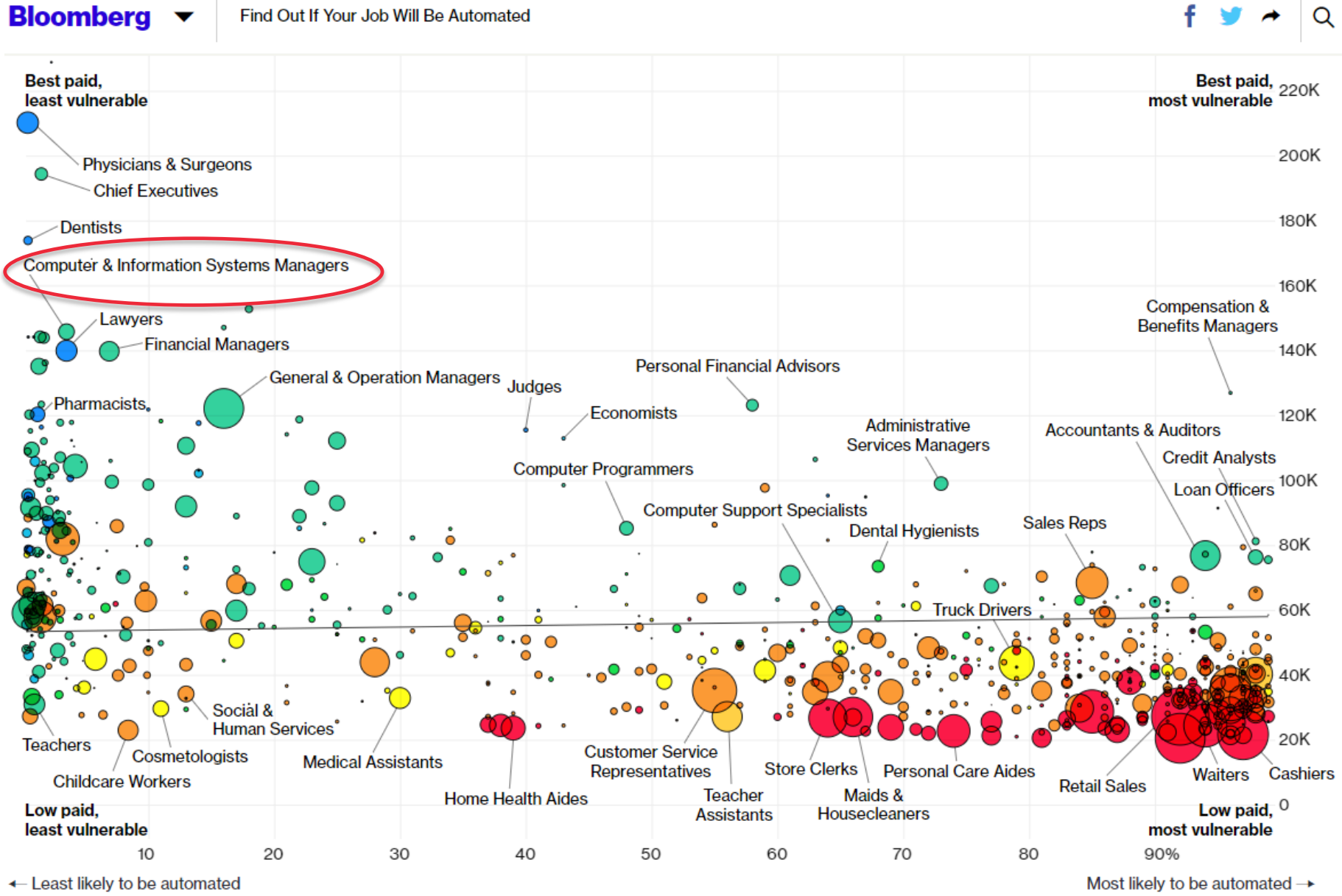
1. Analytical thinking and innovation
2. Active learning and learning strategies
3. Creativity, originality and initiative
4. Technology design and programming
5. Critical thinking and analysis
6. Complex problem-solving
7. Leadership and social influence
8. Emotional intelligence
9. Reasoning, problem-solving and ideation
10. Systems analysis and evaluation

Declining

1. Manual dexterity, endurance and precision
2. Memory, verbal, auditory and spatial abilities
3. Management of financial, material resources
4. Technology installation and maintenance
5. Reading, writing, math and active listening
6. Management of personnel
7. Quality control and safety awareness
8. Coordination and time management
9. Visual, auditory and speech abilities
10. Technology use, monitoring and control

https://www.weforum.org/agenda/2018/09/future-of-jobs-2018-things-to-know/

Jobs that are least & most likely to be automated



Source:http://blogs.edweek.org/edweek/high_school_and_beyond/2017/08/are_you_helping_students_prepare_for_jobs_that_will_be_lost_to_automation.html , August 2, 2017

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**.*

Sources: COBIT (2000) IT Governance framework, Chaffey and Wood (2005)

PayScale 2018 study: Highest Paying 2-year/Associate Degrees by Salary Potential

Rank	Major	Degree Type	Early Career Pay	Mid-Career Pay	% High Meaning
1	Software Engineering	Associate	$50,500	$102,100	N/A
2	Networks & Telecommunications	Associate	$53,300	$97,300	N/A
3	Electrical & Computer Engineering (ECE)	Associate	$44,000	$80,800	N/A
4	Construction Project Management	Associate	$41,500	$78,800	N/A
5	Management Information Systems (MIS)	Associate	$42,200	$76,900	52%
6	Electrical Engineering (EE)	Associate	$44,100	$75,500	59%
7	Industrial Design (ID)	Associate	$42,800	$75,200	N/A
8	Robotics & Automation	Associate	$50,000	$74,300	39%
9	Engineering	Associate	$41,100	$74,000	51%
10	Computer Science (CS)	Associate	$41,900	$73,700	48%
11	Economics	Associate	$35,400	$73,500	42%

https://www.payscale.com/college-salary-report/majors-that-pay-you-back/associate

Top Degrees for the Highest-Paying Business Careers

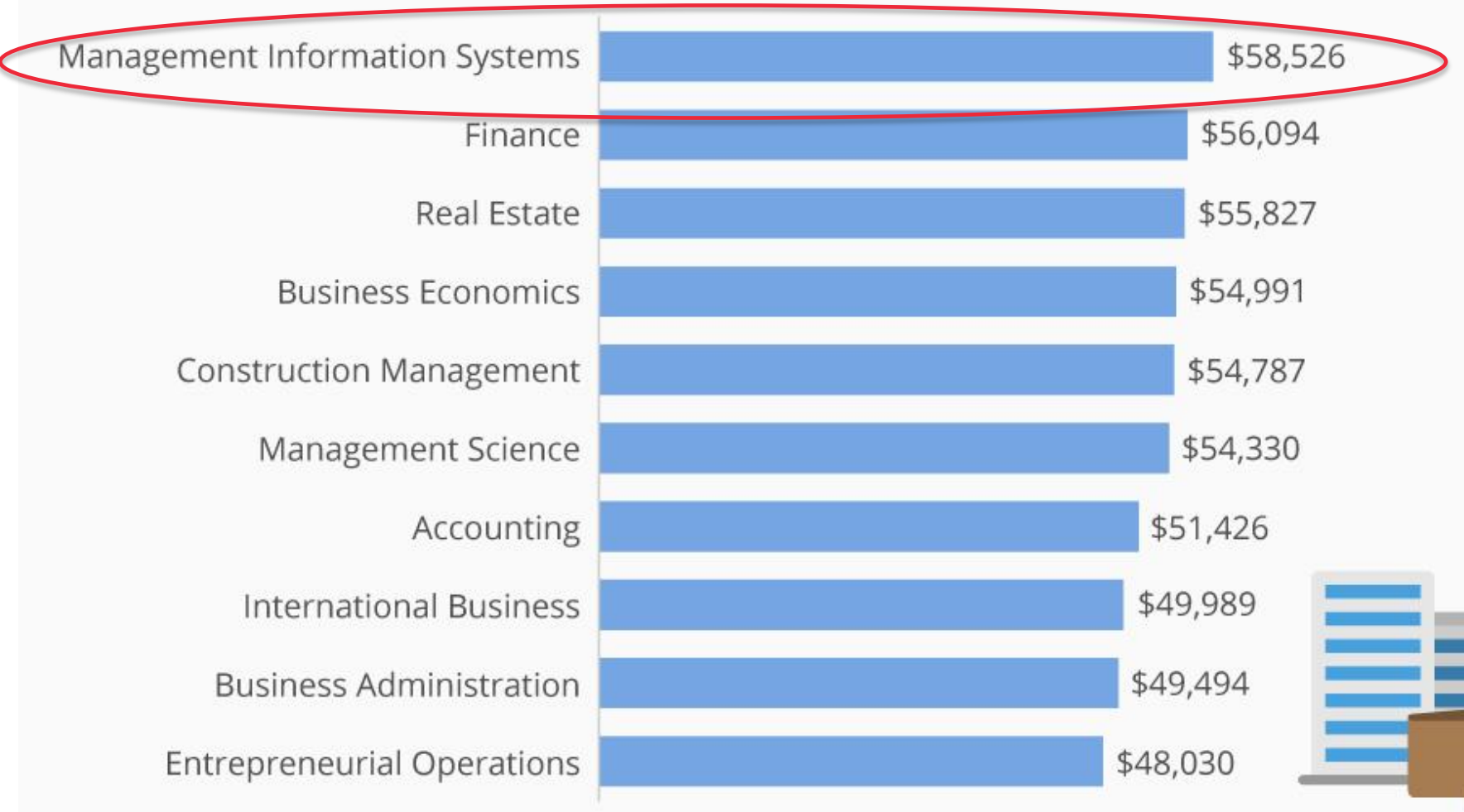
1. **Master of Business Administration (MBA)**
2. **Bachelor's in MIS (IS Management)**

   "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**

https://www.degreequery.com/15-top-degrees-highest-paying-business-careers/

America's Best-Paid Business Graduates

Average starting salary for U.S. business majors in 2015

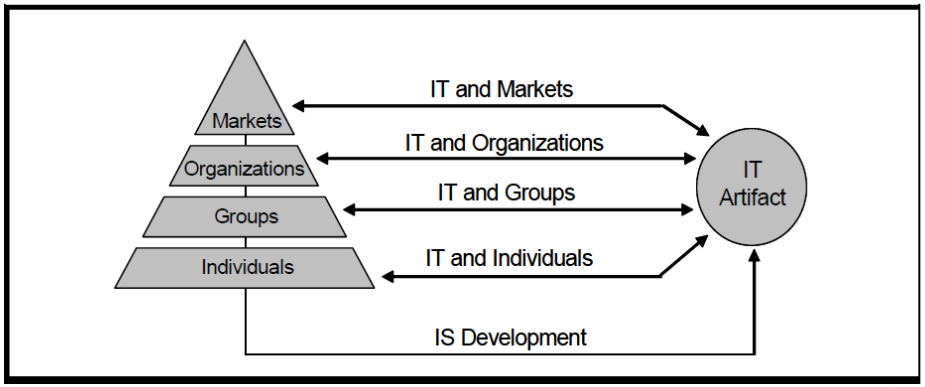


 Source: National Association Of Colleges and Employers

Forbes statista

https://www.forbes.com/sites/niallmccarthy/2016/11/18/americas-best-paid-business-majors-infographic/#f038f6129ab2

Discipline behind MIS is Information Systems Science (ISS), which is a relatively young 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), "The Intellectual Core of the IS Discipline", *MIS Quarterly*, 32(3), 467-482.

