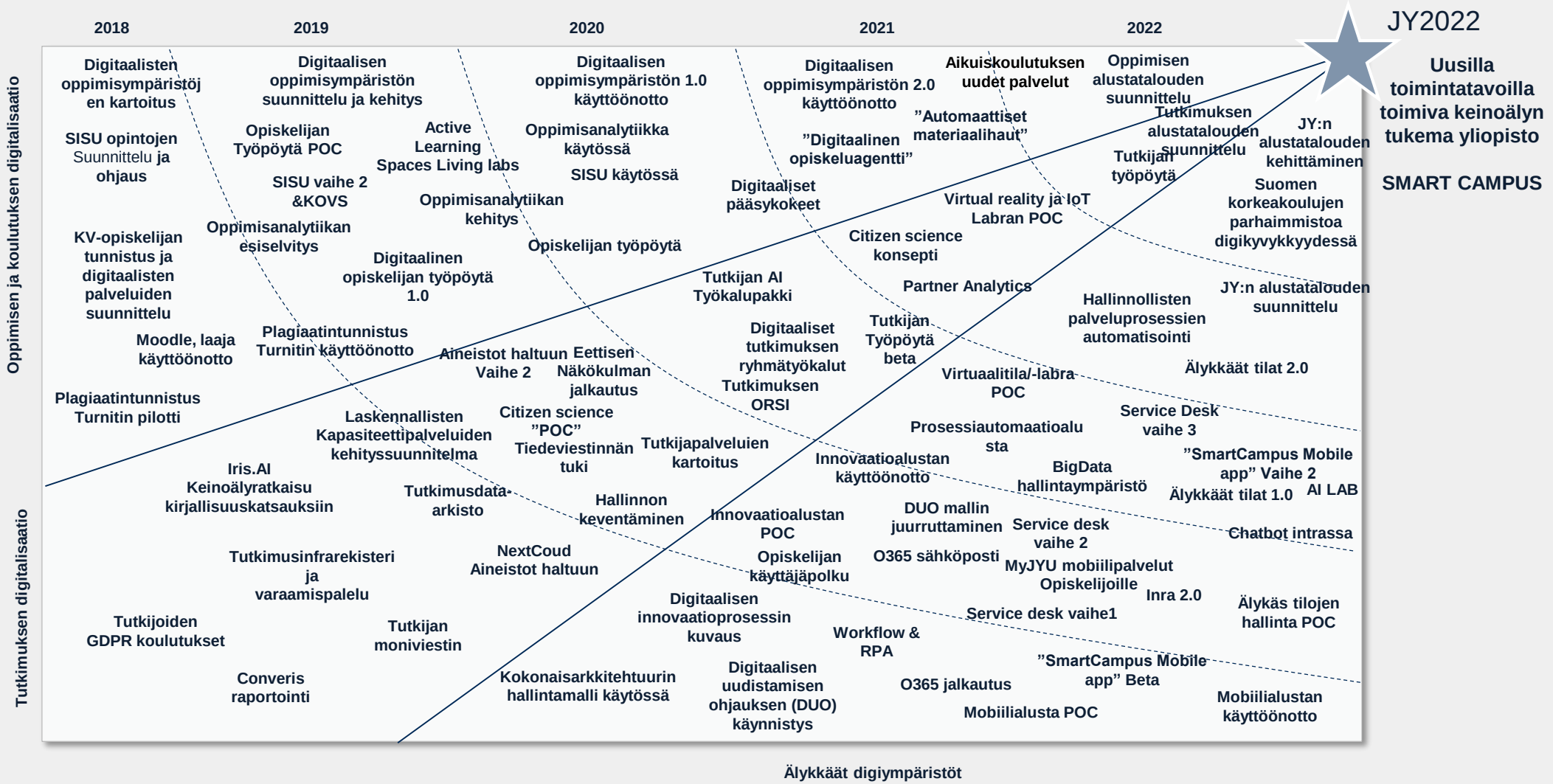
JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

Digiohjelman päivitys H1 2021

Muutosilmiöt

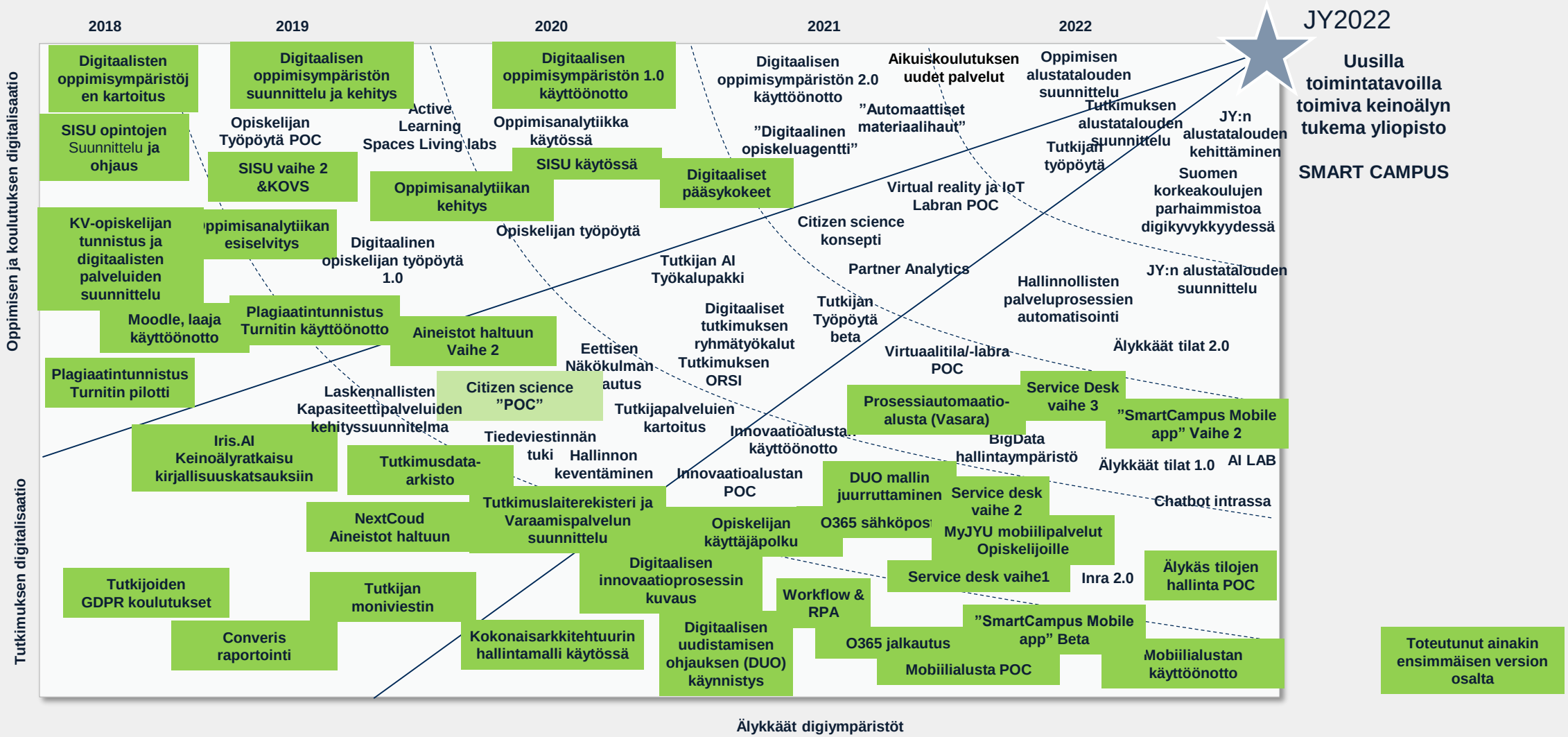
"The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn."
Alvin Tofler

Digiohjelma
Tiekartta 2018-2022

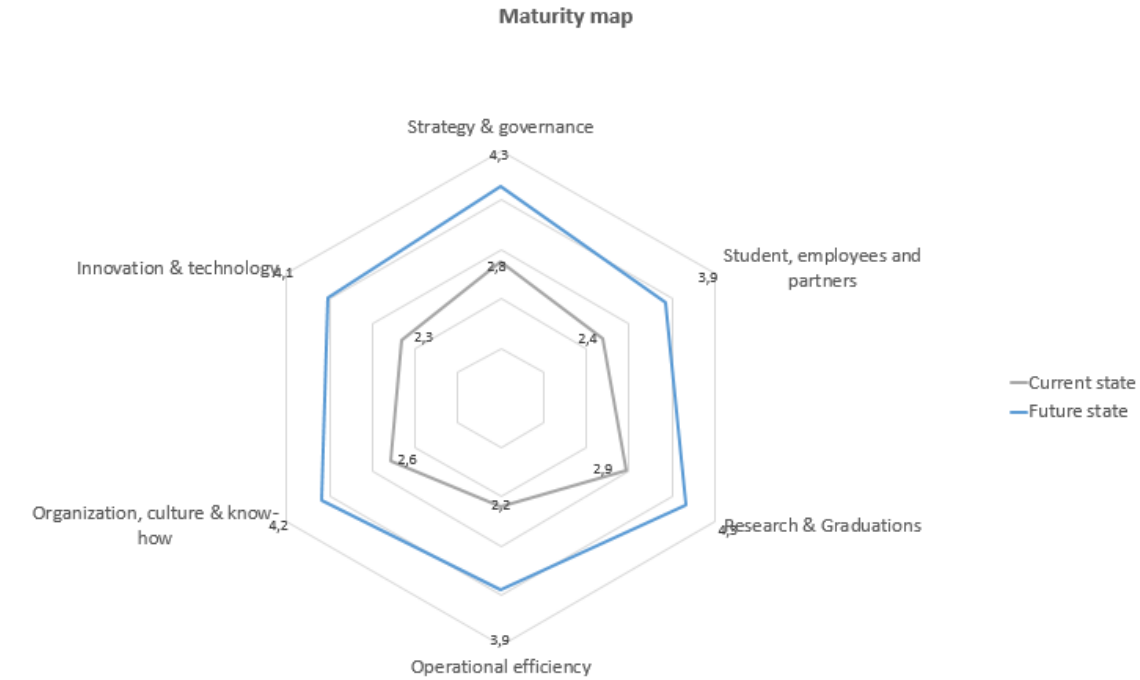


Digiohjelma

Tiekartta 2018-2022 (toteuma 09/2020)

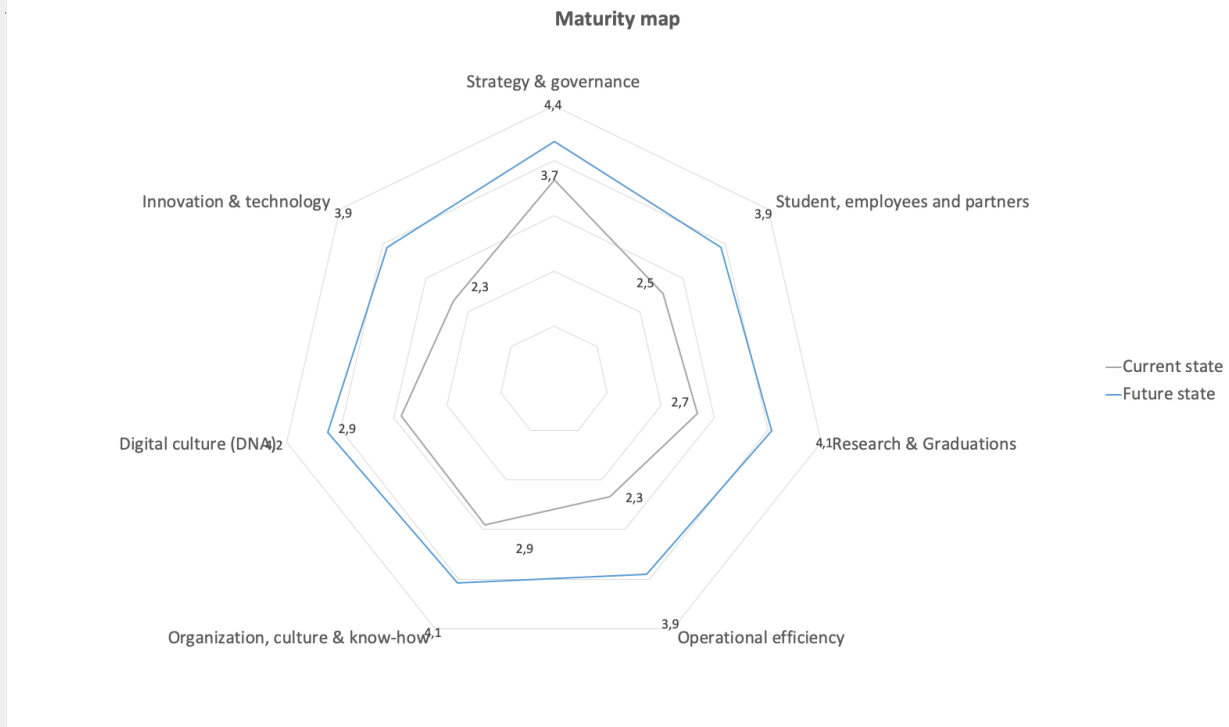


JY:n digitaalinen kypsyystaso 2017 ja 2019 – edistymistä on, mutta olemme edelleen digimatkalla



SUMMARY OF RESULTS: Jyväskylän yliopisto

Categories	Score (1-5)	Current maturity level	Future/target score	Gap (future - current)
Strategy & governance	2,8	Digital player	4,3	1,5
Student, employees and partners	2,4	Digital explorer	3,9	1,5
Research & Graduations	2,9	Digital player	4,3	1,4
Operational efficiency	2,2	Digital explorer	3,9	1,7
Organization, culture & know-how	2,6	Digital player	4,2	1,6
Innovation & technology	2,3	Digital explorer	4,1	1,7
Company level score	**2,5**	**Digital player**	**4,1**	**1,6**



SUMMARY OF RESULTS: Jyväskylän yliopisto

Categories	Score (1-5)	Current maturity level	Future/target score	Gap (future - current)
Strategy & governance	3,7	Digital transformer	4,4	0,7
Student, employees and partners	2,5	Digital player	3,9	1,4
Research & Graduations	2,7	Digital player	4,1	1,4
Operational efficiency	2,3	Digital explorer	3,9	1,6
Organization, culture & know-how	2,9	Digital player	4,1	1,2
Digital culture (DNA)	2,9	Digital player	4,2	1,4
Innovation & technology	2,3	Digital explorer	3,9	1,6
Company level score	**3,2**	**Digital player**	**4,7**	**1,5**


But 2020 Looks Different

Korkeakoulutuksen digivisio 2030 – Suomesta joustavan opiskelun mallimaa

Mikä on digivisio?

