OVERVIEW...

How are worker representatives responding to information & communication technology (ICT) firm strategies to adopt and use digital and Artificial Intelligence-based technologies?

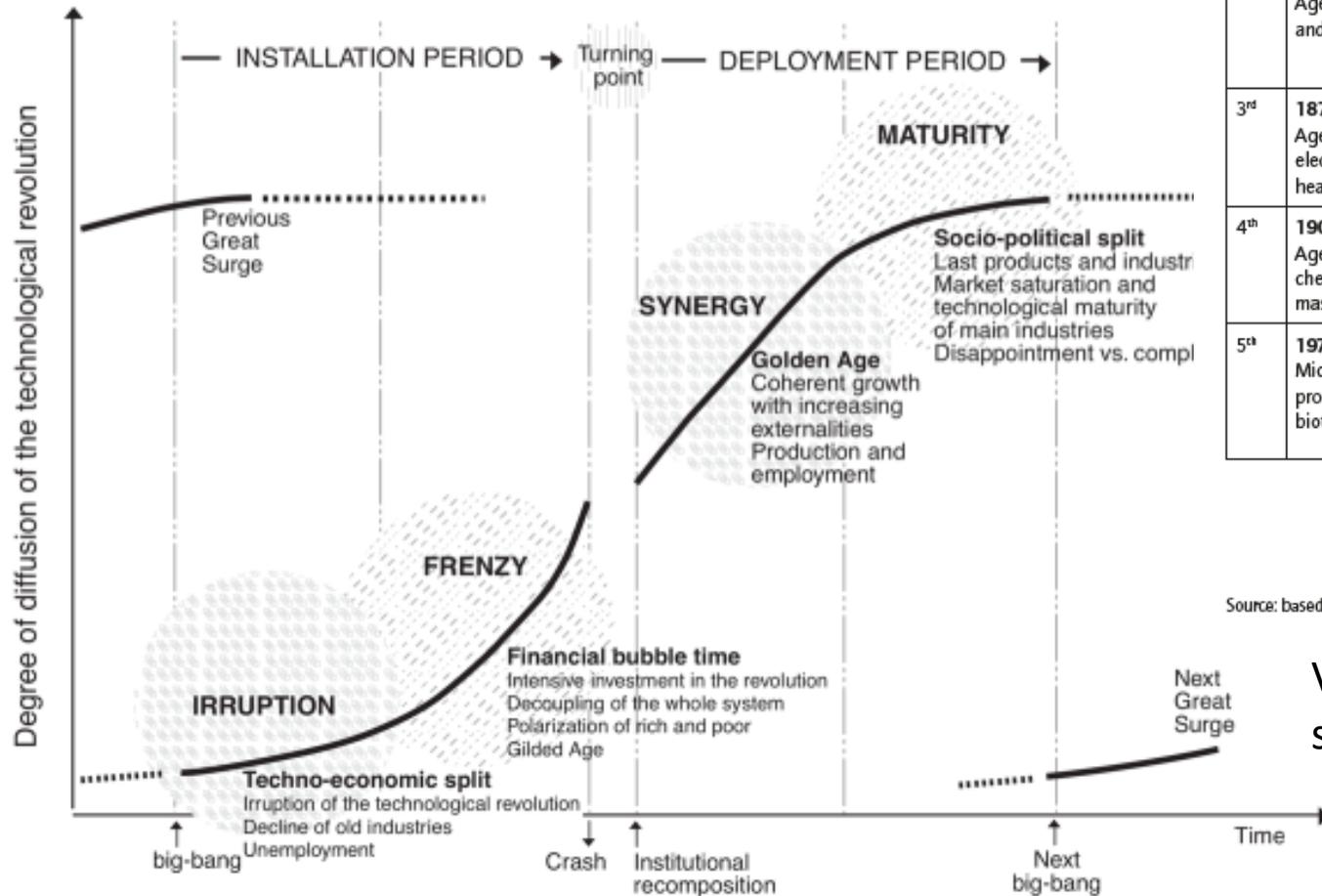**Broader project**: Understanding sources of labor power in 'digital economy'

Grants:

Perez, Carlota (2003). *Technological revolutions and financial capital*. Edward Elgar Publishing.

Figure 5.1   Recurring phases of each great surge in the core countries

Figure 2 Succession of great surges in economic history, based on Perez

Source: based on Perez (2016), p. 195, with certain modifications

Valenduc, Gerard (2018) Technological revolutions and societal transitions. ETUI Foresight Brief.