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Practical issues of the course

Practical issues

- **Lectures**
  - On Tuesdays and Thursdays (in Otakaari 1: **U8**) at 13:15 – 14:45
- **Course book**
  - Information Systems for Managers (without cases), Piccoli & Pigni, 2017, Edition 3.1. https://prospectpressvt.com/titles/piccoli-information-systems-for-managers/#older
  - Library https://aalto.finna.fi/Search/Results?lookfor=37C00100&sk=fi_FI
- **Final grade**
  - Assignments = 40%
  - Exam = 60%
    - Scheduled exams: April 10, May 31 and one in Fall 2019
    - **Minimum of 50% of BOTH assignments AND exam required!**
    - You can't pass the course by taking the exam only
- **Course website:** https://mycourses.aalto.fi/course/view.php?id=20058
  News of the course are sent via MyCourses Announcments (> notifications in email)

Contents of the course book

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 INTERNET AGE

Ch. 4 : The Changing Competitive Environment

Ch. 5 : Electronic Commerce: New Ways of Doing Business

PART III: THE STRATEGIC USE OF IS

Ch. 6 : Strategic IS Planning

Ch. 7 : Value Creation & Strategic IS

Ch. 8 : Value Creation with IS

Ch. 9 : Appropriating IT-Enabled value Over Time

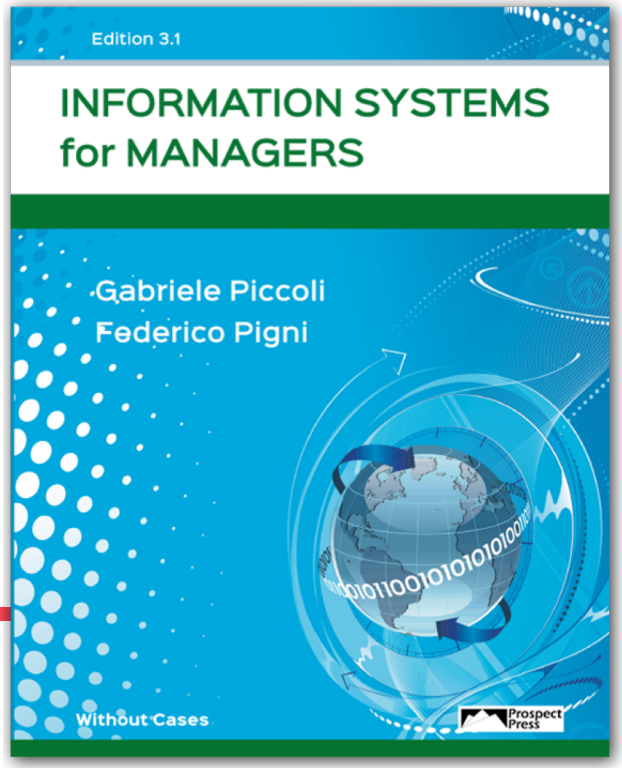
PART IV: GETTING IT DONE

Ch. 10 : Funding & Governance of IS

Ch. 11 : Creating IS

Ch. 12 : IS Trends

Ch. 13 : Security, Privacy & Ethics



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https://prospectpressvt.com/titles/piccoli-information-systems-for-managers/#older

About the assignments

- **Instructions to be provided at MyCourses under the Assignment tab & to be returned there also (https://mycourses.aalto.fi/course/view.php?id=20058&section=2)**
  - Some text-based assignments are automatically scanned via Turnitin plagiarism software - you will be able to see the originality reports yourself and resubmit if needed.*
  - Points are deducted *from late assignments: -1p=1-24h late, -2p=24-48h, -3p= >48h…*

- *The Tech trends assignment to be returned by February 28:*
  - *Read Gartner's and Forbes' writings on technology trends, plus one chapter of your choice either from Accenture's Technology Vision 2019 or Deloitte's Tech Trends 2019, and answer the six questions for Assignment 1 (provided at MyCourses)*

- Remember proper citing conventions (no copy-pasting, mention the sources).

** Turnitin resubmission is possible every 24 hours only.*

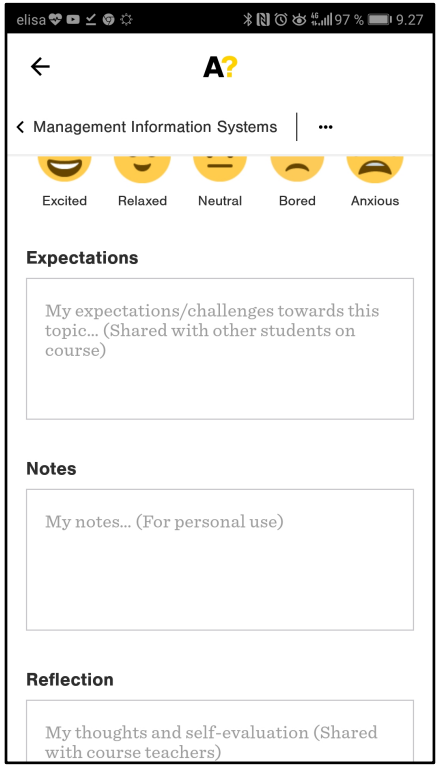
Course feedback from last time (N=62), & impacts

- **82%** (up 7 %) of the students praised the assignments and the tools introduced in them > keeping them similar
  - *”For the first time assignments on the course were interesting.”*
  - *”All assignments were awesome.”*
- **48%** (up 12%) complimented the variety and quality of guest lectures > keeping the concept same, one lecturer changed
  - *“Some of the lecturers were amazingly interesting and inspiring.”*
  - *“The guest lectures were very interesting and I liked the way how practical and academical sides were combined.”*
- Most assignments will again be published early on for students to better allocate time for doing them.
- Analytics assignment (online MOOC course) replaced by another type of assignment
- Two new guest lecture topics: **blockchain** and **gamification**

Dynamic Learning Feedback System

- **NEW!** Possibility to give feedback and reflect on your learning during the course: a **mobile Dynamic Feedback System** developed at Aalto ENG will be piloted and researched in the MIS course.
  - Chance to gain points (up to 8) towards the course grade from participating in this pilot!
  - The web version was piloted last spring at our Business intelligence course

- *Ville Kivimäki (Project Manager & doctoral researcher in Learning analytics) and Tiina Hahto (ISM Master's thesis researcher) will come to tell you more about this today at 14.30 - stay tuned!*



Detailed schedule of MIS 2019 lectures

#	Date	Topic		Assignment Due Dates
1	**26.2.**	Introduction to the MIS course and Chapters 1-2 / Bragge		**28.2.2019**
2	**28.2.**	Collaborative IS and knowledge work / Bragge and Lecturer Antti Salovaara, PhD, Aalto SCI/Computer Science		Other due
3	**5.3.**	Gamification at work / CEO Jukka Koskenkanto, Happit / Cloudriven		dates to be
4	**7.3**	Service Design: Process and Methods / CEO Teemu Uotila and Experience Designer Jan Nikander, Vincit		announced (1-2 weekly)
5	**12.3.**	Experiences of digital transformation in large companies and the growing impact of data in businesses / Board Professional and Angel Investor Elina Piispanen, Telko, SitoWise & Viria		
6	**14.3.**	Organizational change in the digitalization era – how to bring myth to life? / Consultants Milja Nohynek & Karoliina Kettukari, Digital Illustrated		
7	**19.3.**	ERP and business applications / CTO Glen Koskela, Retail & Hospitality EMEIA, Fujitsu		
8	**21.3.**	Business Performance Management in eCommerce / Chief Digital Officer Kari Härkönen, Marimekko		
9	**26.3.**	Enterprise blockchain / CEO Petri Aukia, Codento, http://twitter.com/aukia		
10	**28.3.**	Big data, Artificial Intelligence and Ethical AI / Analytics Architect Jukka Ruponen, IBM Finland		
11	**2.4.**	Text mining and visualization; hints for the exam / Johanna Bragge		
12	**4.4.**	IT Security and Privacy / Mikko Karikytö, Head of Ericsson Network Security and Dario Casella, Head of Privacy, Ericsson Finland		
	10.4.	EXAM at 9-12		
	31.5.	RETAKE EXAMS 31.5.2019 and one in Fall 2019		

Preliminary schedule for MIS assignments

Assignment	Topic	Deadline
1	Business technology trends	28.02.
2	Programming with Codecademy	04.03.
3	E-brainstorming with Stormboard	10.03.
4	Service Design in Practice (at lecture)	07.03. lecture
5	Building your own chatbot	14.03.
6	Exploring data with Cognos Analytics	21.03.
7	Research Profiling with Scopus (or WoS)	26.03.
8	Visualizing data with Tableau Public	28.03.
9	Text-mining with Leximancer	02.04.
Bonus	Dynamic Feedback System (DFS) use	05.04
Bonus	Interviews related to DFS	week 12