Digivisio on kaikkien Suomen korkeakoulujen yhteinen hanke, joka avaa oppimisen kansalliset tietovarannot yksilön ja yhteiskunnan käyttöön. Pitkäjänteinen digivisiotyö tukee oppijoiden oppimista läpi elämän sekä mahdollistaa pedagogiikan kehittymisen ja korkeakoulujen uudistumisen. Vuonna 2030 Suomessa on avoin ja tunnustettu oppimisen ekosysteemi, joka hyödyttää myös laajasti niin tutkimus- ja innovaatiotoimintaa kuin työelämääkin.

DIGIVISIO 2030

”…uudet murrosteknologiat, tekoälystä kvanttilaskentaan, lyövät itseään vauhdilla läpi. Uuden kohtaaminen tarjoaa uusia tilaisuuksia tehdä asioita paremmin ja viisaammin kuin ennen. Uuden kohtaaminen voi myös tuntua pelottavalta. Paljon vaarallisempaa on kuitenkin yrittää ripustautua sellaiseen vanhaan, joka ei enää palaa.”

TP Sauli Niinistö 1.1.2021

Miksi päivitetään ja päivittämisen tavoite

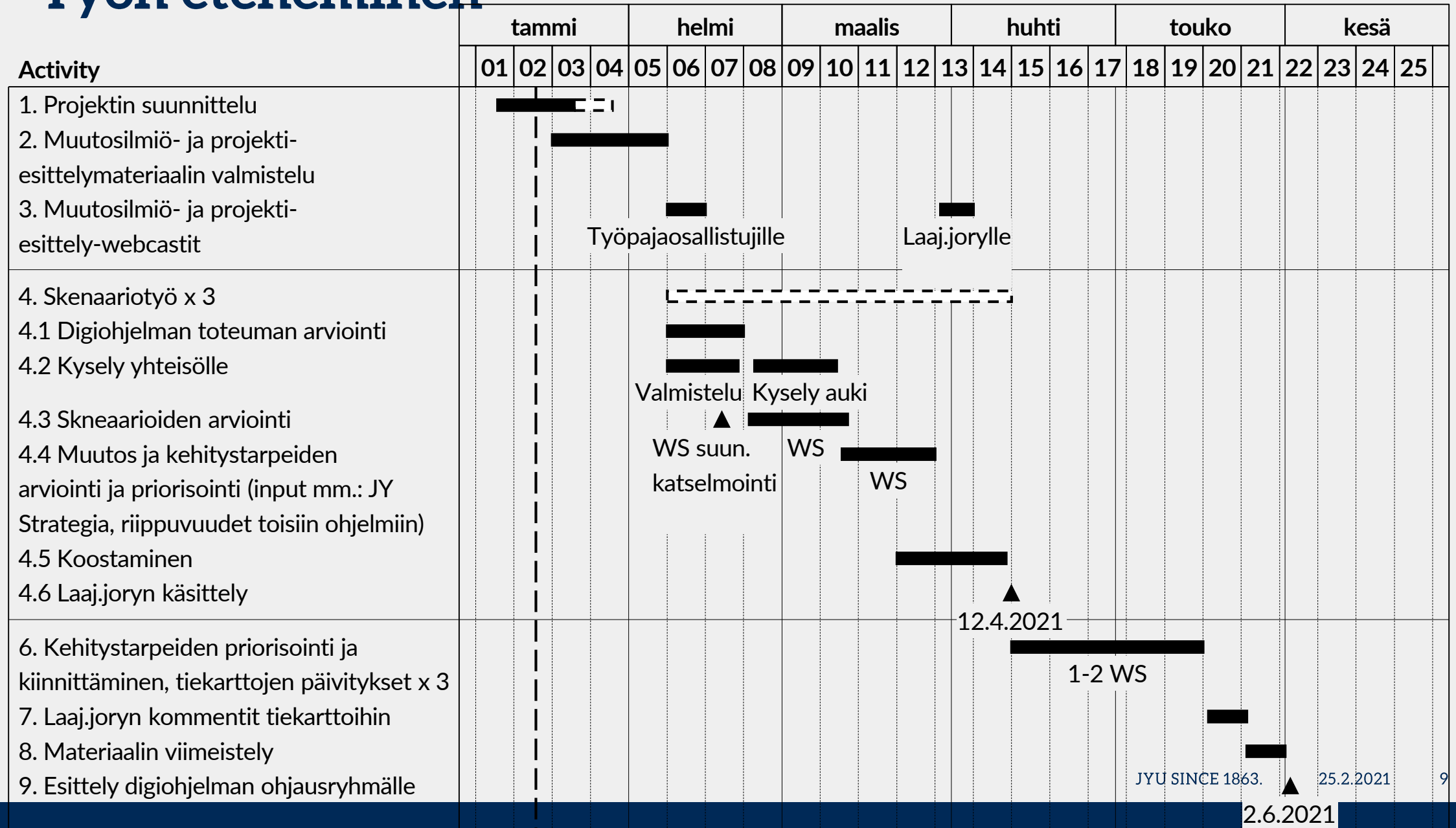
Miksi tehdään juuri nyt?

- Yli puolet alkuperäisen digiohjelman tiekarttaa kuljettu, maailma ja me olemme muuttuneet, tavoite hämärtyy, suuntaan vaikuttavia muutosilmiöitä ja kehityskulkuja on ilmaantunut
- Digitaalinen kehitys on niin nopeaa, että joka tapauksessa päivitys tulisi tehdä kahden vuoden välein

Tavoite

- Tunnistaa tärkeimmät uuden digiohjelmaan vaikuttavat muutosilmiöt ja ymmärtää kehityksen eteneminen Jyväskylän yliopistossa
- Päivittää suunnitelma suhteessa ympäristön ja Jyväskylän yliopiston muutoksiin ja prioriteetteihin
- Priorisoida kehityskohteita tarpeen mukaan uudelleen
- Saavuttaa Jyväskylän yliopiston johdon sitoumus digikehityksen suuntaan ja valintoihin

Työn eteneminen



Etenemissuunnitelma (JY laajan johtoryhmän näkökulma)

12.4. JY laaj.joryn kokous

17.-21.5.

2.6.

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Keskeisiä muutosilmiöitä

Datan arvon ja määrän kasvu

Jatkuva oppiminen

Covid-19 ja uusi normaali

Tekoälyn murros

Hyperautomaatio

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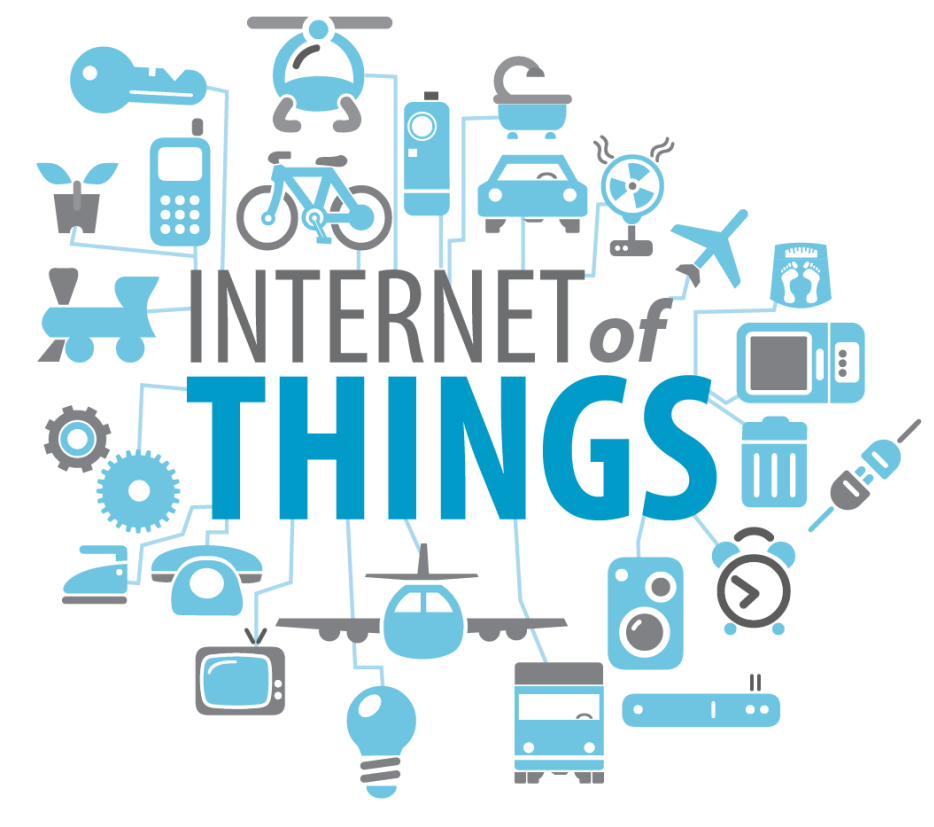
Datan arvo ja määrä kasvaa

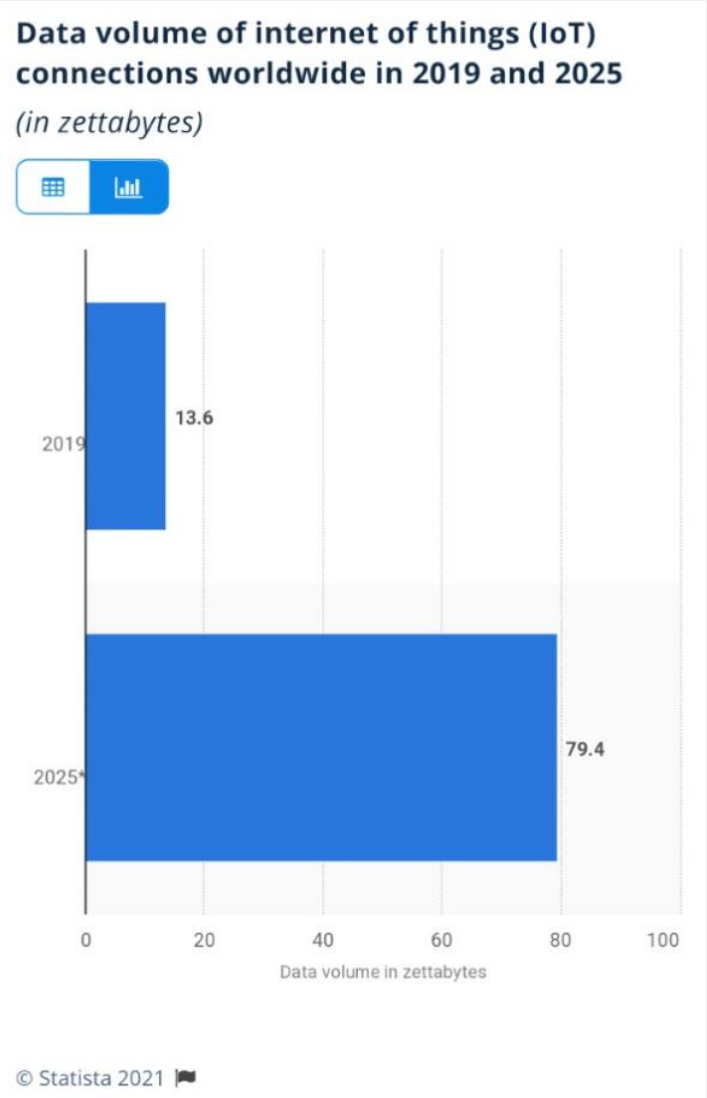
Datan arvo kasvaa

Data = uusi öljy, joka on jalostettava

IT-jätit ostavat dataa ja asiakkaita ostamalla toisia IT-jättiläisiä

Datan määrä kasvaa – myös tutkimuksen tarpeisiin?