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Technological revolutions & the digital economy

'Digital revolution'	ICT/services innovations	Production/product innovations
2nd digital revolution Industry 4.0 ***Autonomous technology***	**IT integrated** *5G, cloud computing, AI* Big data analytics Robotic/Cognitive process automation Platforms	**Self-controlled** Smart factories Internet of things Autonomous vehicles
1st digital revolution Industry 3.0 ***Indirect human involvement***	**IT-supported** *Internet, mobile telephone, microprocessor* Computer-aided design Document digitalization Electronic checkout, inventory	**Indirectly controlled** Industrial robots CNC machines (with pre-programmed software) Process engineering

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Development of value added for the ICT sector, EU, 2014 - 2019
(2014 = 100)
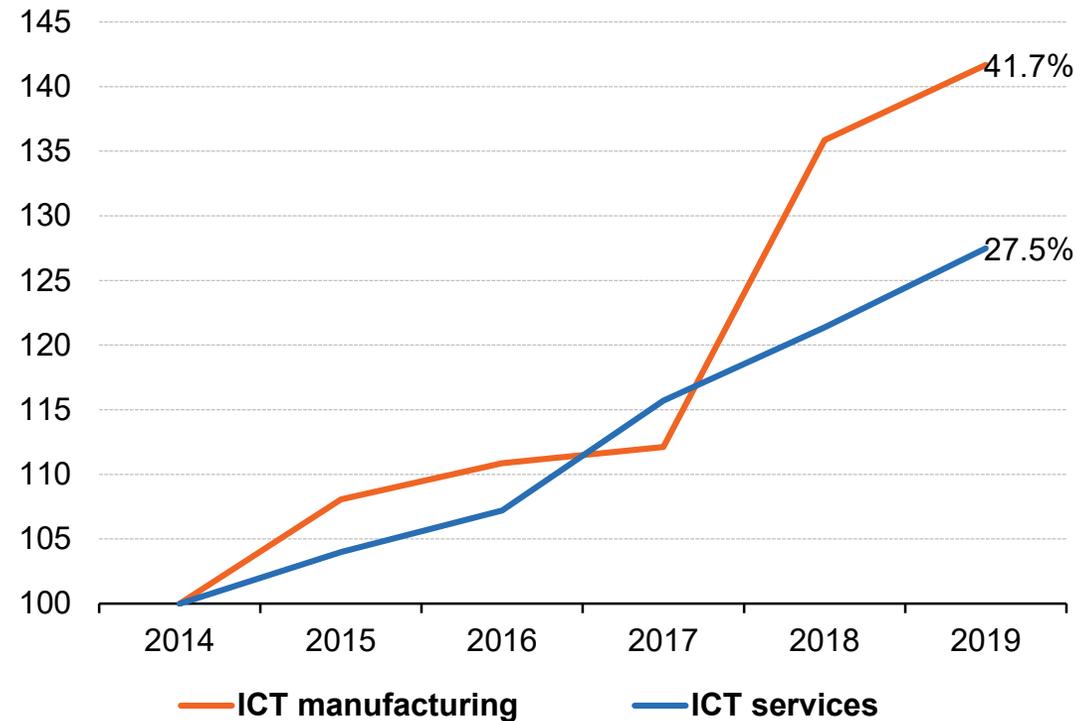
Note: EU aggregate based on information Belgium, Bulgaria, Czechia, Germany, Estonia, Greece, France, Croatia, Italy, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia and Slovakia.
Data for Belgium, Bulgaria, Germany, Estonia, Greece, France, Croatia,