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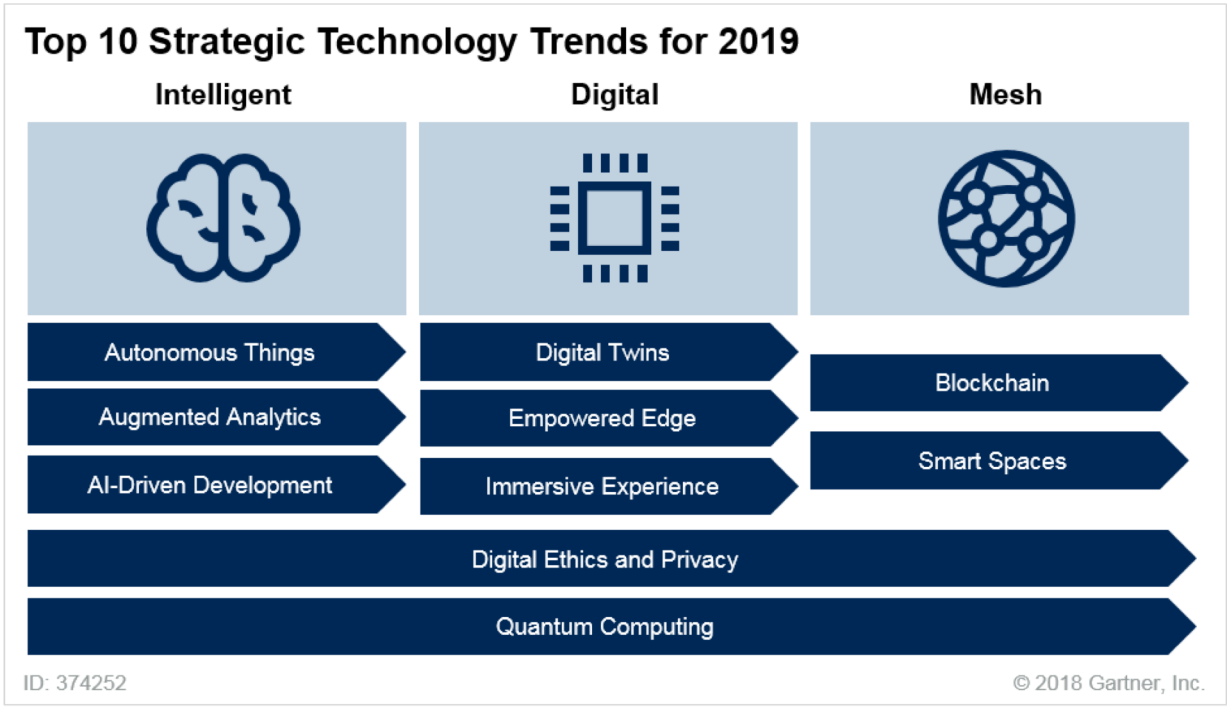
Current technology trends

Top technology trends for 2019

Gartner:



Deloitte:


AI-fueled organizations | 19


NoOps in a serverless world | 39


Connectivity of tomorrow | 57


Intelligent interfaces | 71

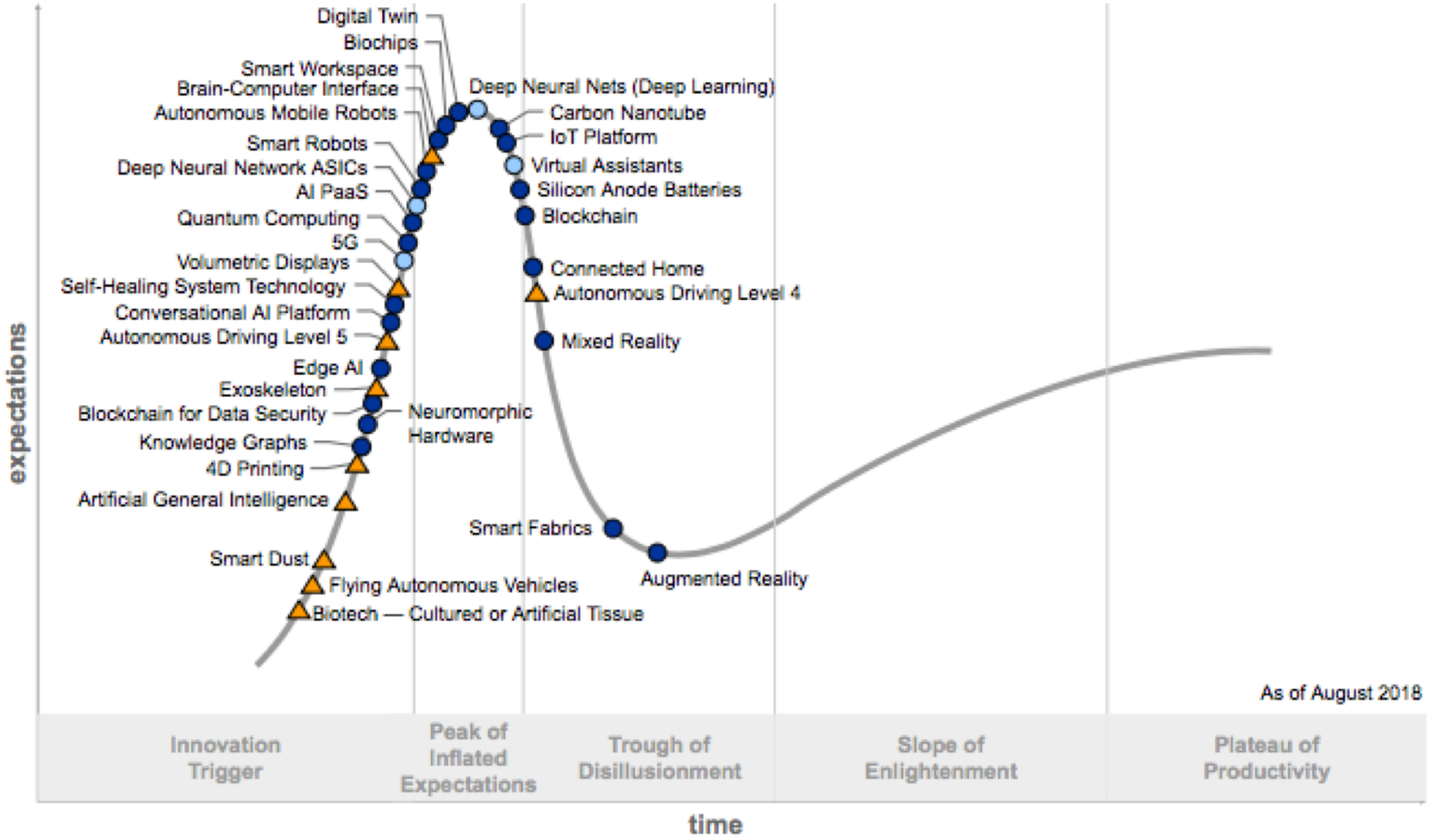

Beyond marketing: Experience reimagined


DevSecOps and the cyber imperative | 1

Accenture:

https://www.gartner.com/smarterwithgartner/gartner-top-10-strategic-technology-trends-for-2019/
https://www.accenture.com/us-en/insights/technology/technology-trends-2019
https://www2.deloitte.com/insights/us/en/focus/tech-trends.html

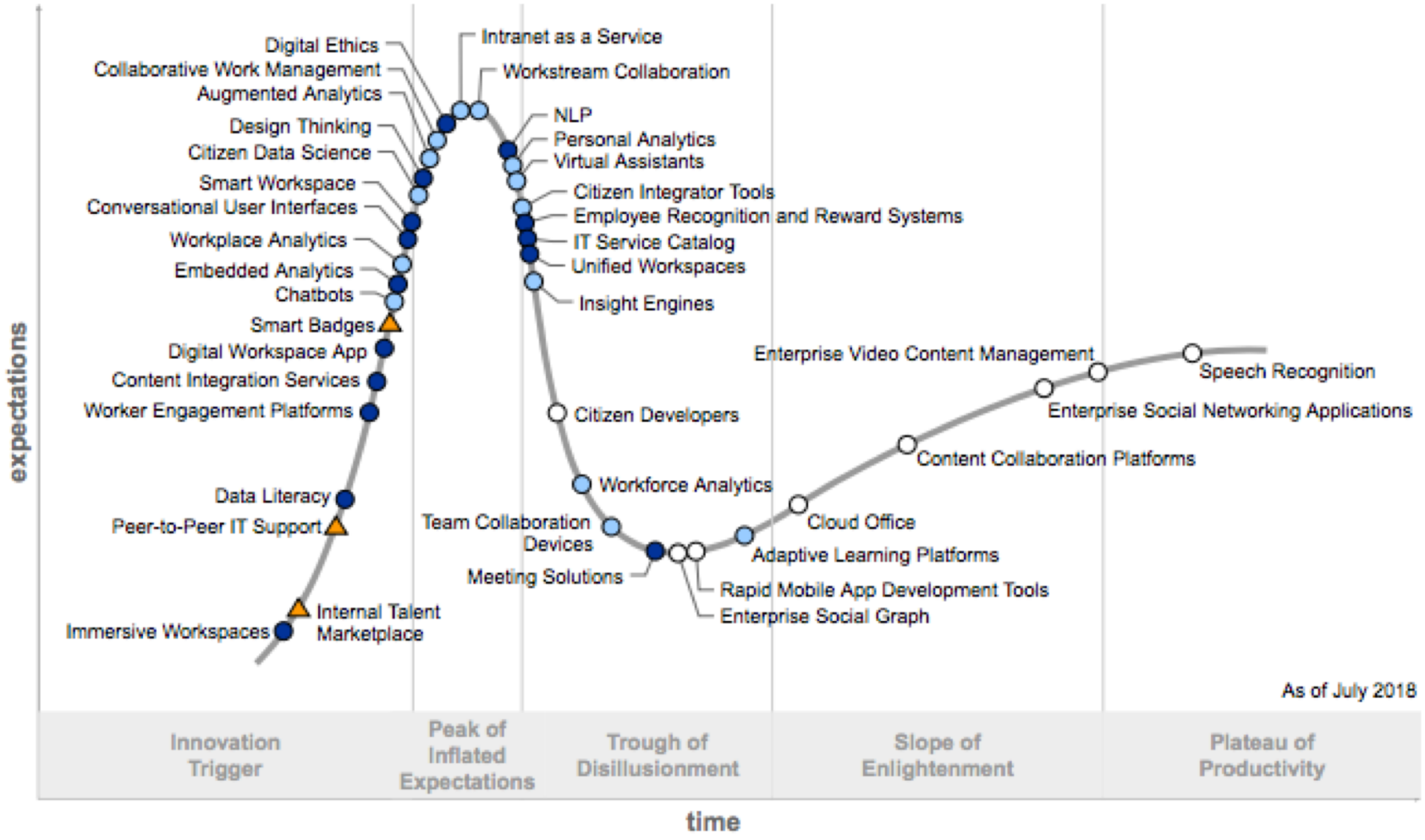
Gartner's hype cycle for Emerging technologies 2018