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Muutosilmiö: Jatkuva oppiminen

Korkeakoulutuksen tarpeen kasvu

Korkeakoulujen lisättävä 800 miljoonaa
korkeakoulutusmahdollisuutta seuraavan 35 vuoden aikana

180 miljoonaa koulutuspaikkaa luotu viimeisen 45 vuoden aikana

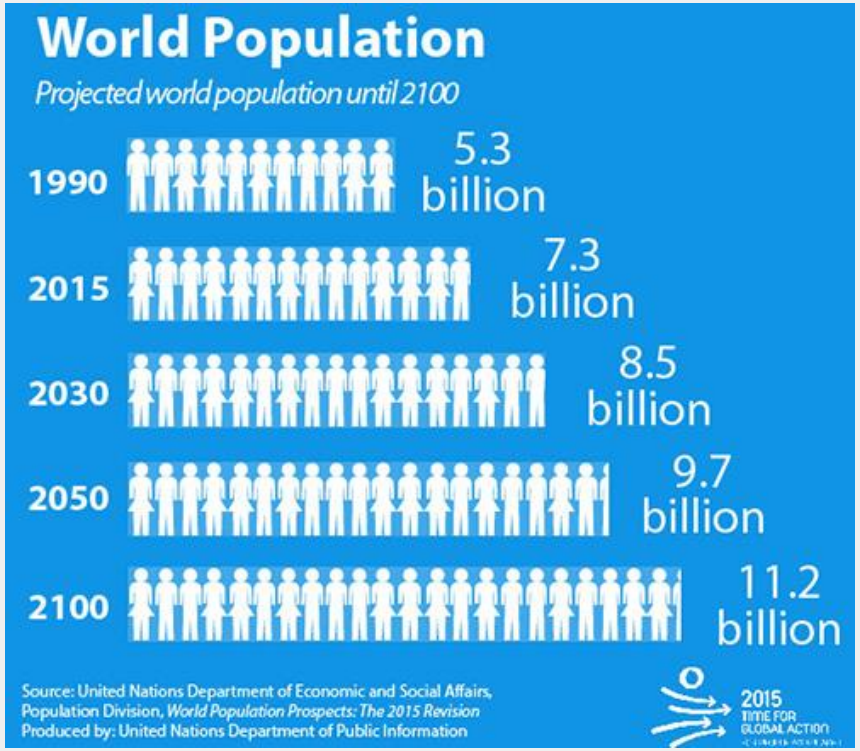
Miltä näyttää moderni jatkuvan oppimisen ympäristö tänään? Tässä lyhyt video, jossa esitellään LinkedIn learning.

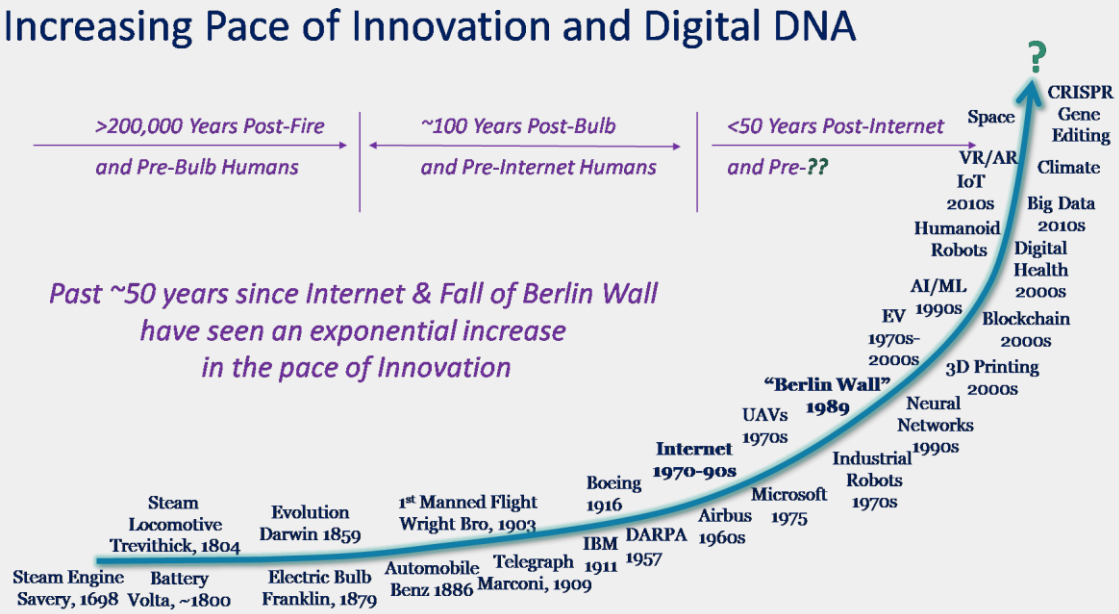
Source: Gartner, Maailmanpankki

Muutosdraiveri: väestön kasvu ja työelämän muutos edellyttävät merkittävää osaamisen kehittämistä

Globaali väestönkasvu on noin 82 miljoonaa vuodessa (lähde: YK)

Työelämään siirtyvä väestö tarvitsee osaamista ja työelämässä osaamisen jatkuvaa kehittämistä muuttuvassa ympäristössä





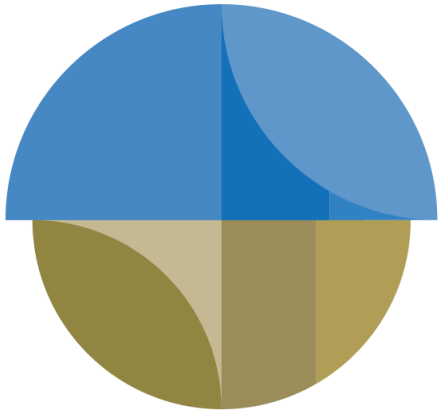
Muutosdraiveri: digitalisaatio ja tekoäly

WORLD ECONOMIC FORUM

Job landscape

By 2025, new jobs will emerge and others will be displaced by a shift in the division of labour between humans and machines, affecting:

97 million



85 million

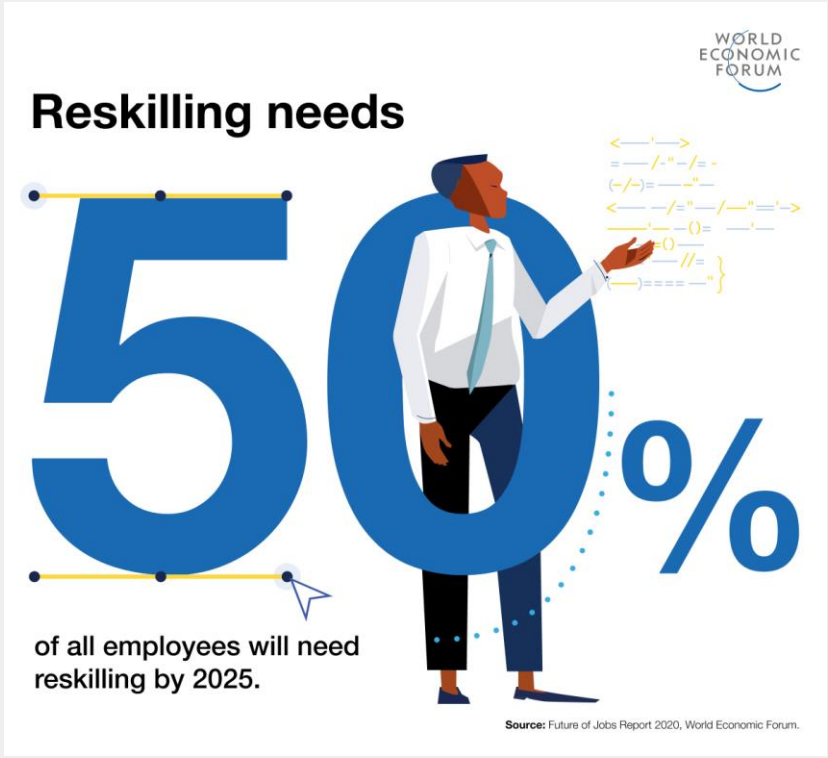
Growing job demand:

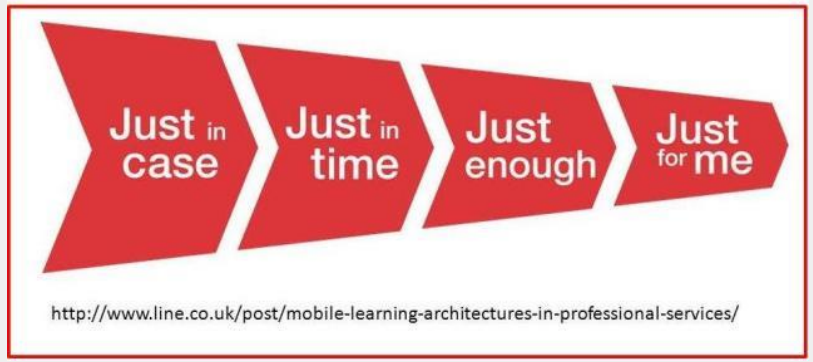
1. Data Analysts and Scientists
2. AI and Machine Learning Specialists
3. Big Data Specialists
4. Digital Marketing and Strategy Specialists
5. Process Automation Specialists
6. Business Development Professionals
7. Digital Transformation Specialists
8. Information Security Analysts
9. Software and Applications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

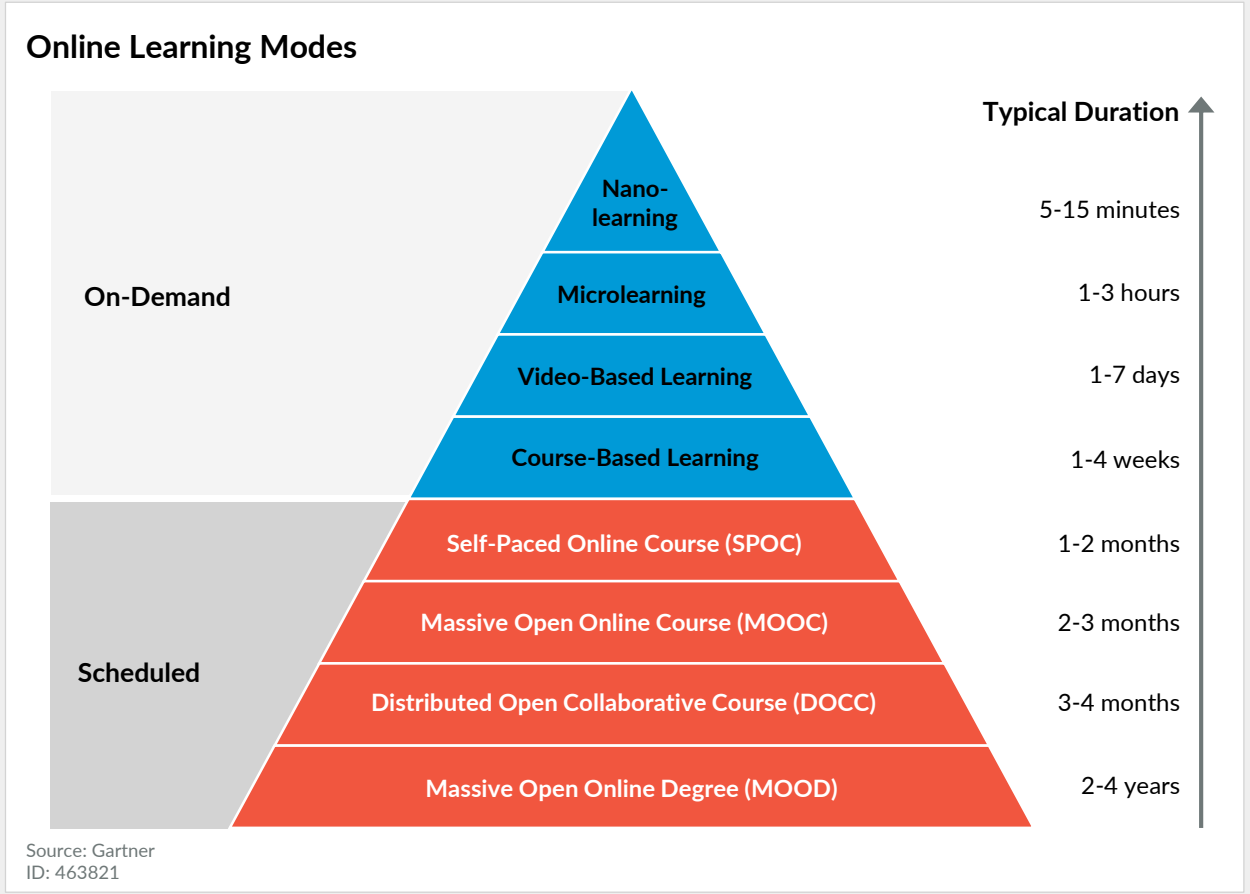
Source: Future of Jobs Report 2020, World Economic Forum.