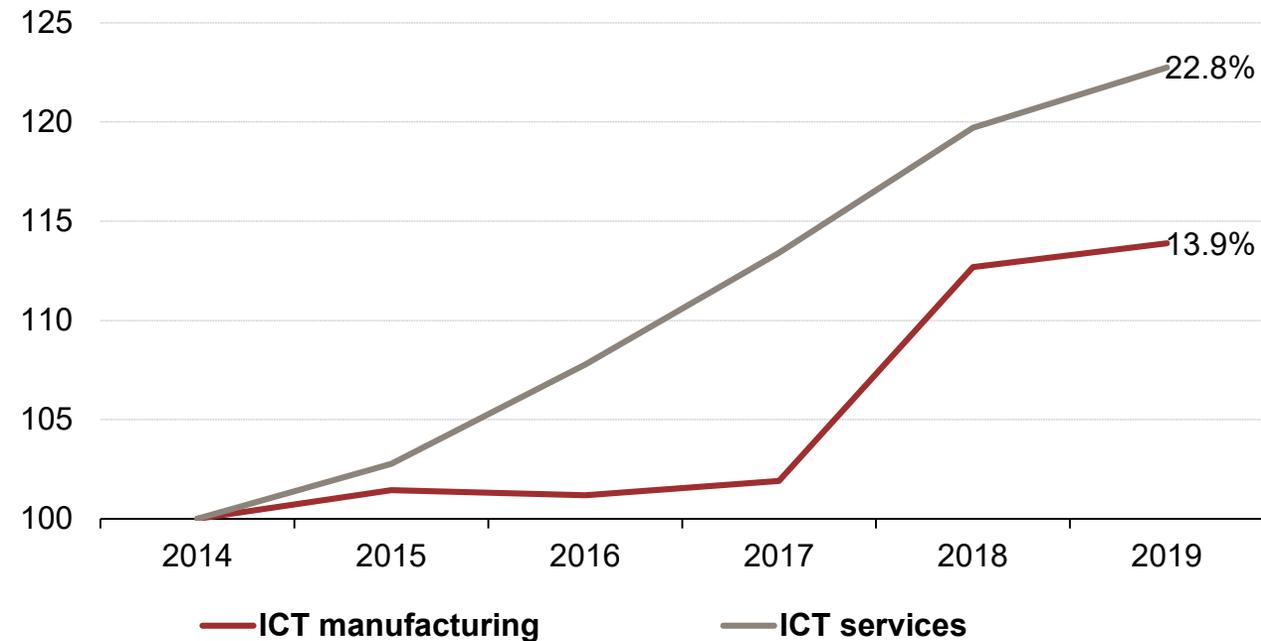| (EUR million)	2014	2015	2016	2017	2018	2019
ICT manufacturing	23593	25497	26156	26452	32054	33425
ICT services	256873	267107	275413	297195	311779	327457

https://ec.europa.eu/eurostat/databrowser/bookmark/63e027bb-6073-4cbd-a237-0a4deac625ac?lang=en

Employment in the ICT sector, EU, 2014 - 2019
(2014 = 100)

Note: based on information for the EU Member States excluding Denmark, Ireland, Spain, Cyprus, Luxembourg, Malta, the Netherlands, Austria, Portugal, Finland, and Sweden.
Data for Belgium, Bulgaria, Germany, Estonia, Greece, France, Croatia, Italy, Lithuania, Hungary, Poland and Romania: break(s) in series.

(number)	2014	2015	2016	2017	2018	2019
ICT manufacturing	419,575	425,646	424,561	427,589	472,832	477,867
ICT services	3,305,542	3,397,144	3,562,556	3,748,767	3,956,933	4,057,752

https://ec.europa.eu/eurostat/databrowser/bookmark/fd806757-d7dc-4ff5-be0f-b1f198295bce?lang=en

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'THE DIGITAL ECONOMY'... AS SEEN BY ICT TOP MANAGEMENT

Key Defining Trends

New Business Models:
- FinTech
- Digital Government
- Ecommerce
- Trade Marketplaces
- Cloud Kitchens
- Vacation Rentals
- Ride-Hailing
- Streaming Content

Dominance of Digital Business Models · From Services to Experiences · Rise of Industry Ecosystems

Digital Economy

Key Enablers:
- Digital Strategies & Regulations
- Digital Infrastructure
- Data
- Digital Skills

Emerging Technologies:
- 5G
- Cloud
- IoT
- Artificial Intelligence
- Big Data Analytics
- AR/VR
- Cybersecurity
- Robotics

"For national governments and policymakers, this digital economy has major implications if they are to achieve their key objectives regarding economic diversification, local value creation, national digital transformation, job creation, and bridging economic inequality. To state it simply, both the public and private sector must transform themselves into digital enterprises to remain relevant and competitive, if they wish to thrive in the digital era."

Safder, N. (2021) Accelerating the Digital Economy: Four Key Enablers (huawei.com). Huawei.