http://www.gartner.com/technology/research/hype-cycles/

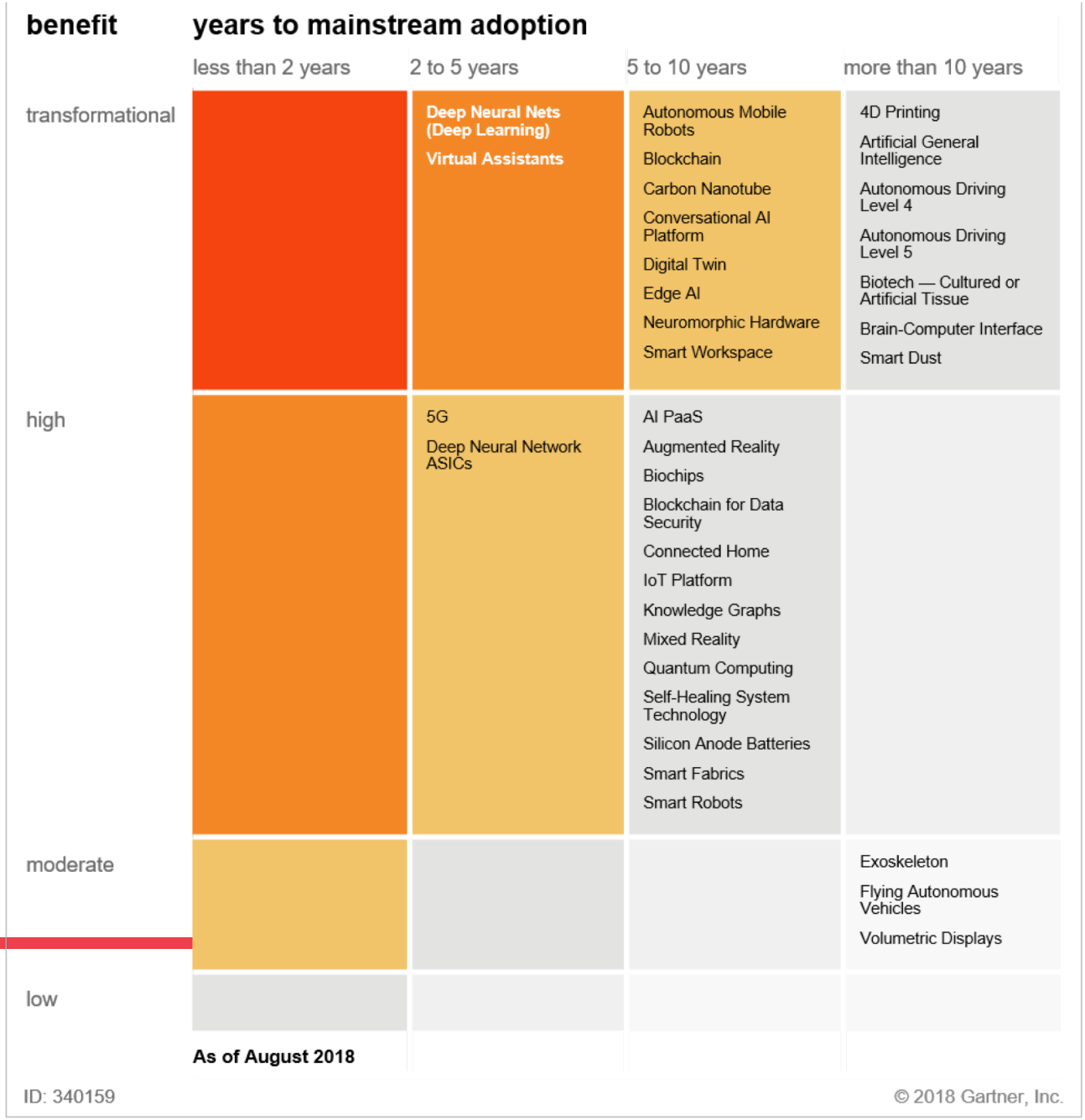
NOTE: Gartner's research reports are available at http://gartner.aalto.fi

Gartner's hype cycle for the Digital workplace 2018



NOTE: Gartner's research reports are available for Aalto researchers and students at http://gartner.aalto.fi

Gartner's priority matrix for Emerging technologies 2018



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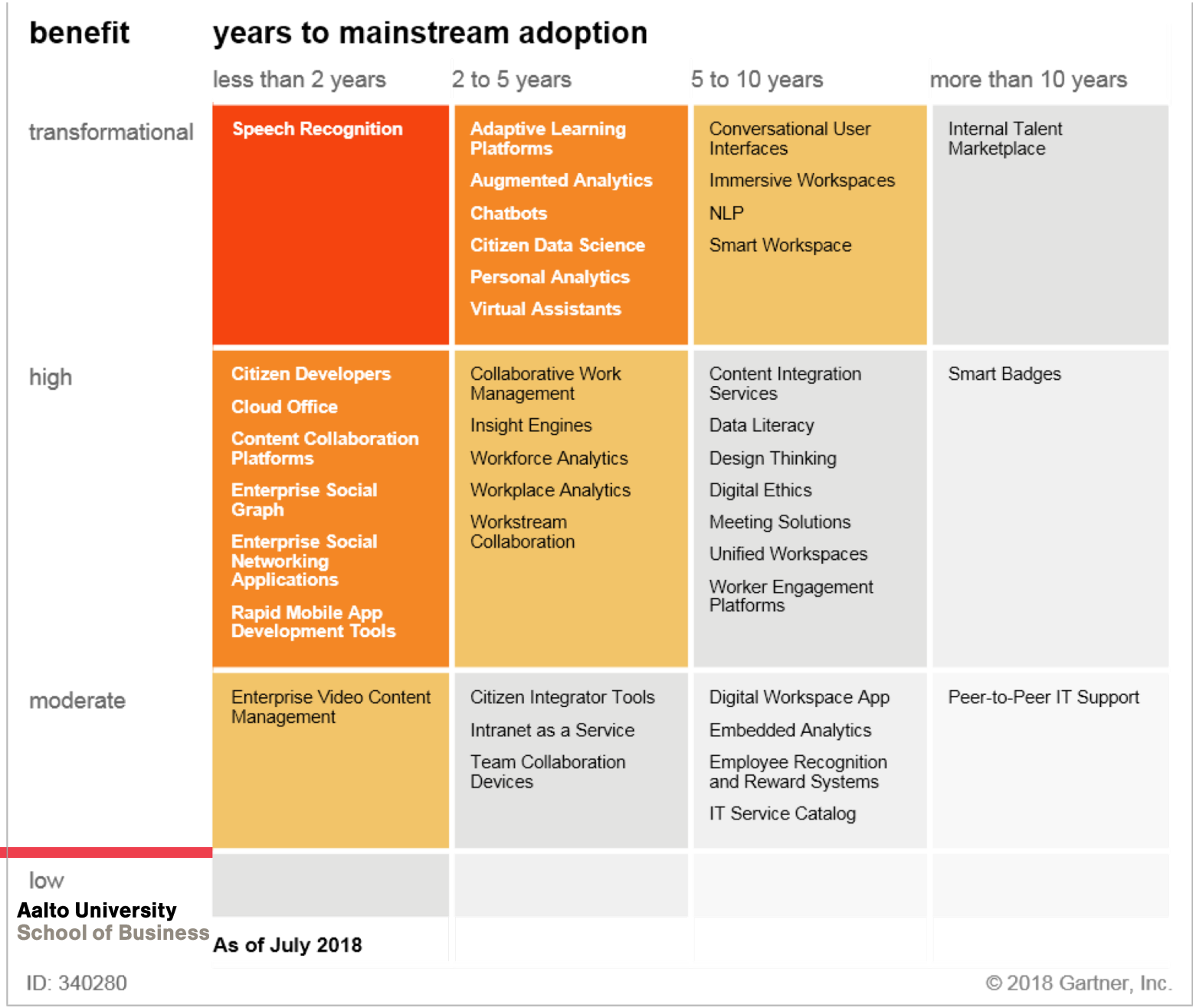
Gartner's priority matrix for Digital workplace 2018



benefit	years to mainstream adoption			
	less than 2 years	2 to 5 years	5 to 10 years	more than 10 years
transformational	**Speech Recognition**	**Adaptive Learning Platforms** **Augmented Analytics** **Chatbots** **Citizen Data Science** **Personal Analytics** **Virtual Assistants**	Conversational User Interfaces Immersive Workspaces NLP Smart Workspace	Internal Talent Marketplace
high	**Citizen Developers** **Cloud Office** **Content Collaboration Platforms** **Enterprise Social Graph** **Enterprise Social Networking Applications** **Rapid Mobile App Development Tools**	Collaborative Work Management Insight Engines Workforce Analytics Workplace Analytics Workstream Collaboration	Content Integration Services Data Literacy Design Thinking Digital Ethics Meeting Solutions Unified Workspaces Worker Engagement Platforms	Smart Badges
moderate	Enterprise Video Content Management	Citizen Integrator Tools Intranet as a Service Team Collaboration Devices	Digital Workspace App Embedded Analytics Employee Recognition and Reward Systems IT Service Catalog	Peer-to-Peer IT Support
low				

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As of July 2018

ID: 340280


Course goal 1: SEE THE BIG PICTURE !
M. Souranto 2009

Course goal 2: KNOWING IS RELAXING.

”T-SHAPED PEOPLE” ARE WANTED!

J. Bragge 2010

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Information systems and the Role of General and Functional Managers
&
Information Systems Defined

Chapters 1 and 2 from Part I of the course book

People affected by organizational IS

Top responsabilities: the General Manger

Jeff Bezos

Photo : http://www.time.com/time/specials/packages/article/0,28804,2107952_2107953_2109567,00.html

Knowledge worker in charge of an entire organization or business unit

Team leader : the Functional Manager

Knowledge worker in charge of a **functional** area or **team**

Photo : http://www.onlinedegrees.org/calculator/salary/purchasing-manager

The one you should care: end User

Individuals who have **direct contact** with **software applications** as they use them to carry out **specific tasks**