Data is the key

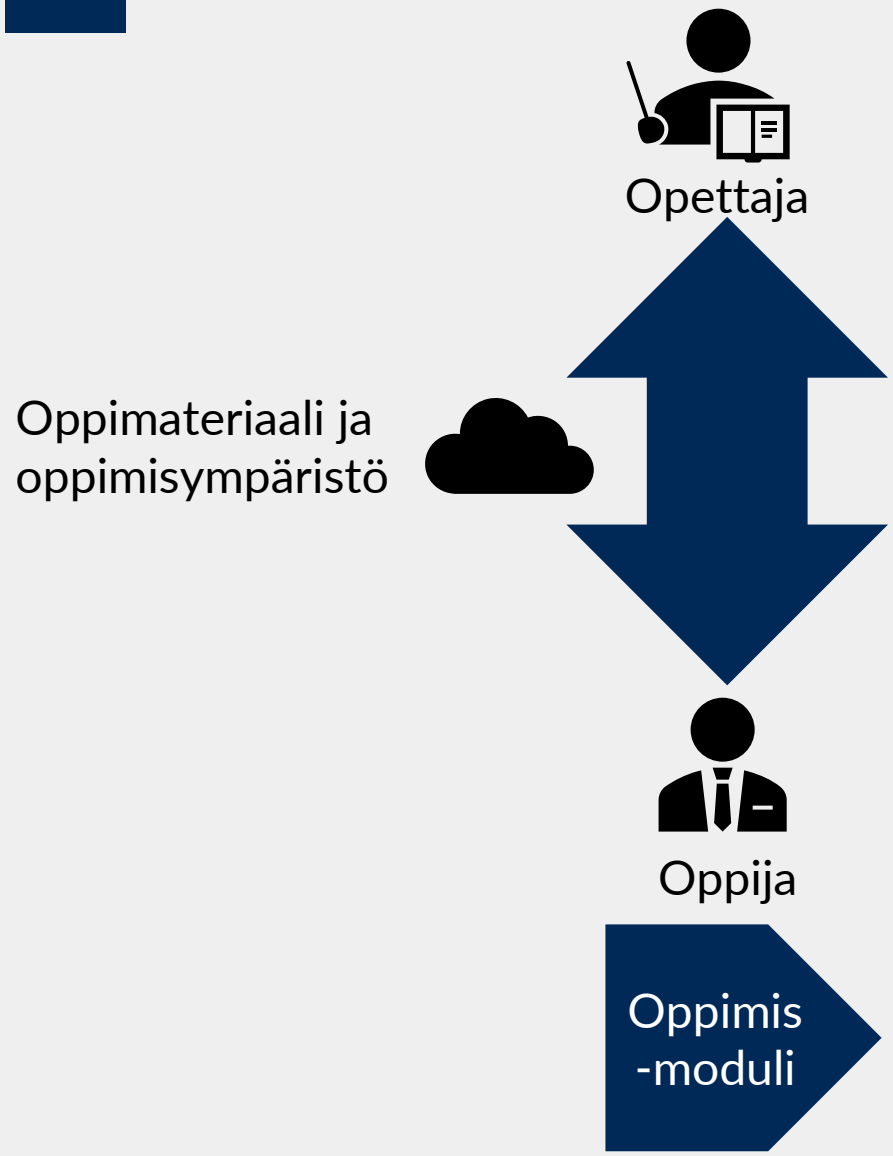
Traditional Mode



Toward Nanolearning – enable personalized learning paths

AI learning assistants analyze microlearning behaviors and the effectiveness of different content styles to personalize the user experience by matching content at the appropriate maturity level to fill specific skills gaps.

Oppimisen ja opettamisen erityispiirteitä tulevaisuudessa



Opettaja mm.

- Näkee missä oppimateriaalin kohdassa on vietetty paljon aikaa ja mihin palattu useamman kerran, miten materiaalia ja opetusta kannattaisi kehittää - reaaliaikaisesti
- Näkee millaisen materiaalin käytön ja oppimistavan kautta syntyy parasta osaamista
- Näkee kurssilta tippuneet, missä kohti poistumista on eniten ja mitkä asiat mahdollisesti vaikuttivat, vaikuttaako esim. jokin pohjatiedon puute

Opiskelija mm.

- Saa ehdotuksia miten kannattaisi edetä ja miten muut ovat saaneet hyviä oppimistuloksia
- Saa koko ajan palautetta oppimisesta ja edistymisestä
- Arvioi toisten oppimista, tuottaa opetusmateriaalia
- Saa kehotuksia edetä

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Muutosilmiö: Covid-19 ja uusi normaali

Digitaalisuus on osa kaikkea toimintaa – miten työ ja osaamistarpeet muuttuvat yliopistossa?

Ennen

Nyt – uusi normaali

Digitalisaatio muuttaa työn sisältöä

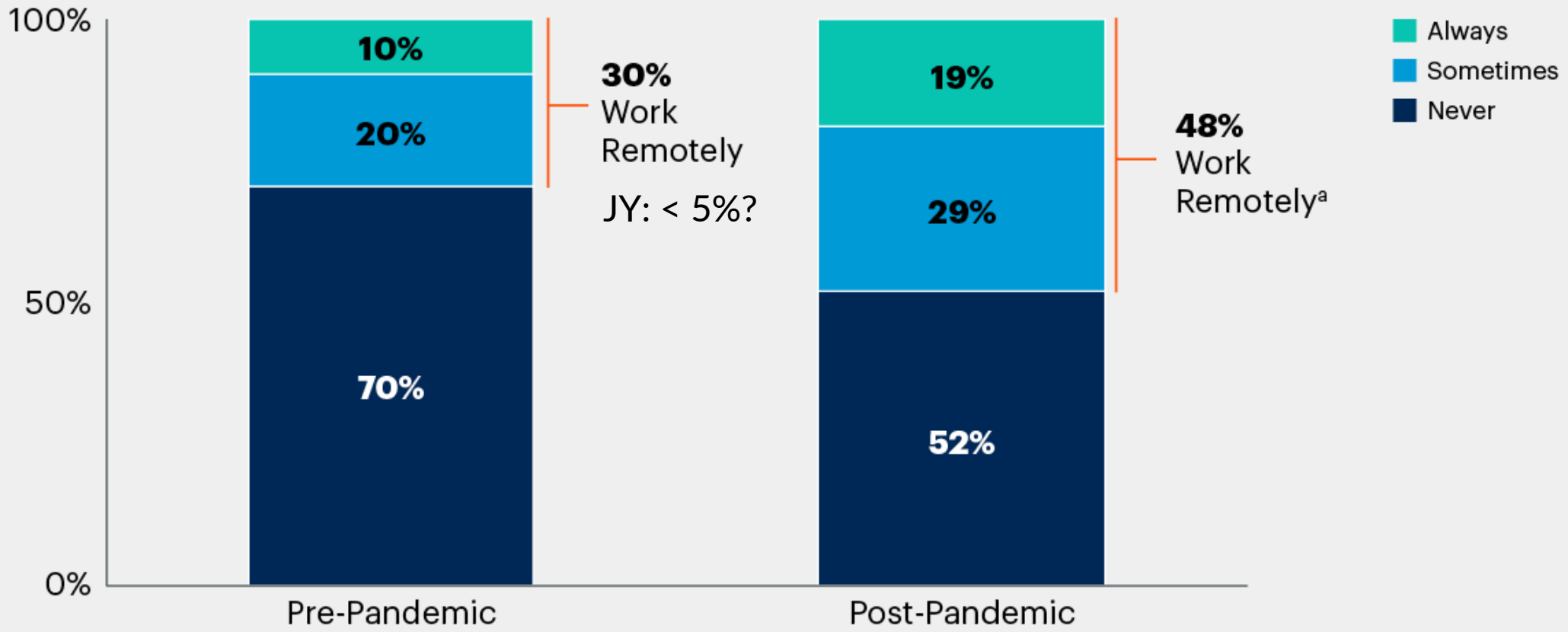
Higher Education Impact Areas

Impact Area	Short ⟷ Long	
Institutional Independence	Largely preserved if cash rich / government supported	Challenged — widespread partnership and consolidation
Funding	Stretched — cost optimization needed	Insufficient — value optimization essential
Learning Environments (Including Labs)	Back to campus	Hybrid or fully online
Learning Systems	Optimization of existing solutions	Transformation with new approaches
Faculty Teaching	Evolved from traditional	Digital first redesign
Administrative Computing	On-premises	Hybrid and cloud
Student Experience	Socially distanced	Redefined for online
Student Award	Degree dominates	Stackable credentials aligned to employability

Higher Education Impact Areas

Impact Area	Insignificant ⟷ Significant	
Government Funding	Research support	Aligned to industry skills
Senior Leadership	Preservation of historic strategic assumptions	Transition to new strategic models
Institutional Buildings	High occupancy and space demand	Low occupancy and space demand
Classroom Design	Back to normal	Coordinated HyFlex models
Teaching Delivery	Face-to-face faculty dominates	New adaptive learning pathways
Faculty and Student Culture	Acceptance of close proximity	Aversion to social contact
Administration Offices	Back to campus	Flexible work locations
Program Marketing	Institutional brand and prestige	Student success and impact

Percentage of Employees Working Remotely, Pre- and Post- Pandemic
Projected



Source: Gartner COVID-19 Crisis Benchmarking Against Your Peers Webinar Poll (n = 421 HR leaders, 2 April 2020), 2020 Gartner Cost Cutting and Employee Experience Survey (n = 4,535 employees), COVID-19: How Finance Leaders Are Responding to the Emerging Situation Webinar Poll (n = 317 finance leaders, 26 March 2020).

[a] Modeled based on responses to three Gartner surveys.

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Muutosilmiö: Tekoäly

Edelleen validi

”…uudet murrosteknologiat, tekoälystä kvanttilaskentaan, lyövät itseään vauhdilla läpi. Uuden kohtaaminen tarjoaa uusia tilaisuuksia tehdä asioita paremmin ja viisaammin kuin ennen. Uuden kohtaaminen voi myös tuntua pelottavalta. Paljon vaarallisempaa on kuitenkin yrittää ripustautua sellaiseen vanhaan, joka ei enää palaa.”

TP Sauli Niinistö 1.1.2021

The Long-Term: AI Will Be Transformational

- AI changes the professions we teach for, so we need to change how we teach for those professions

Contents lists available at ScienceDirect

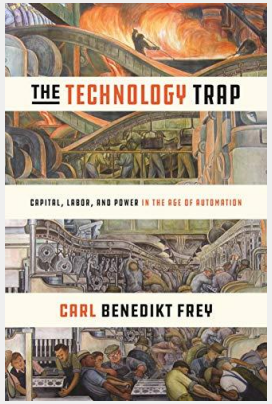
Technological Forecasting & Social Change

ELSEVIER

The future of employment: How susceptible are jobs to computerisation?☆

Carl Benedikt Frey[a,*], Michael A. Osborne[b]

[a] Oxford Martin School, University of Oxford, Oxford OX1 1PT, United Kingdom
[b] Department of Engineering Science, University of Oxford, Oxford OX1 3PJ, United Kingdom

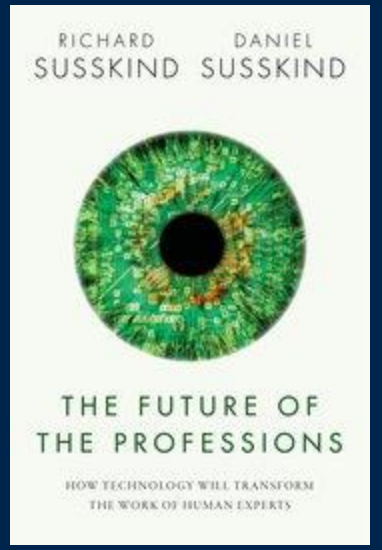


Carl Benedikt Frey

The Future of the Professions

How Technology Will Transform the Work of Human Experts

Richard Susskind and Daniel Susskind



Gartner

AI will be in everything that is machine readble: Some categories to consider

- Education
  - Pedagogic use
  - Student Support use
  - Career focused
- Research
  - Actual Research
  - Researcher Support (Grant application, mgmnt etc)
- Administration
  - Institution planning/decision
  - Retention
  - Recruit/Enrollment

JY example: Automated text generation and spelling of interview recordings

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Hyperautomaatio

Taustadraivereita:

- Uusi Normaali
- Korjausvelka
- Tekoälyn murros

Gartner Definition of Hyperautomation

“Business-driven hyperautomation is a disciplined approach that organizations use to **rapidly identify, vet and automate as many business and IT processes as possible**. Hyperautomation involves the orchestrated use of multiple technologies, tools or platforms. Examples of these include AI, machine learning, event-driven software architecture, robotic process automation (RPA), BPM/iBPMS, integration platform as a service (iPaaS), low code/no code tools, packaged software and other types of decision, process and task automation tools.”

Hyperautomation Is Inevitable and Irreversible

Work From Home has accelerated "**Default is Digital**"

Expect that everything that can and **should be** automated **will be** automated.

Everything else must be **augmented**. Augmenting business decisions.

Gartner

Gartner CEO study:
Top 5 Concerns About Managing Future Workforce

Ranked
No. 1 Challenge

Continued Unabated Investments in Hyperautomation Despite the Crisis

Strategic Investments

85%

will increase or not change Hyperautomation investment strategies over next 12 mos.

Governance

40%

will have 4 or More *Concurrent* Hyperautomation initiatives to Manage & Operate

Governance

16%

will have 15 or More *Concurrent* Hyperautomation initiatives to Manage & Operate

Polling data from Nov 2020 webinar titled: The Gartner 2021 Predictions: Accelerate Results Beyond RPA to **Hyperautomation**
Number of respondents = 184 to 399 (depending on question).
Q1: How would you characterize your organization's Hyperautomation investments over next 12 months?
Q2: How many Hyperautomation initiatives are taking place with in your organization?