EUROPEAN DIGITAL DECADE

How far are we from the 2030 Targets which enable an inclusive and sustainable digital society?
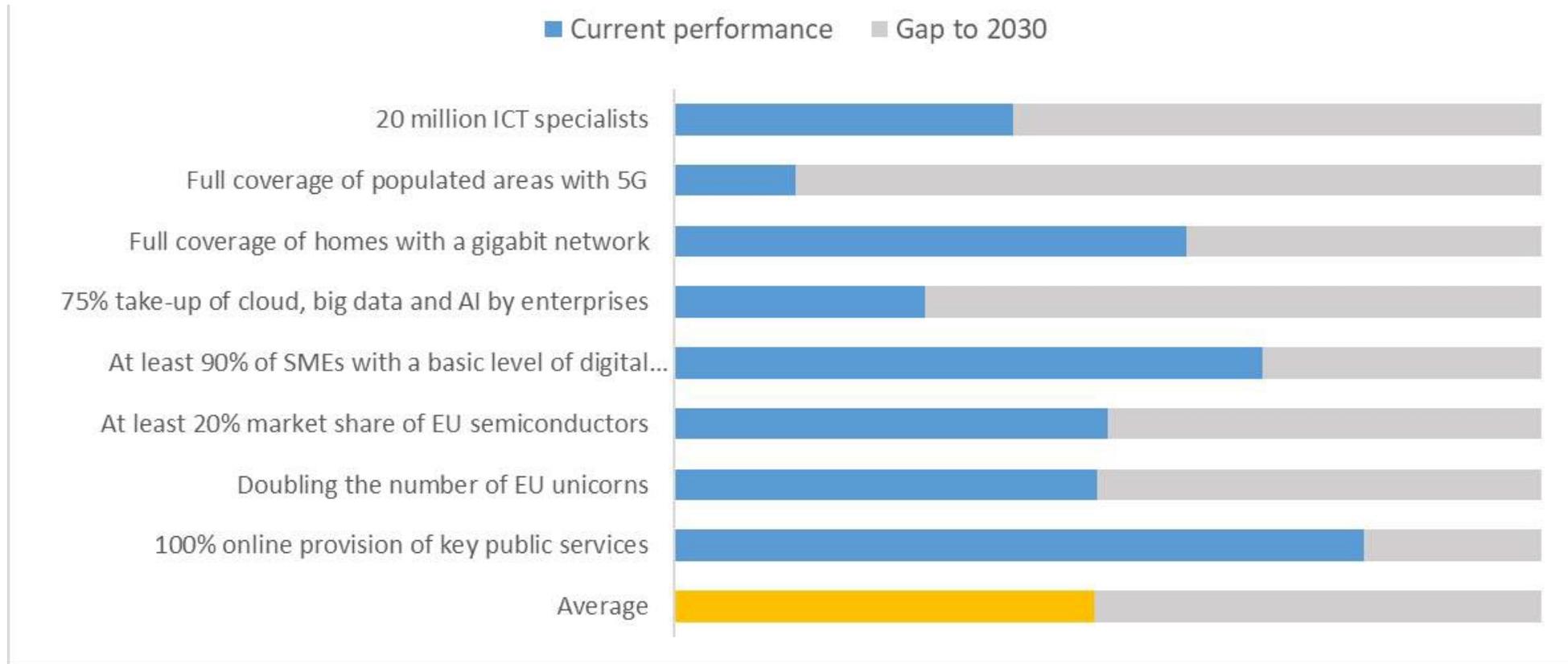
European Commission (2021) 2030 Digital Compass: the European way for the Digital Decade