Photo : http://www.tetras.univ-savoie.fr/france/DT1202894320/page/TGI.html

The one you should listen to: IT professionals

individuals with **technical training** and education

The whole system

General and **Functional Managers**
often are also end-users

OFTEN

=

=

The importance of IS

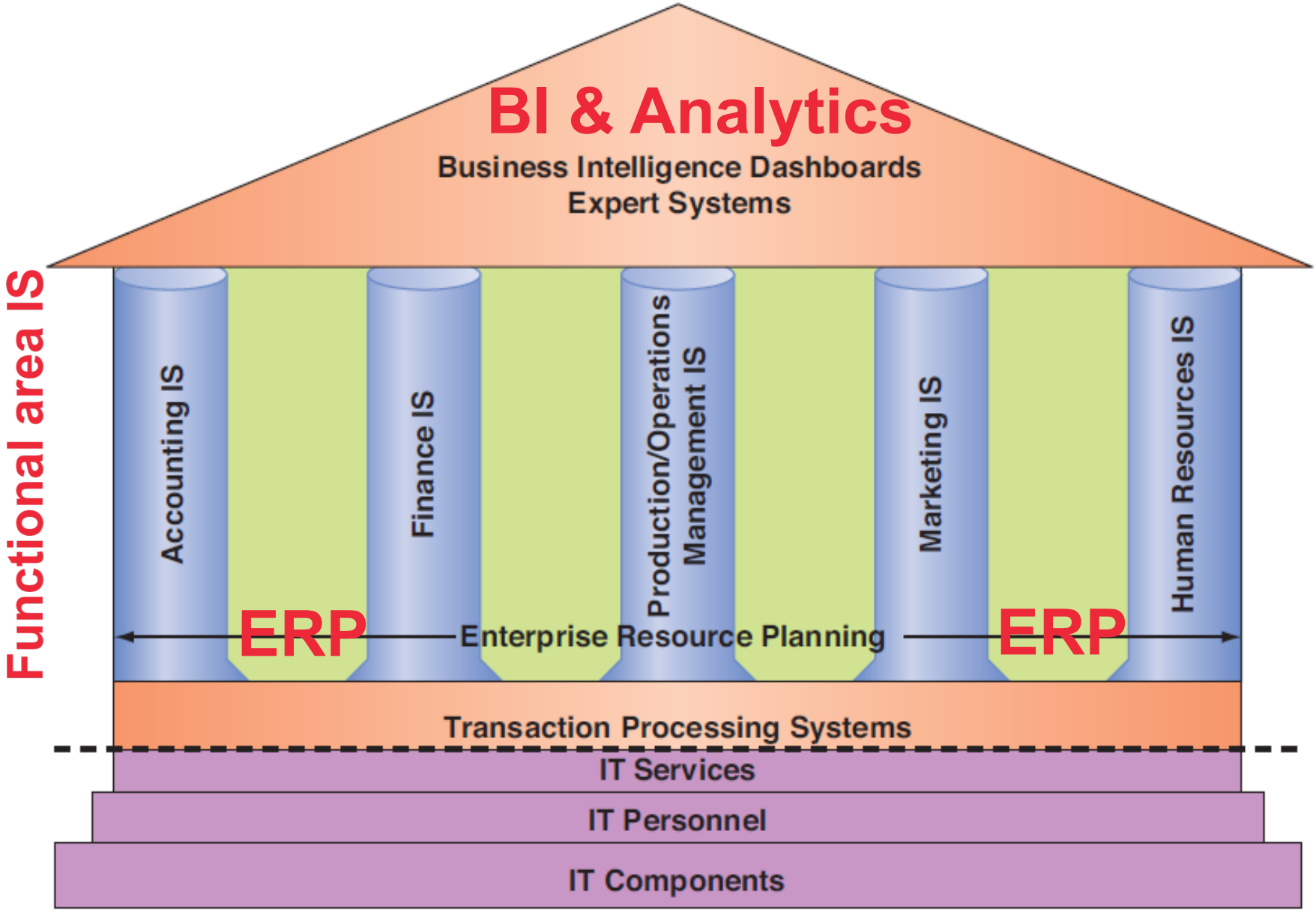
"**All the value** of this company is in its people. If you burned down all our plants, and we just **kept** our **people** and our **information** files, we should **soon** be **as strong as ever**."

Thomas Watson Jr.

Photo : www.ivy-style.com/machine-man-thomas-j-watson

Quote of IBM's legendary chairman more than 50 years ago.

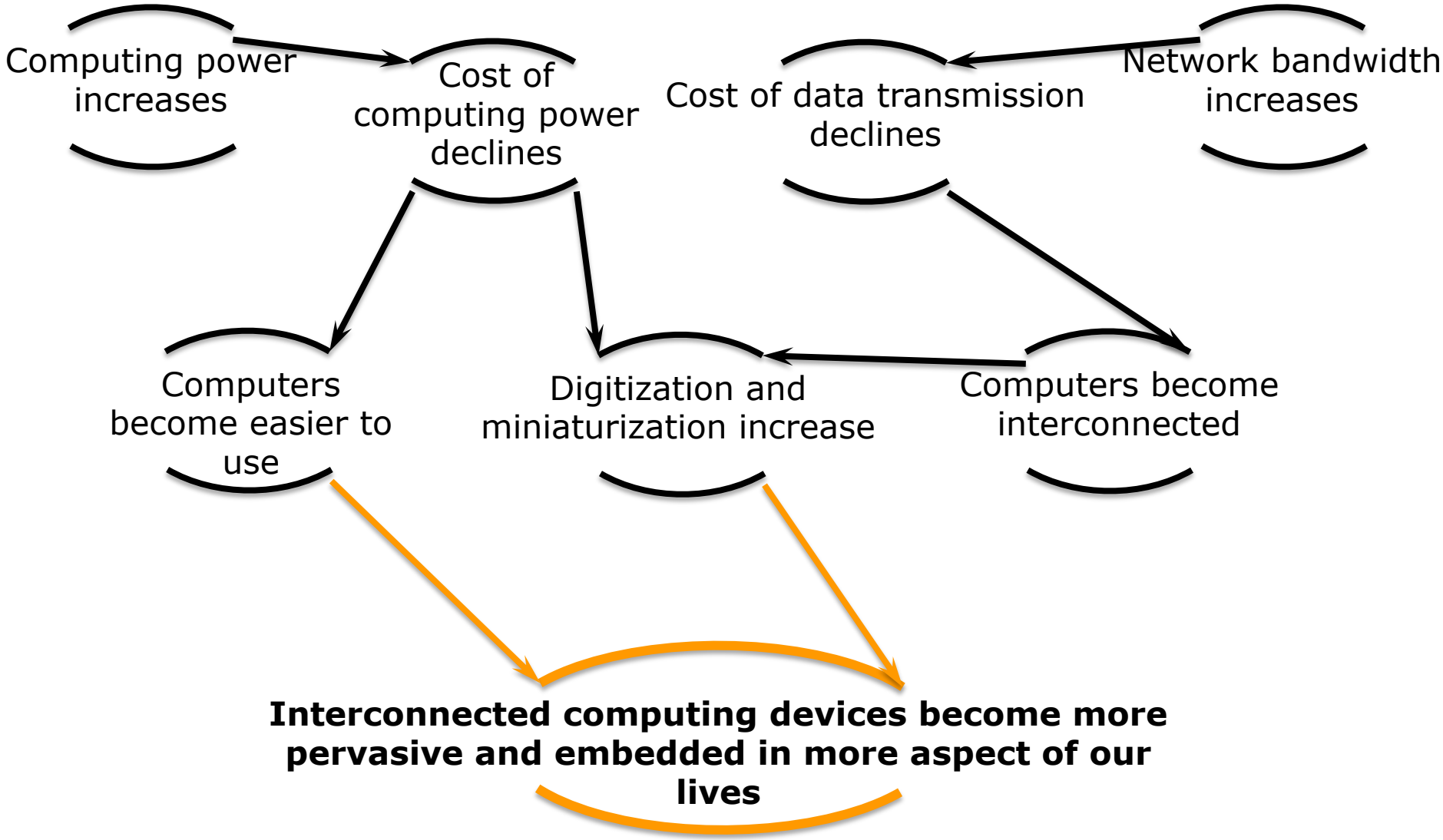
IS within an Organization



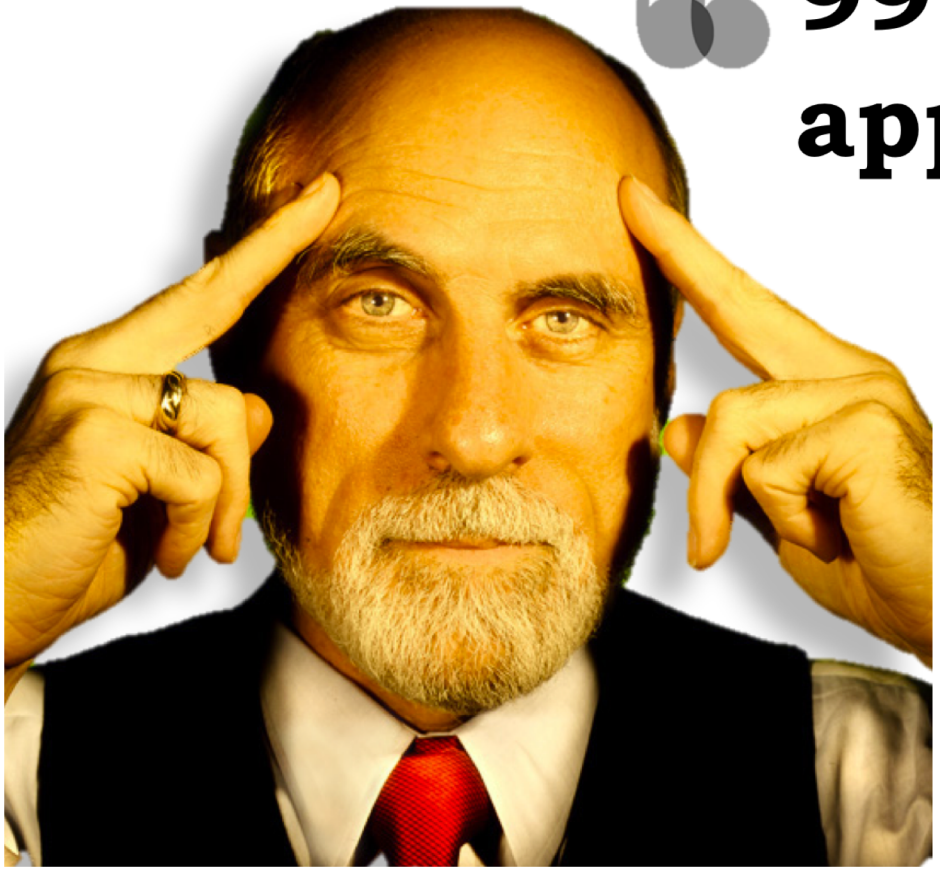
Critical lessons!

- Managers have to make educated decisions about *the use* of IT
- Organizations use new IT to serve growing/changing business needs
- Savvy managers partner with IT pros to ensure information systems success
- Managers may or may not be end-users of the new systems they help introduce

Implications of IT Trends



And it's just the beginning!



"**99%** of the **application** have **not** been **invented**!"

Vinton Cerf http://www.paganelliphotography.com/

Co-inventor of the TCP/IP protocol

Key takeaways from Chapter 1

- **General and functional managers**, the individuals in organizations who have responsibility to lead a functional area or a business, can no longer abdicate their right, and duty, to be involved in IS and IT decisions. They **should act in partnership with the firm's IS & IT pros**.