Continued Unabated Investments in Artificial Intelligence Despite the Crisis

Value Seeking

75%

will Continue or Start New AI Investments in next 6 to 9 months

Strategic Investments

66%

will increase or not change AI investment strategies (since onset of crisis)

Growth

50%

PRIMARY AI Investments is focused on Revenue Growth or CX/Retention

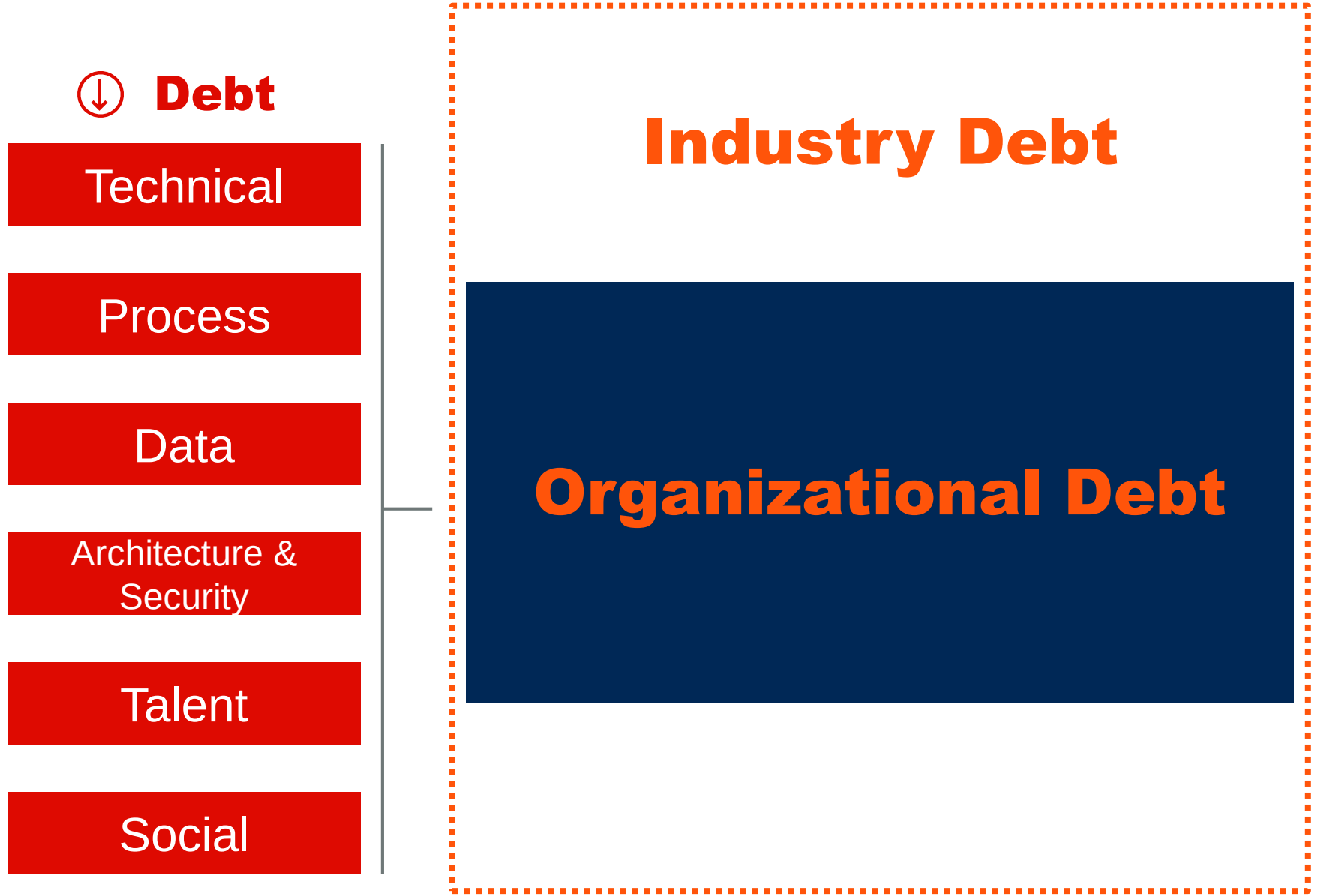
Containment

30%

PRIMARY AI Investments is focused on Cost Optimization

Polling data from Septe 2020 webinar titled: Driving Strategic Mandates for AI in the Enterprise
Number of respondents = 150 to 200 (depending on question).

Gartner



C-Level Mandate: Shift From Debt to Liquidity

Debt

- Technical
- Process
- Data
- Architecture & Security
- Talent
- Social

Compose the Future

Liquidity

Gartner

C-Level Mandate: Shift From Debt to Liquidity

Debt

- Technical
- Process
- Data
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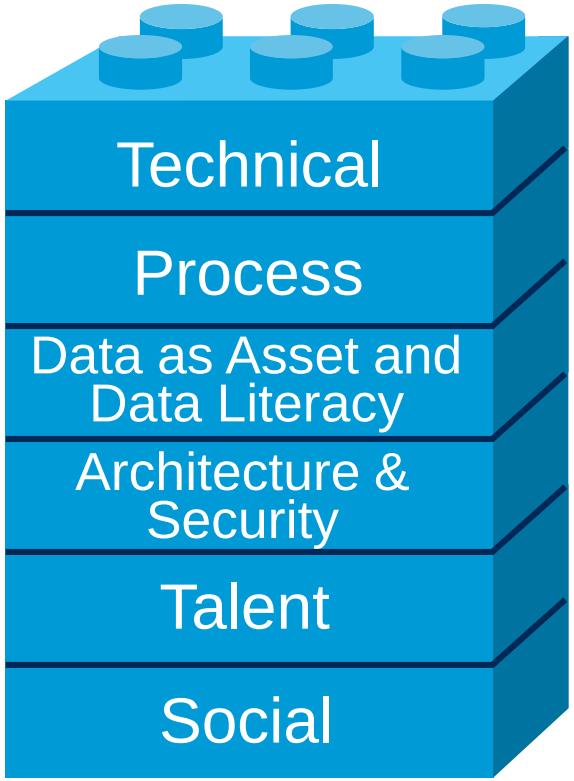
- Social

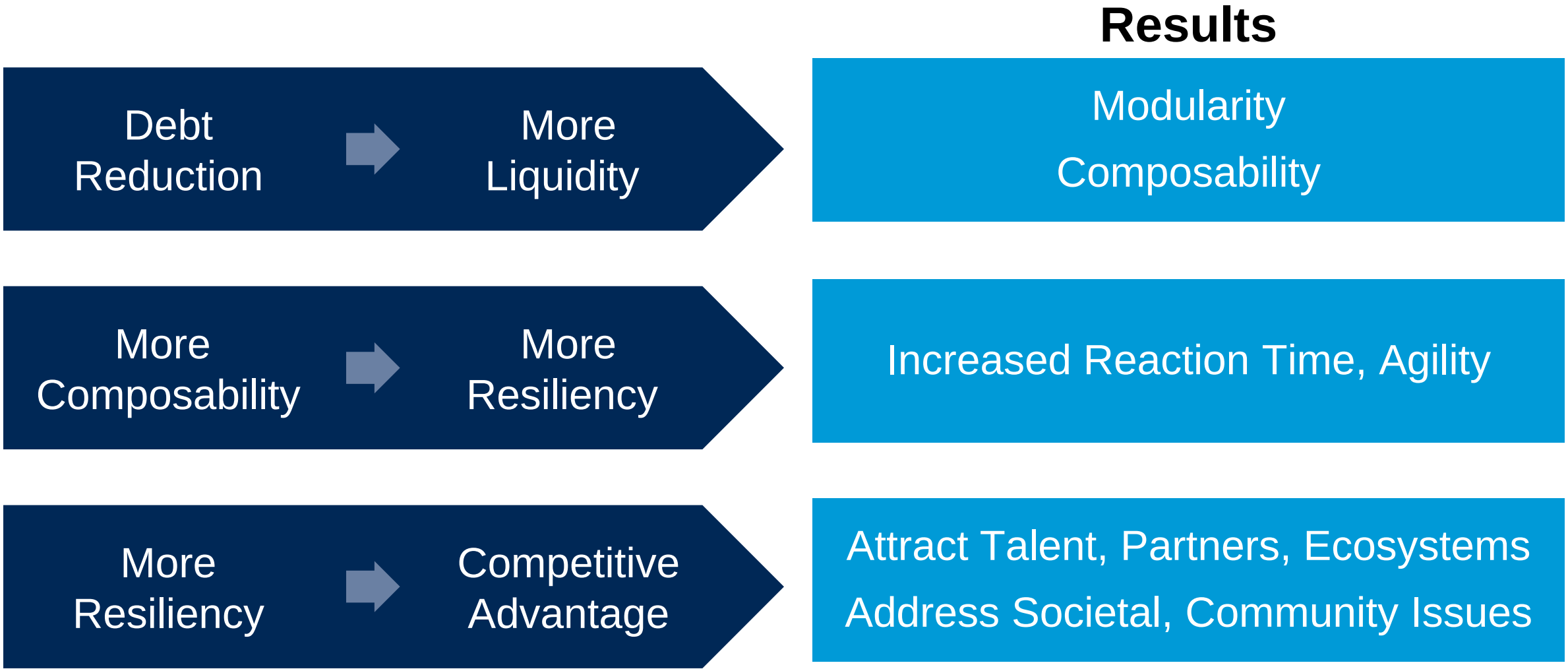
Compose the Future

Liquidity



Gartner

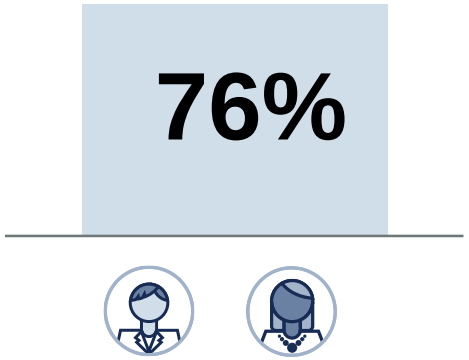
Compose the Future: Focus on Liquidity



Business Technologists (Not "Just" Citizen Developers)

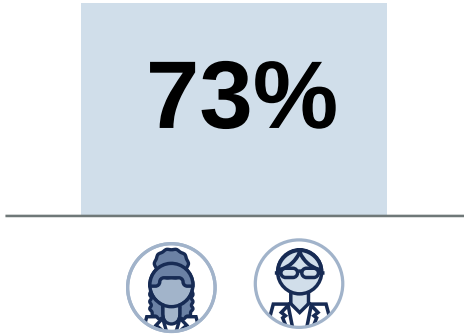
Reasons Why Business Technologists Do What They Do

Corporate IT Has Not Kept Up With Demand



My IT department … could not provide the capabilities **fast enough** …did not provide the **right capabilities**

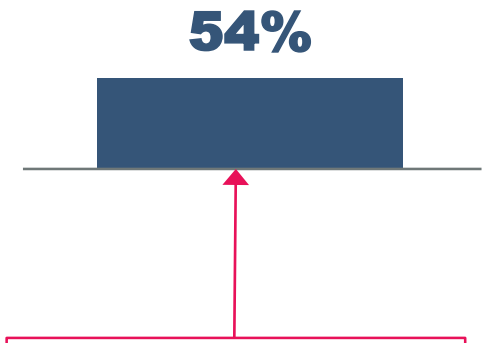
Employees Have Greater Technology Ambitions



My enterprise … **encouraged me to build** information technologies

I wanted to develop my **technology skills**

Being a Business Technologist Is Formally Recognized as Part of the Role



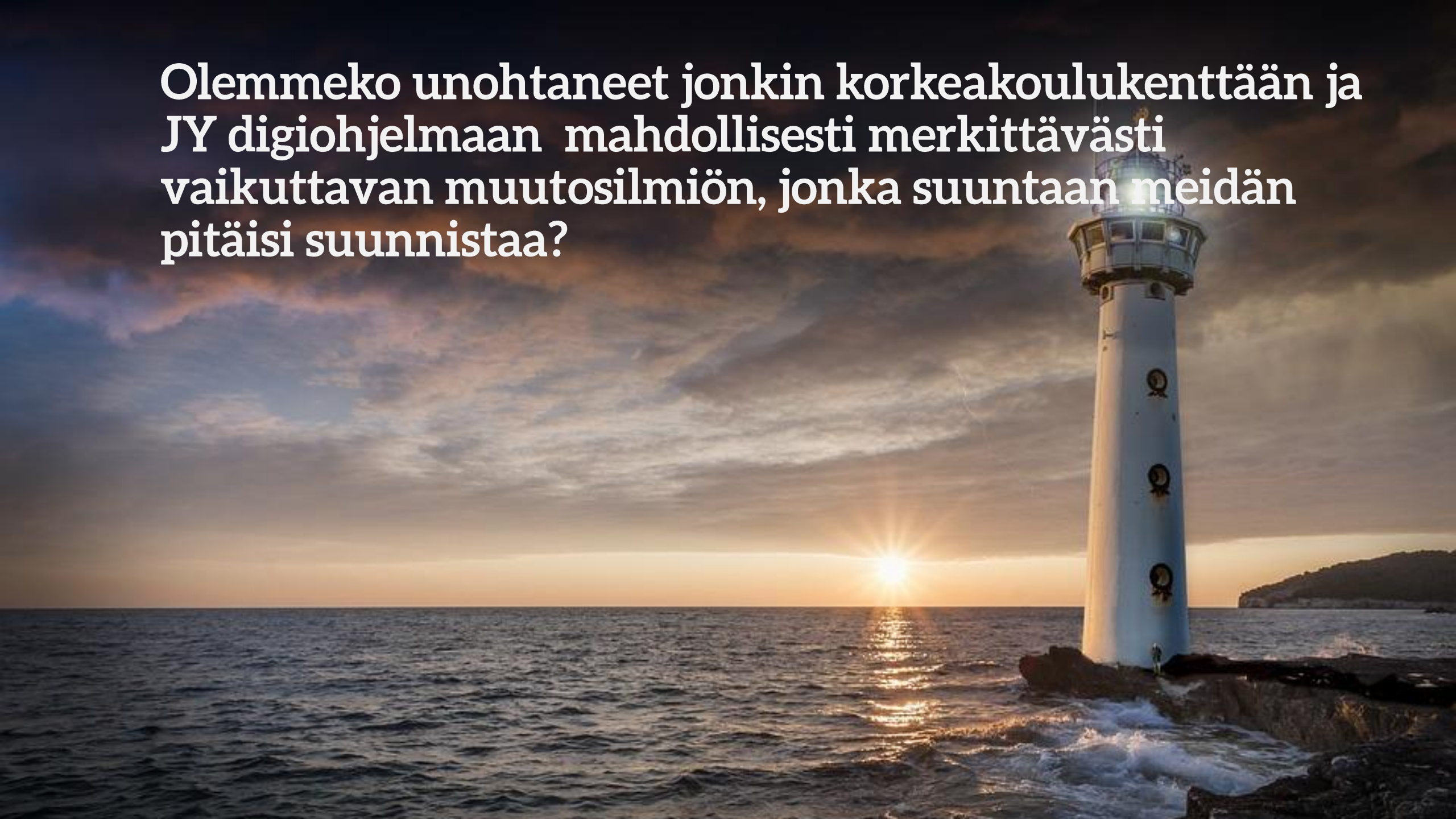
About half or more of their **personal performance objectives** explicitly mention modifying or building data or tech solutions

This is change in whole organization, not just in IT department

n = 2,015 business technologists

Source: Gartner 2020 Digital Friction Survey

Gartner


Olemmeko unohtaneet jonkin korkeakoulukenttään ja JY digiohjelmaan mahdollisesti merkittävästi vaikuttavan muutosilmiön, jonka suuntaan meidän pitäisi suunnistaa?

Ollaan yhteyksissä

Ari Hirvonen

- 040 504 5891
- ari.hirvonen@jyu.fi

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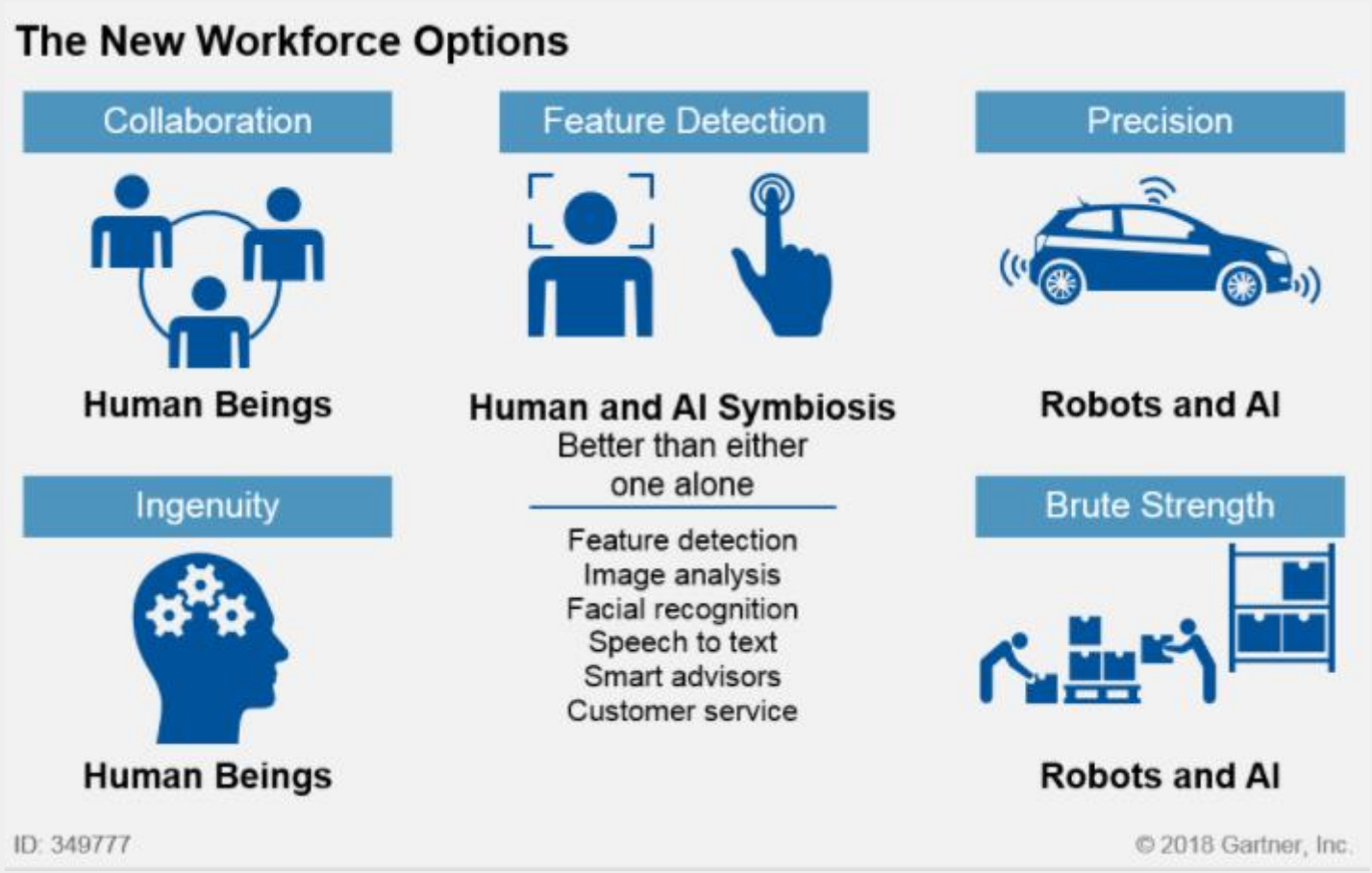
Additional


The New Workforce Options
Collaboration
Human Beings
Feature Detection
Human and AI Symbiosis
Better than either one alone
Feature detection
Image analysis
Facial recognition
Speech to text
Smart advisors
Customer service
Precision
Robots and AI
Ingenuity
Human Beings
Brute Strength
Robots and AI
ID: 349777
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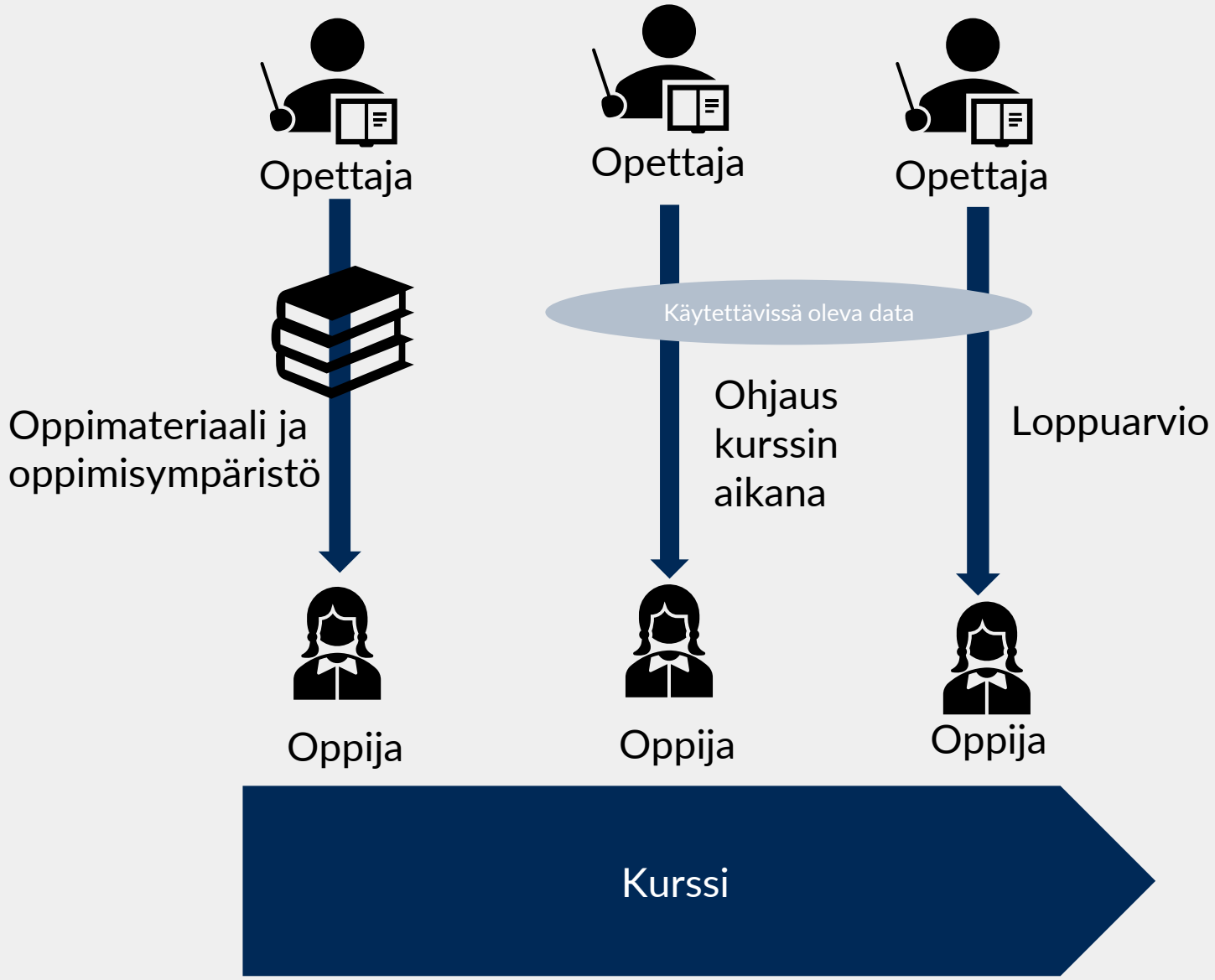
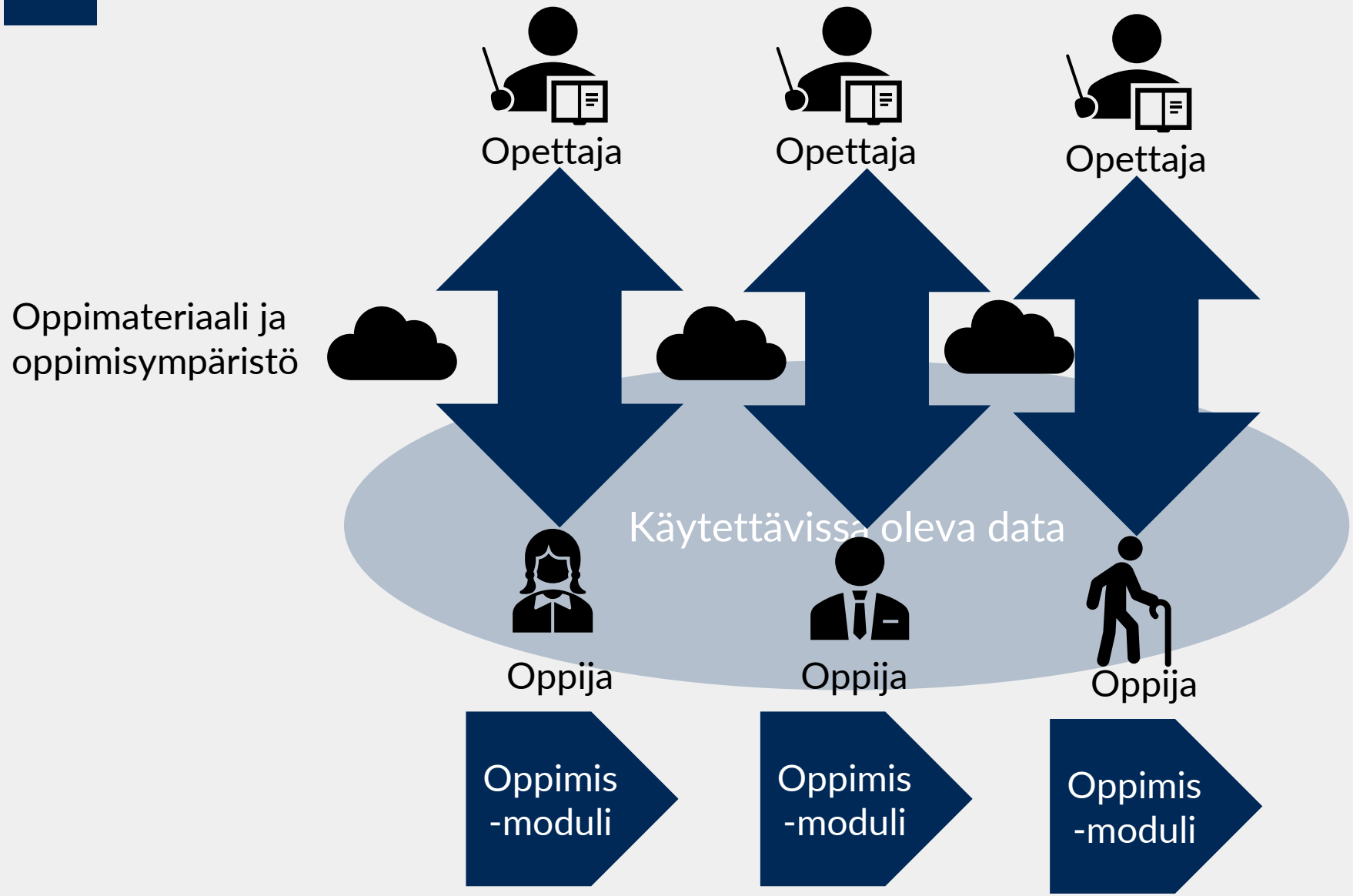
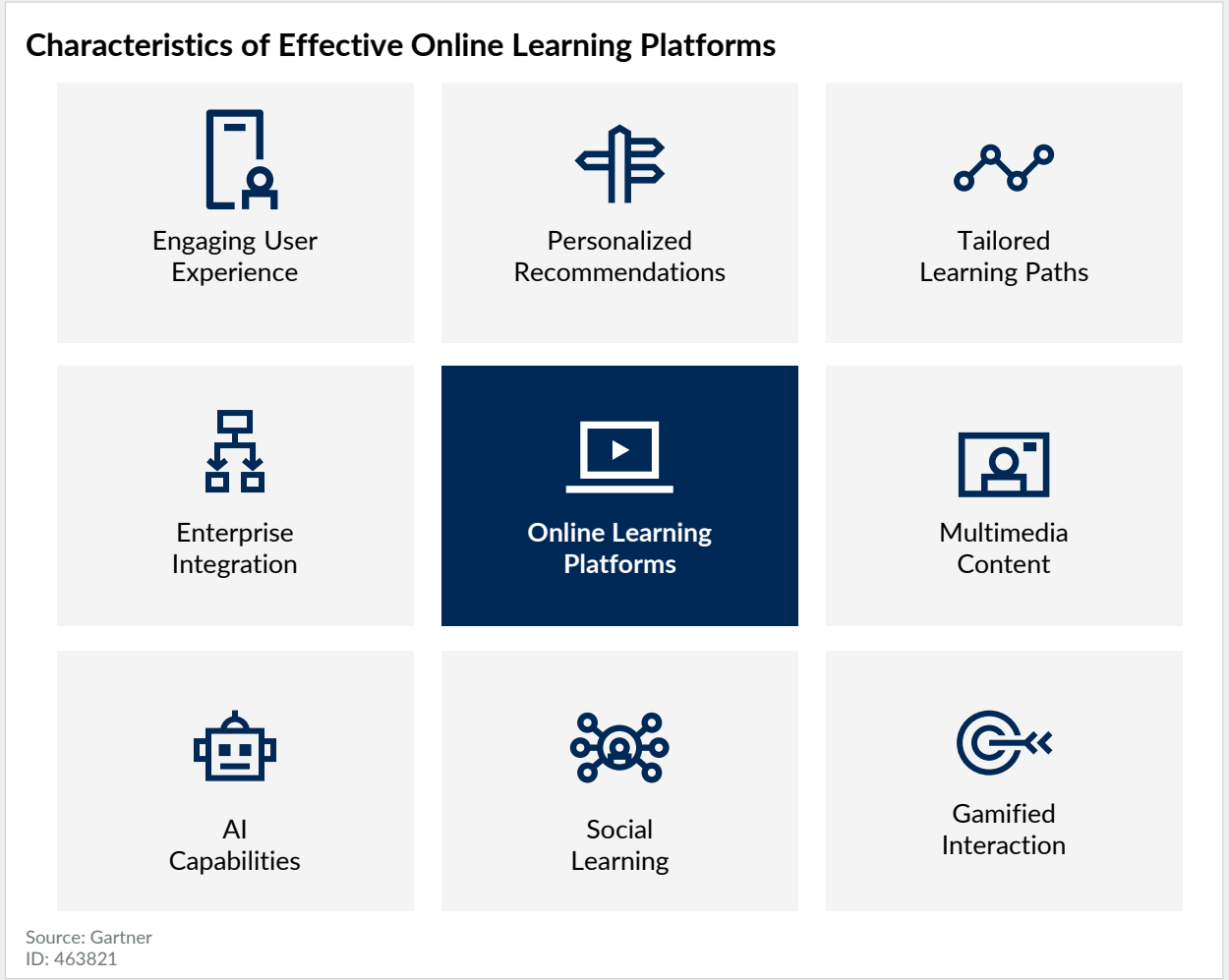
Oppiminen ennen…