- The **IS skill set required** of the modern general and functional manager pertains to **decisions about identifying opportunities to use IT to the firm's advantage**; **planning for the use of IS resources; and managing the design, development, selection, and implementation of IS**. While end-user skills (i.e., the ability to use computers proficiently) are an important asset for any knowledge worker, the critical skills for modern managers relate to the organizational, not personal, uses of IT.

- Chief information officers (**CIOs**), the leading figures in the IS and IT function, are **increasingly being selected from the functional and managerial ranks rather** than from the technology ranks.

- The enduring effects of **Moore's law** have led to increasingly **powerful yet cheaper computing strength**, **declining costs of computer memory**, and a **dramatic improvement** in the **ease and breadth of use** of digital devices. Moreover, **increasingly available network connectivity and storage capacity, improved battery life for portable devices**, and the **proliferation of intelligent devices** have contributed to dramatically change the business and social landscape.

IS is not a technology!

Did the Ricasoli Winery have an IS in 1872?

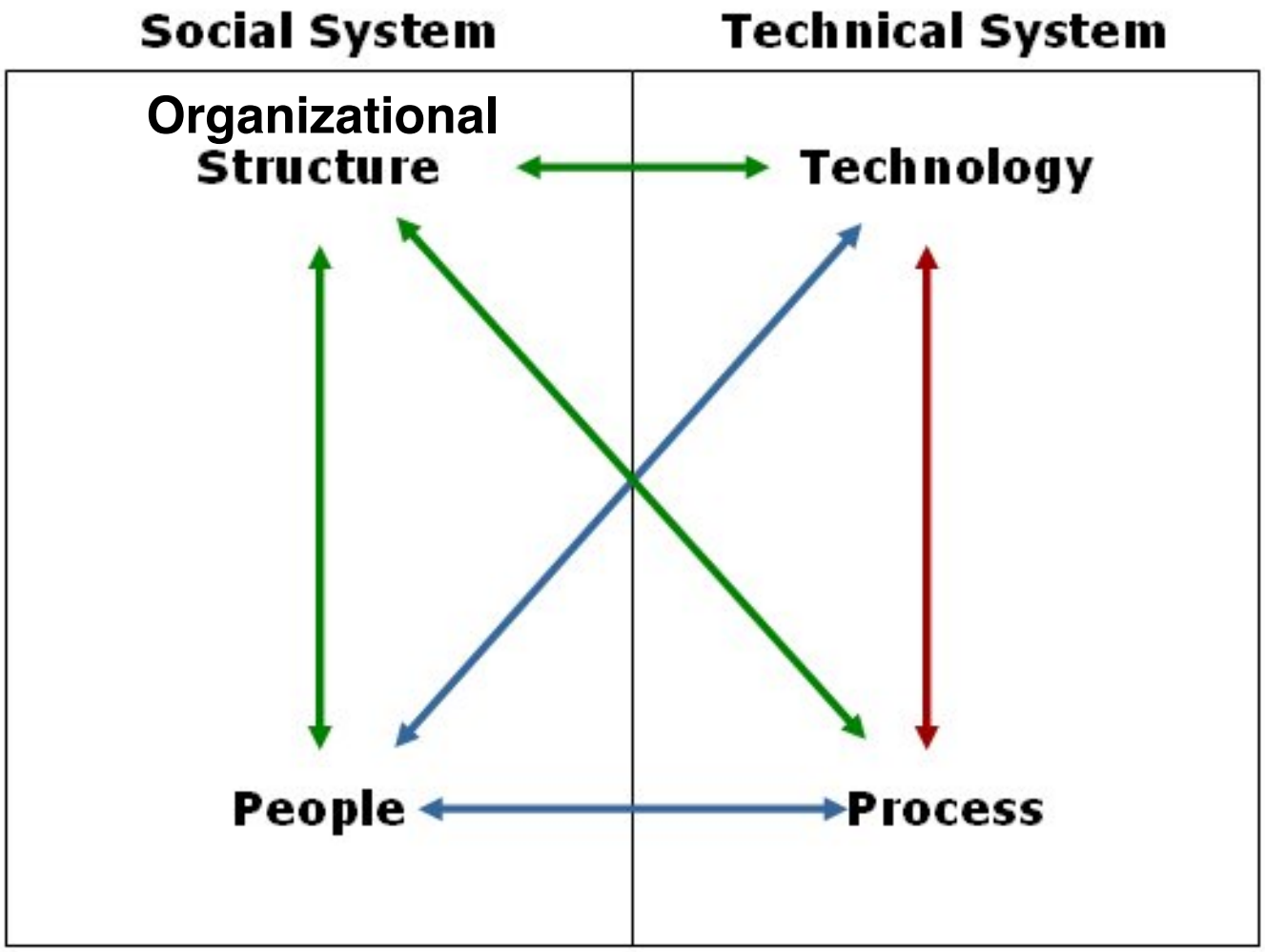
https://www.callmewine.com/media/catalog/product/cache/2/image/9df78eab33525d08d6e5fb8d27136e95/b/a/xbarone-ricasoli.produttore_12.jpg.pagespeed.ic.uT2CKsa1tR.jpg

IS defined

Information Systems are **formal**, **sociotechnical**, **organizational systems** designed to **collect**, **process**, **store**, and **distribute information**.

Gabriele Piccoli

Four Components of an Organizational IS



Component #1: Information Technology (IT)

Hardware

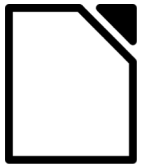
- Laptops, desktops, mobiles…

Software

- Microsoft Office, Operating Systems…

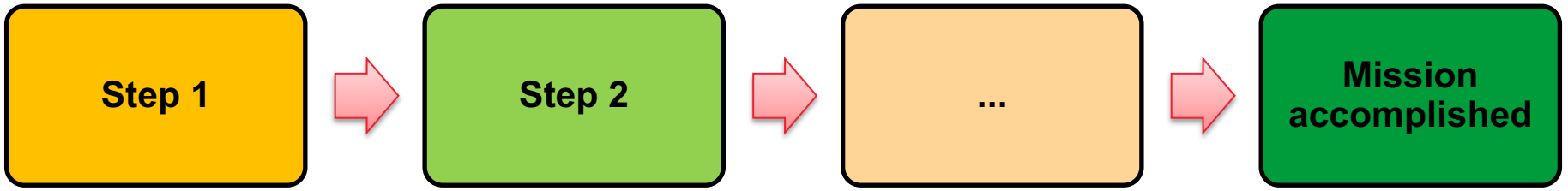
Telecommunication equipment

- Internet, telephone networks…

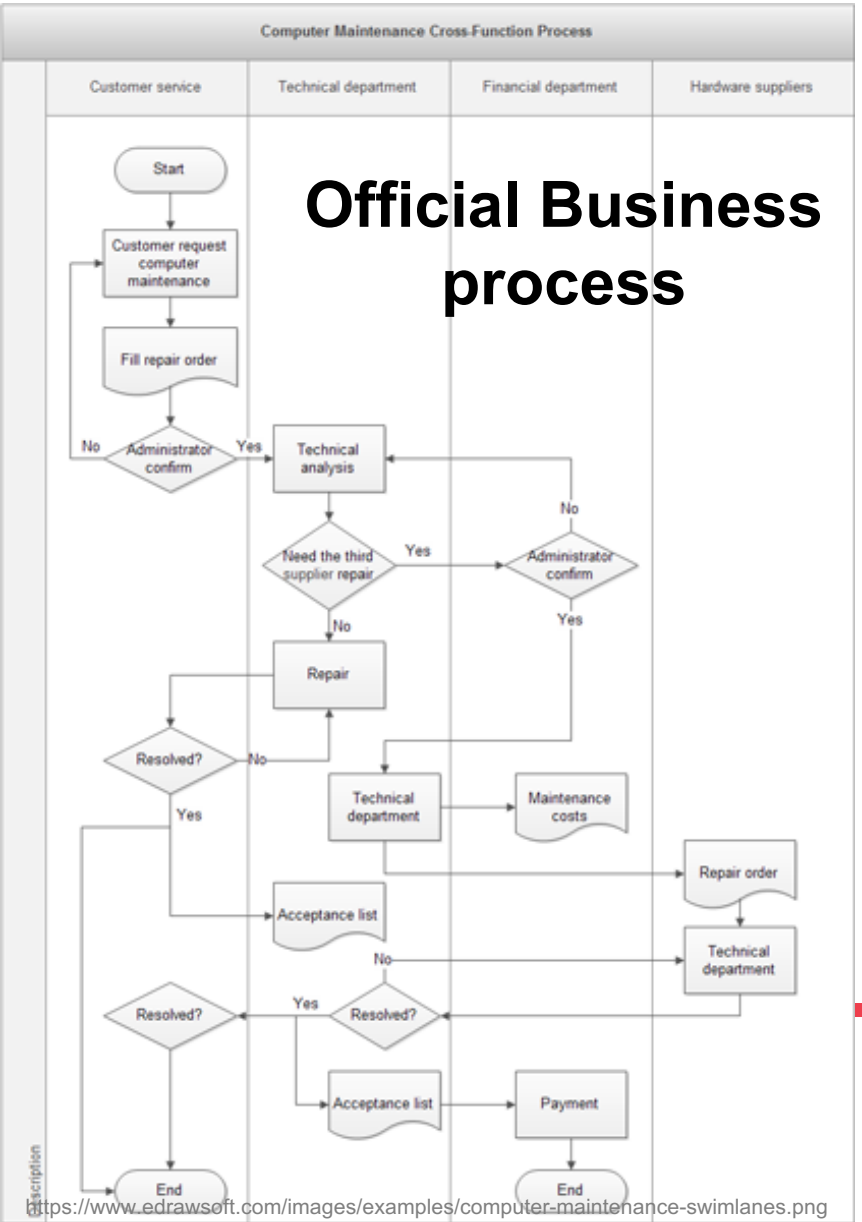


Component #2: Process

- The series of steps necessary to complete a business activity
- There are multiple ways to perform an activity: Every process is designed to be efficient & effective