Oppiminen tulevaisuudessa…



Online learning platform



Higher Educations Trends Supporting the Future of Work

Key Supporting Elements

- Real-world experiences through apprenticeships. Co-ops, career-focused curriculum and alumni mentoring.
- Providing workplace-relevant tools, methods and environments.

The shift toward more-**practical and skills-based training**

Recommendations

- Partner with instructors and career centers to identify, pilot and implement technologies that facilitate and track these experiences.
- Identify gaps in SIS and LMS capabilities, and close them by replacing or supplementing with curriculum management, continuing education and experiential learning systems.

Key Supporting Elements

- Smaller digital credentials
- Agile curriculum
- Partnerships with industry
- Just-in-time education
- Improved recruiting of student and faculty

The shift toward **life-long learning**

Recommendations

- Pilot issuing digital credentials that are more granular, transparent and portable. Develop an institutionwide plan that is informed by these pilots and the work of credentialing standards organizations.
- Build the required learning platform by including tools that improve student recruiting and enrollment, faculty course design, and engagement with workplace content and mentors.

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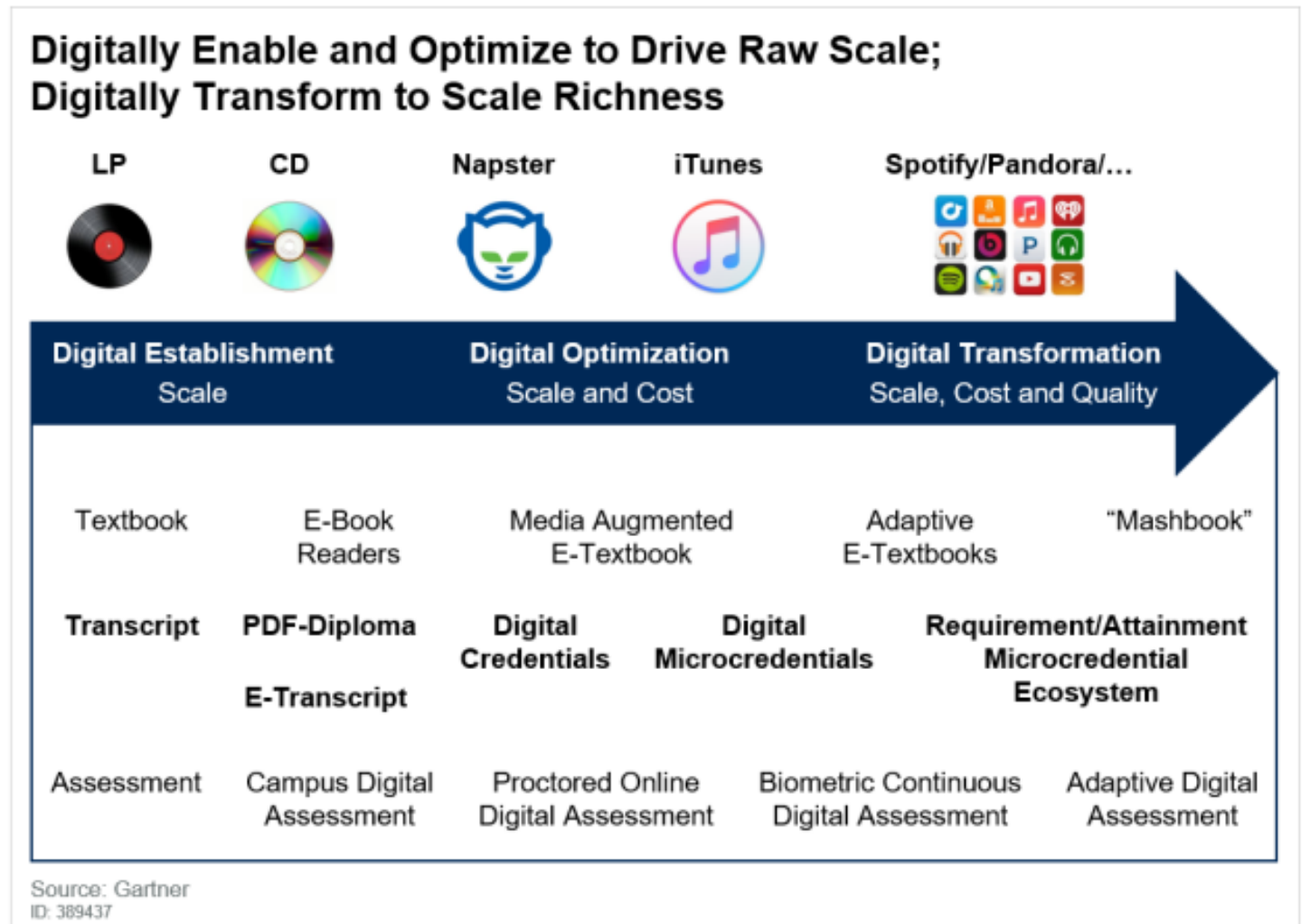
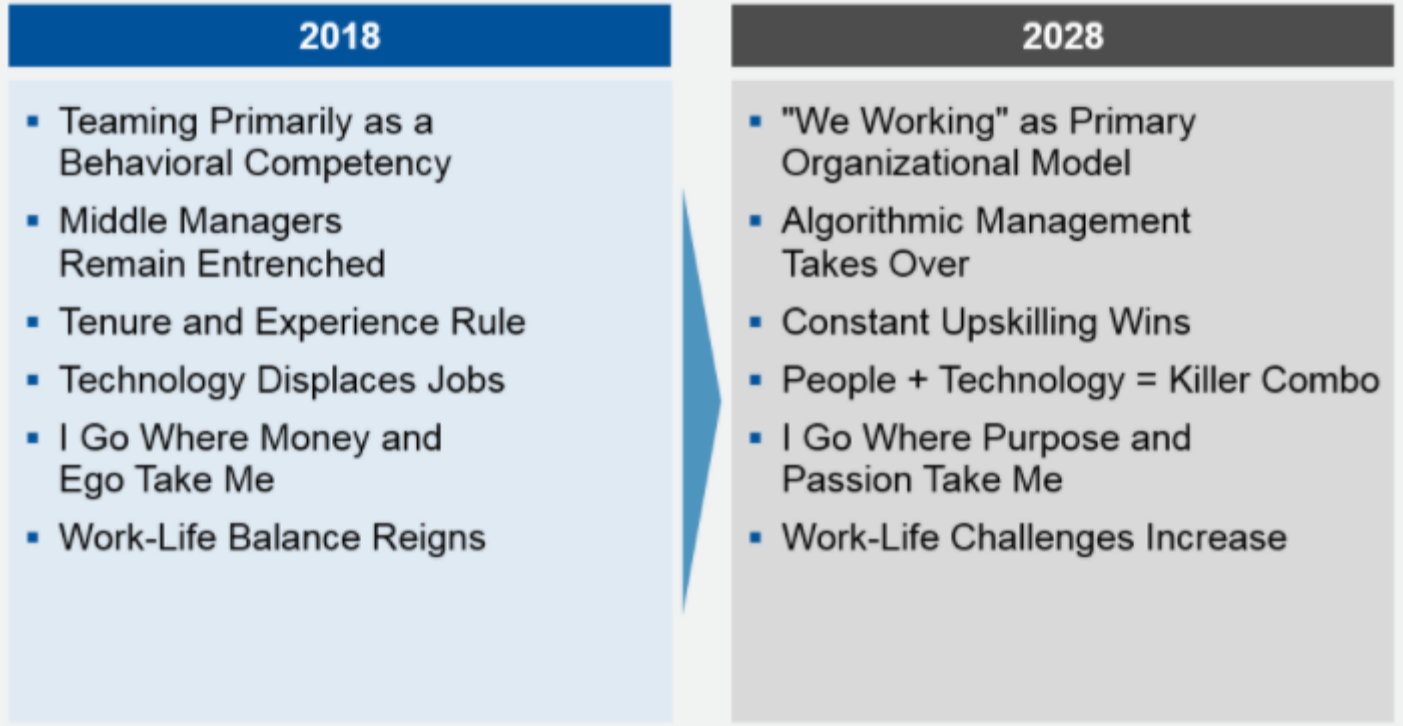
Muutos on ollut jo käynnissä



How We Will Work in 2018 and 2028



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Muutos on ollut jo käynnissä: Tietointensiivisen ammattityön muutos

- Alansa asiantuntija
- Kokemus ja asiantuntijamaine
- One-to-one

- Menetelmät
- Kuvaus- ja sisältömallit
- Protokollat
- Tarkistuslistat
- Uudelleenkäyttö
- Tietämys ei ”kulu” vaan kasvaa

- Teknologia tukee
- Käyttäjää tukevat järjestelmät
- Työkalu kiinteä osa toimintaa, vain ammattilaisten käytössä
- Robotiikka kirurgiassa, CAD, automatisoitu työnkulku, automaattinen laadun valvonta
- Tietämys on digitoitua ja siirrettävää

- Digitaalinen kanava suoraan palvelun käyttäjien käyttöön
- Maksullisia ja maksuttomia digitaalisia palveluita, asiantuntijoiden kontrolloimia tai vapaita
- Ilmaisia yhteisöjä

Kuluttajistuminen ->

Susskind, Richard. The Future of the Professions (p. 197). OUP Oxford

Overview of Post-COVID-19 Future of Work Trends

Accelerated Trends

- Remote work increases
- Expanded data collection
- Employer as social safety net
- Contingent worker expansion

New Impacts

- Separation of critical skills and critical roles
- Humanization (and dehumanization) of workers
- Emergence of new top-tier employers

Pendulum Swings

- Shift from designing for efficiency to designing for resilience
- Increase in organization complexity

Source: Gartner

728270_C

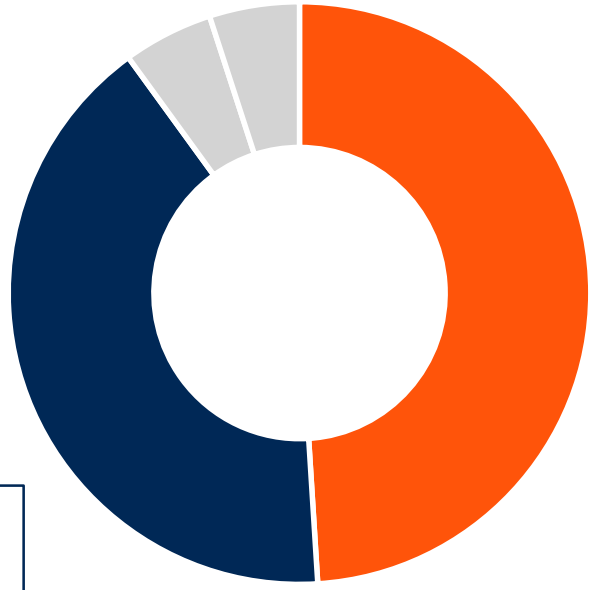
	No Interest	On Radar/No Action	Medium/ Long-Term Plan	Short-Term Plan/ Experiments	Invested/ Deployed	No. Deployed
Institution Analytics	1%	13%	21%	39%	27%	48
Digital Assessment	2%	29%	24%	25%	20%	35
Learning Analytics	0%	20%	22%	38%	19%	34
Adaptive Learning	7%	35%	31%	16%	10%	17
AI-Aided Student Advising	17%	43%	20%	15%	5%	9
AI-Aided Teaching (e.g., AI TAs)	28%	49%	14%	7%	3%	5
AI-Aided Recruit/Enroll (Chatbots)	25%	47%	15%	11%	2%	3
AI-Aided Research	32%	48%	11%	7%	1%	2

Base: Higher education industry, n = 178
Q: Indicate your organization's interest or activity regarding investments in the following education-sector-specific technologies (including totally new investments and replacing existing).

Breakdown of Analytics and Technology-Driven Work Across the Organization

5%
Technology Producers in Business Unit IT and Data and Analytics Departments

5%
Technology Producers in Central IT Departments



41%
Technology Producers in Business Units and Corporate Functions (outside of IT)

49%
Technology "End Users"

Dependent on the industry, the share of technology producers outside of IT ranges between 54% and 26% of the workforce.

n = 4,977 employees across the entire workforce

Source: 2020 Gartner Digital Friction Survey

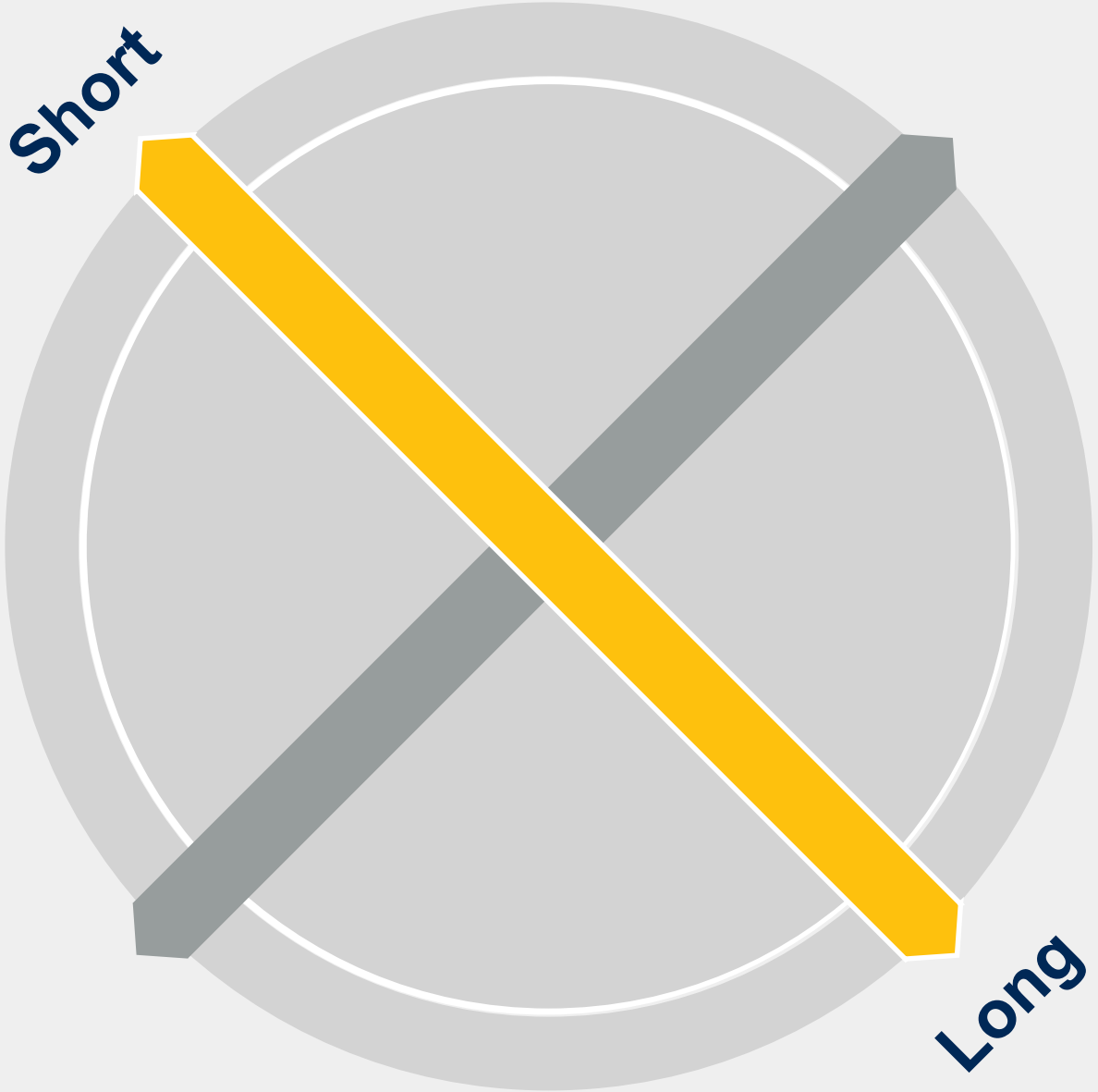
Gartner®

Hyperautomation Portfolio of Technologies

- Artificial Intelligence
- Machine Learning
- Chatbots/Conversational Platforms
- Event-Driven Software
- Process Mining/Discovery Tools
- RPA/CoRPA/iBPMS/iPaaS
- Low Code/No Code

Duration of Disruption

How long will the combined public health/economic crises be the primary strategic consideration?

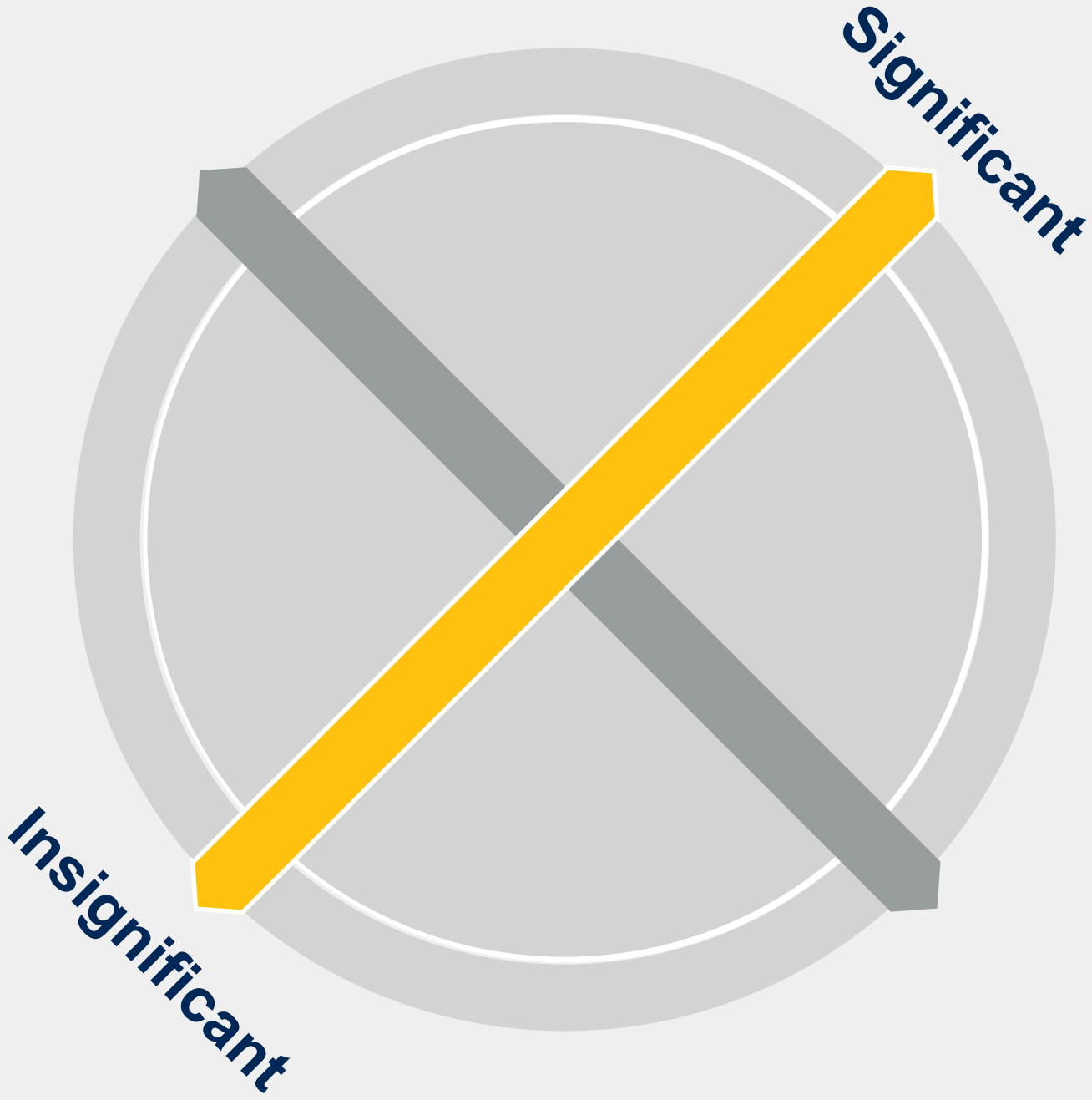


Fundamental Impact Areas

Impact Area	Short ⟷ Long	
GDP / Economic	GDP recovers quickly	GDP stays depressed
Demand	Accelerates, similar in shape	Depressed, changes shape
Supply Chains	Limited short-term disruption	Long-term disruption
Fiscal and Monetary Policy	Limited, effective interventions, modest debt expansion	Repeated interventions required, debt growth and pressure
Employment	Quick return to full employment	High long-term unemployment
Business Failures	Quick, creative destruction	Long, structural dislocation
Capital Markets	Liquid, easier credit	Constrained, tighter credit
Healthcare System	Episodic and heroic response	Continuous disaster response

Behavior Changes

To what extent will the imposed and learned behaviors from the pandemic fundamentally change our markets, enterprises and institutions?



Fundamental Impact Areas

Impact Area	Insignificant ⟷ Significant	
Social Distancing	Temporary	Ingrained
Social Cohesion	Low, individualist	High, collectivist
Personal Hygiene	Old habits persist	New habits ingrained
Privacy	Anonymity prevails	Traded for safety, protection
Values Toward Life	Carefree	Survival
Geopolitical	Globalism dominates	Localism dominates
Trust and Legitimacy	Lower trust for leaders and experts	Higher trust in leaders and experts
Travel	People, businesses embrace	People, business avoid
Entertainment	Big crowds return	Crowds avoided
Workplace	Return to office, factories	Work from home, automation

- By 2024, low-code application development will be responsible for more than 65% of application development activity.
- By 2023, cloud-based AI will increase 5x from 2019, making AI one of the top cloud services.
- By 2023, 65% of EA programs will refocus on information architecture, making it central to all digitalization initiatives