Official vs Informal business process



Official Business process

≠

Informal Process

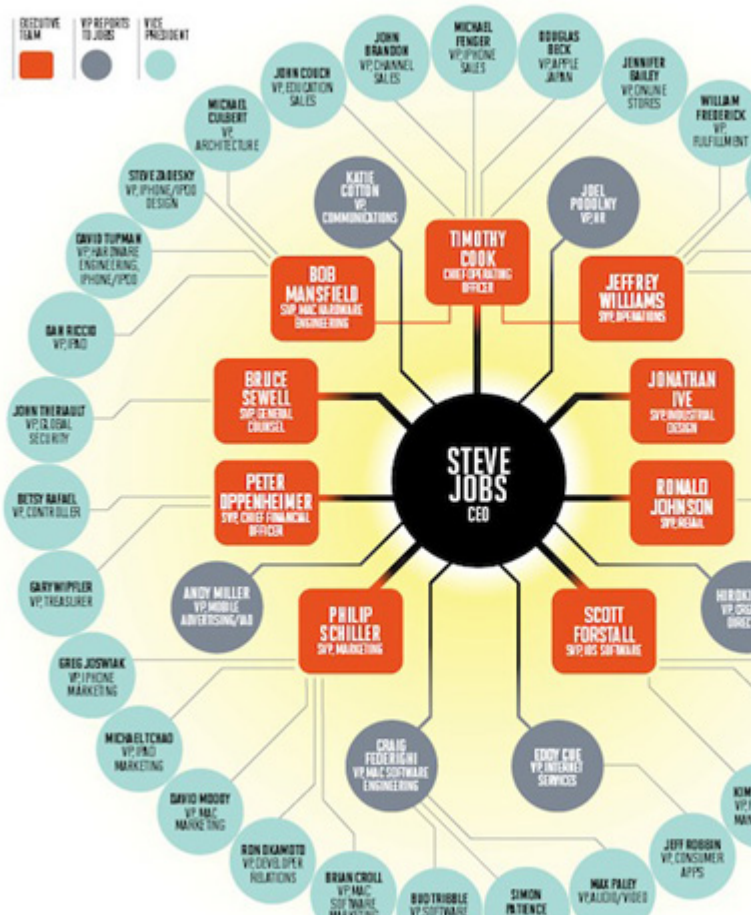
https://www.edrawsoft.com/images/examples/computer-maintenance-swimlanes.png

https://s3.amazonaws.com/thumbnails.illustrationsource.com/huge.16.80983.JPG

Component #3: People

Component #4: Organizational structure

- The structure component encompasses:
  - The **organizational design**
    - Hierarchy, decentralized, loose coupling
  - The **reporting configuration**
    - Functional, divisional, matrix
  - The **organizational relationships**
    - Communication and reward mechanisms
    - Culture
      - The role of organizational culture is extremely important in the adoption of new technologies
      - Although technologies might be superb, they might not be utilized due to lack of managerial support or resistance of users.



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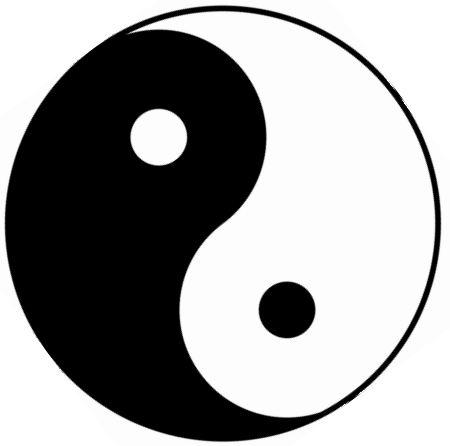
http://www.macnn.com/articles/11/05/07/apple.corporate.structure.gets.detailed.look/

Systemic Effects: Components Working Together

The four components of an IS are **Interdependent**

Changes in one component may affect all others

Success is based on the proper interaction of IT with the other components!



Do not optimize the tech part but the IS as a whole!

Components

Many companies rush out, buy software solutions, install them quickly, and then can't understand why the system failed.

> We look at what **business issues** exist, what **people** and **processes** pertain to that business issue, what those people do. **Technology** won't solve by itself – other components have to be part of the solution.

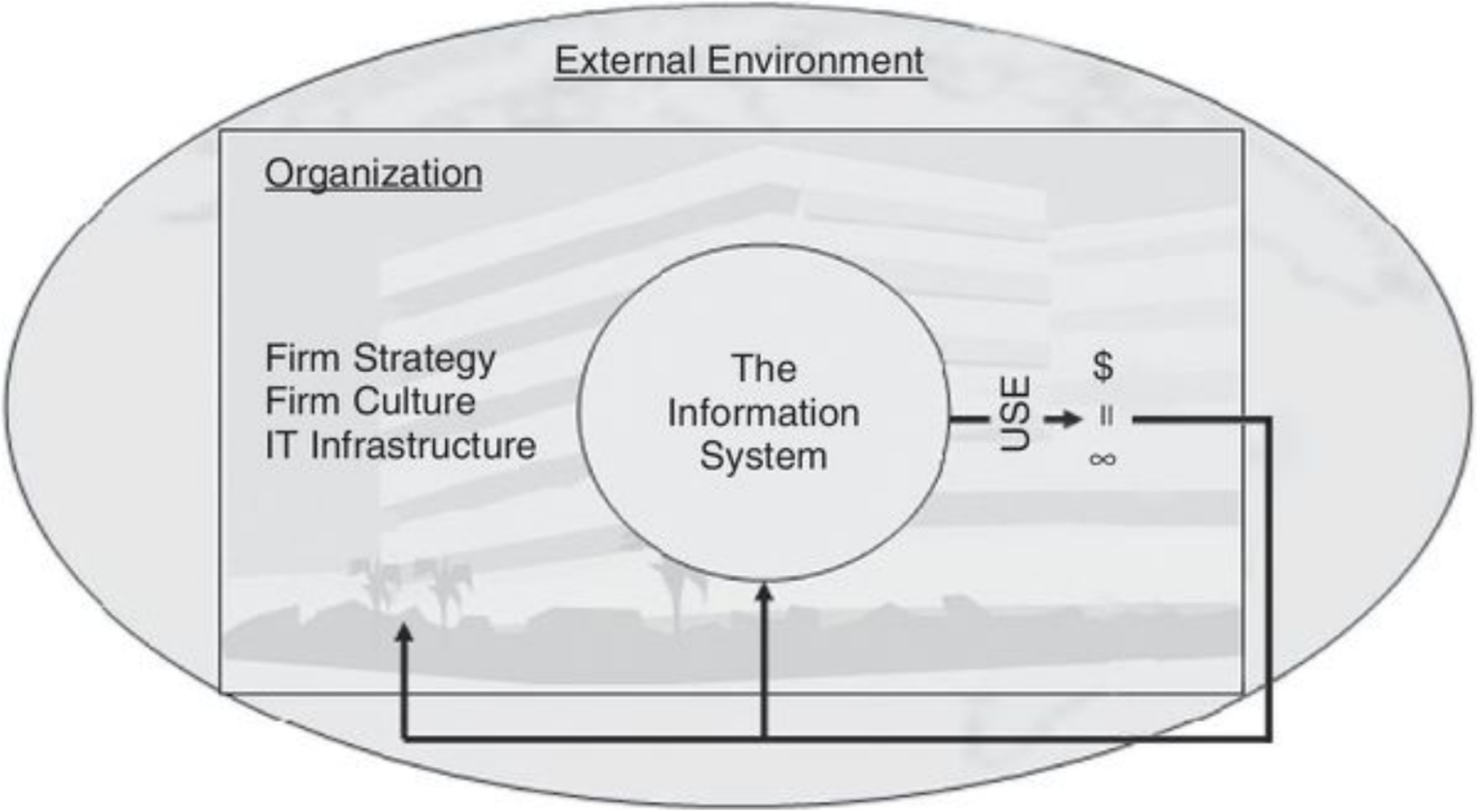
Mark Hedley Photo : http://hotel-online.com/News/PR2005_1st/Jan05_WyndhamHedley.html

Information systems success

- An IS is deemed a failure if it is **abandoned** (i.e. the implementation phase is never concluded) or **not used** (i.e. the IS is completed but rejected by its intended users).
  - due to non-use, the IS will not yield the promised benefits

- The success of an IS that is in use is evaluated based on whether, and to what extent, the IS has delivered its expected benefits.
  - The benefits can be intended and unintended, direct and indirect

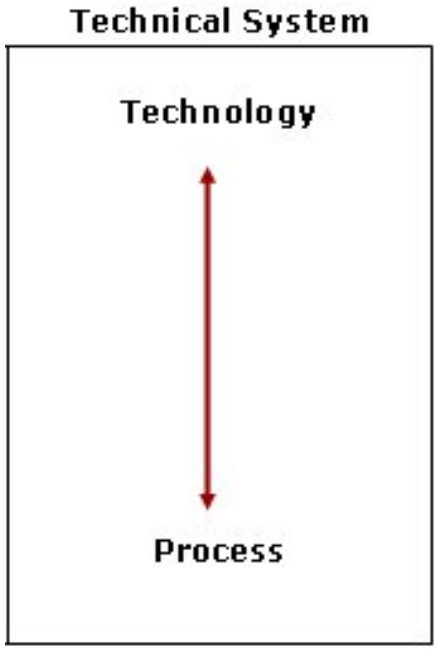
Information systems in an organizational context – they do not exist in a vacuum



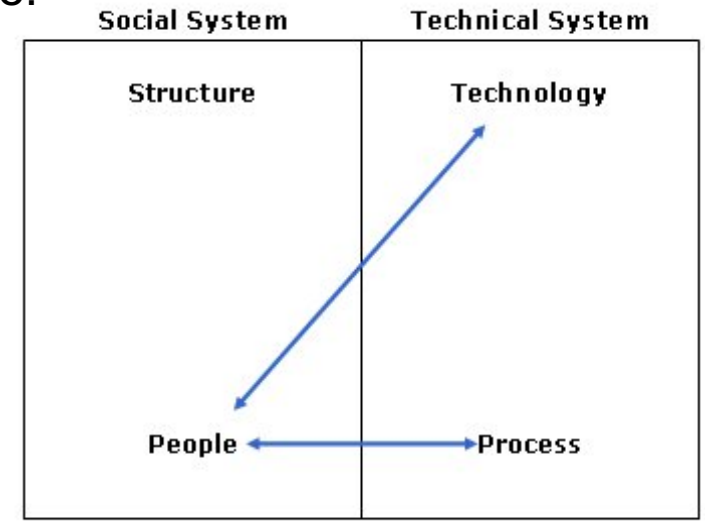
Information Systems and Organizational Change

Understanding that IS are socio-technical systems can help in better managing organizational change!

1st order change: Automate

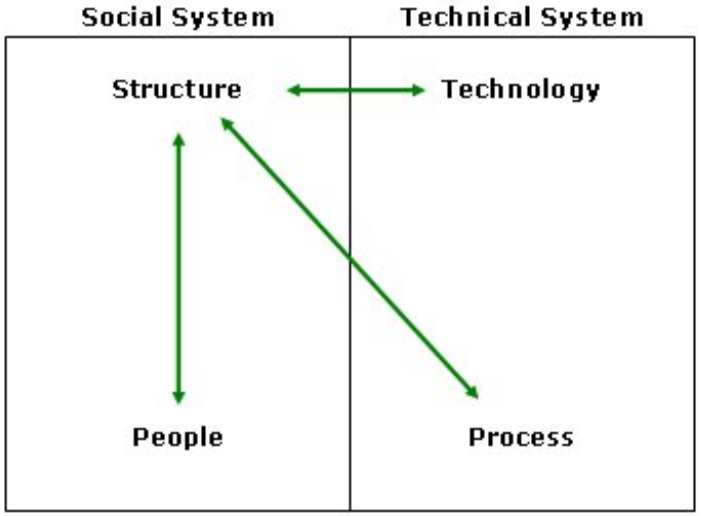


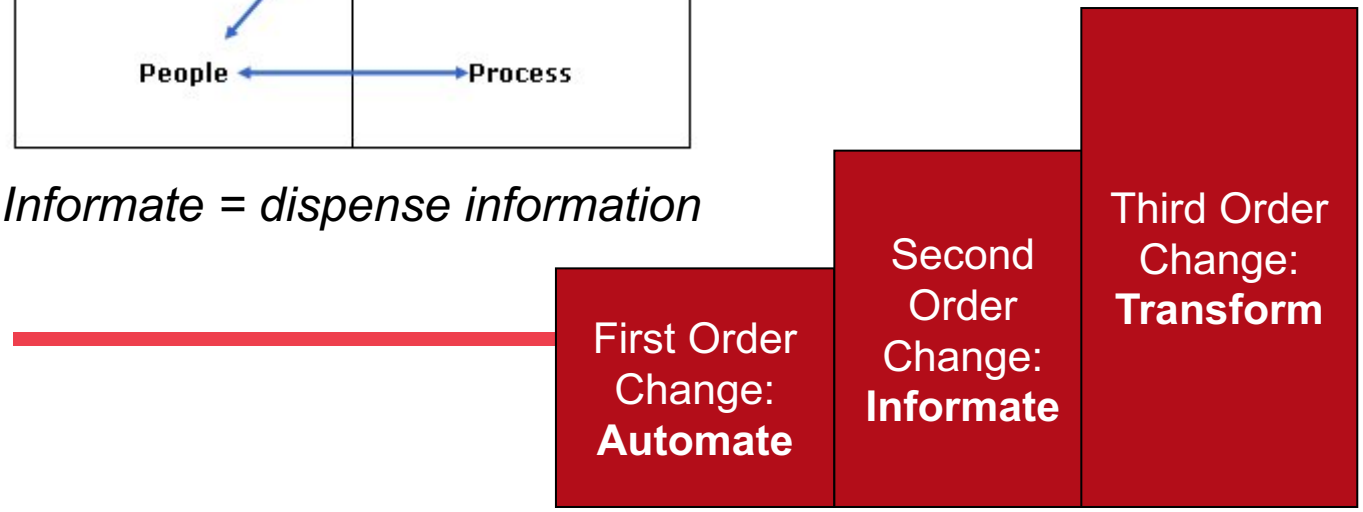
2nd order change: Informate



Informate = dispense information

3rd order change: Transform





Key takeaways from Chapter 2

- IS are designed and built with the **objective of improving the firm's efficiency and effectiveness** by fulfilling its information processing needs. **Successful IS are those that are used and that achieve their intended goals**.

- **IS exist in an organizational context, characterized by the firm's strategy, culture, and IT infrastructure**. The organization itself is subject to the influences of its external environment, including regulatory requirements, social and business trends, and competitive pressures.

- **IS are subject to systemic effects, defined as the notion that the different components of a system are interdependent** and that changes in one component affect all other components of the system. Thus, when designing a new IS, or troubleshooting an underperforming one, you can devise multiple ways to achieve the system's goal.

- Increasingly in modern firms, **organizational change stems from the introduction of new IT**. Depending on the objectives and reach of the new system, we identify three levels of change—**first-, second-, and third-order change—each requiring different levels of commitment and sponsorship to be successfully managed**.

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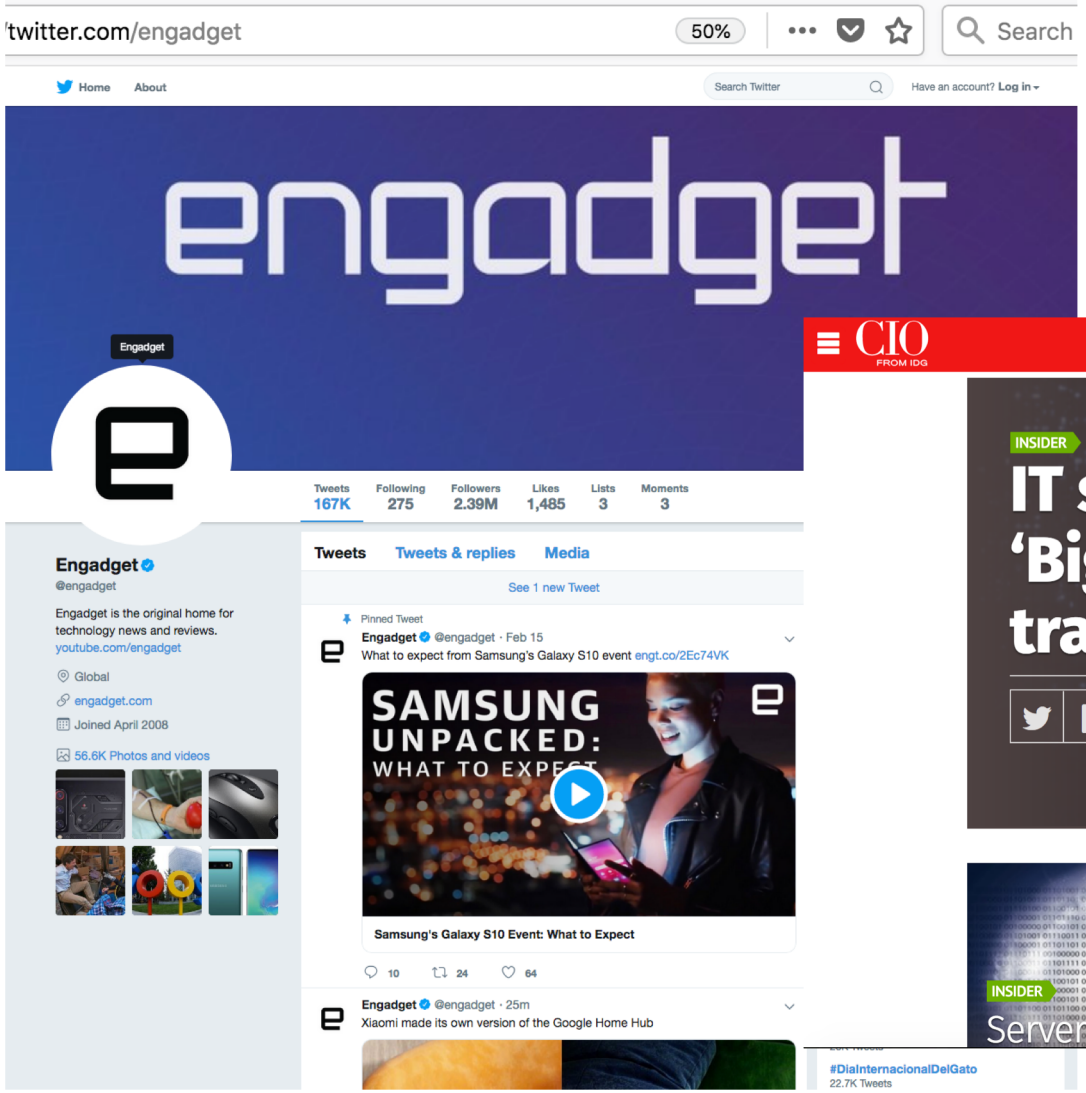
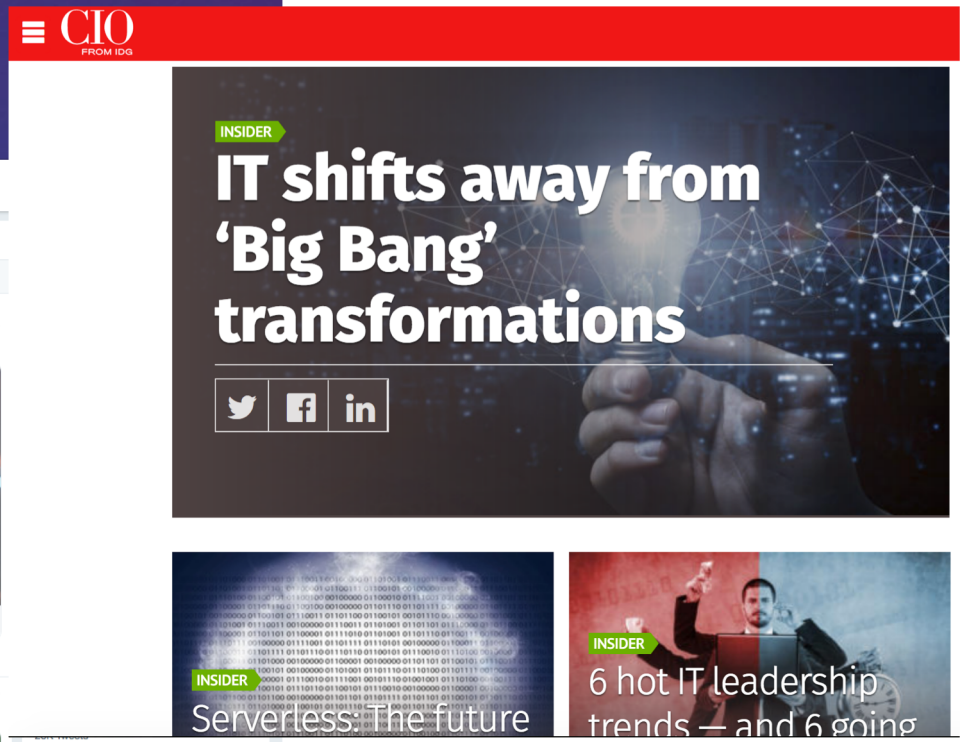
Wrap up

Lots of technology issues and ”ABC” acronyms!

- Also managers need 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, Mashable.com, TIVI.fi, ITviikko.fi, Digitoday.fi, Tech twitterers and bloggers…





Next lectures

Thursday 28.2.

Collaborative IS and knowledge work

Johanna Bragge and
Antti Salovaara, PhD, Lecturer / Aalto SCI, Computer Science

Tuesday 5.3.
Gamification at work
CEO Jukka Koskenkanto / Cloudriven, Happit

Thursday 7.3.
Service Design: Process and Methods
CEO Teemu Uotila and Experience Designer Jan Nikander, Vincit