Digital Economy and Society Index (DESI) 2021 ranking

European Commission (2021) Digital Economy and Society Index (DESI) 2021 -- Germany
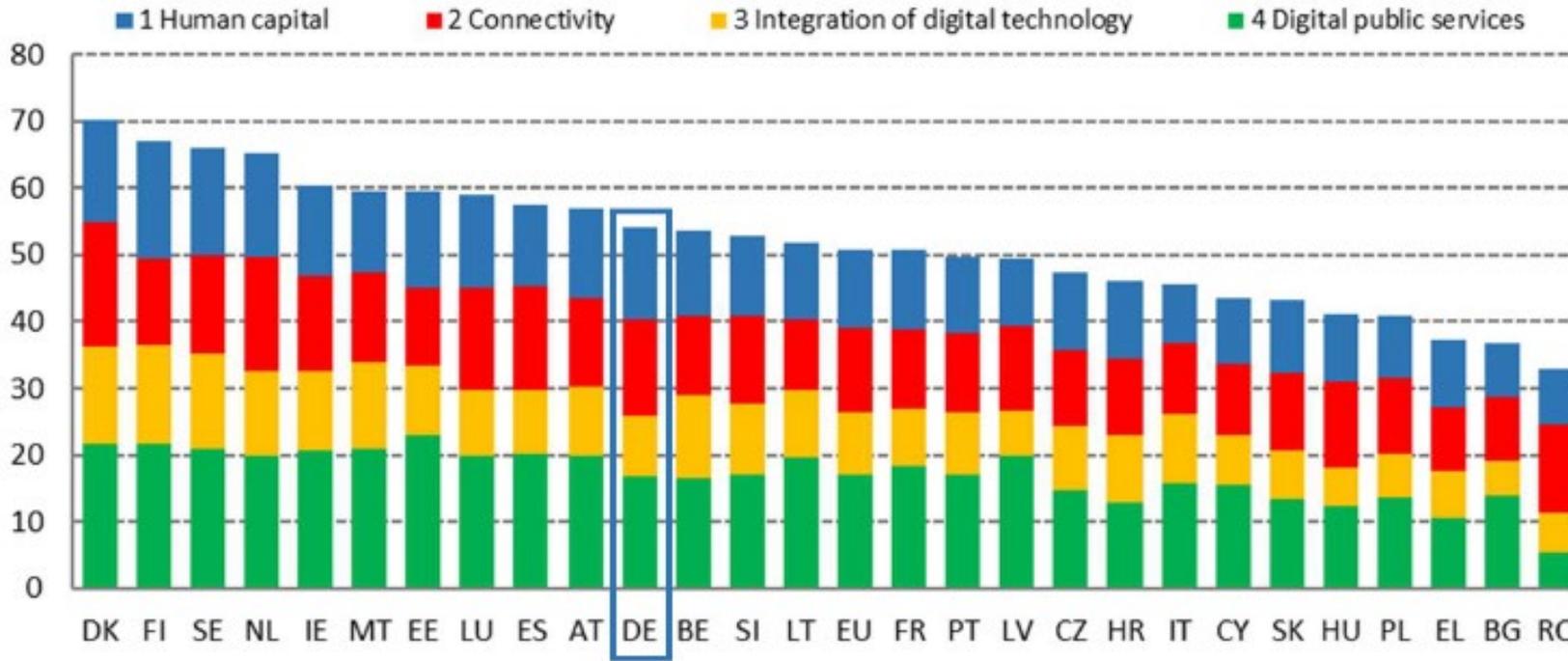
Germany:

- **EUR 26.5 billion Recovery and Resilience plan – 'digital objectives' as > 50%**

- **Connectivity: billions invested in infrastructure**

- **Digitalisation of businesses: focus on autos & defence**

QUESTIONS… THROUGH THE LENS OF THE ICT INDUSTRY

- How and why were/are the 1st and 2nd digital revolutions so disruptive to past social compromises?

- What are possibilities for new regulatory, bargaining models that re-establish (under new techno-economic conditions) the social regulation of work?

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EXIT, VOICE, AND SOLIDARITY

[Hirschman: Exit, voice, and loyalty]

Restructuring involves contested choices concerning social versus market value of work

Restructuring drives down pay and conditions to the extent that it is market-oriented ('marketization'):

- *Shift in employment relationship away from social concerns with **internal coordination and equity** → market-based concerns with **maximizing short-term profit – price mechanism for allocation decisions***

- *Intensifying competition based on replacement of worker voice with employer exit as means of **securing worker cooperation** (Greer and Doellgast 2017; Doellgast et al. 2018)*

Conditions for contesting market-oriented restructuring: labor power to (re)assert legitimacy of social values and outcomes in the employment relationship. Rests on 3 conditions:

Constraints on employer exit from encompassing labor market institutions

Support for collective worker voice in management decisions

Strategies of inclusive labor solidarity based on bridging divides among workers and in the labor movement

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ICT: 1ST 'IT SUPPORTED' DIGITAL REVOLUTION

Liberalization of services + 'Frenzy' (bubble) & 'Dot com' bust
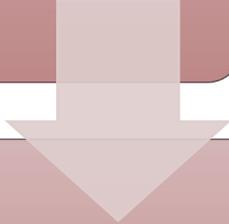
Enabled & pushed companies into new organizational models
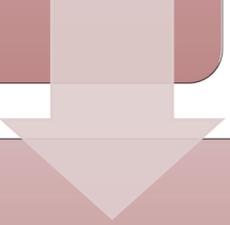
Outsourcing, offshoring – globally networked service firm

% call center jobs at each company externalized to service subsidiaries, temp agencies, & subcontractors (as of 2010-12)

Legend:
- % subsidiary
- % temp agency
- % subcontractor

Doellgast, Sarmiento-Mirwaldt, Benassi (2016)

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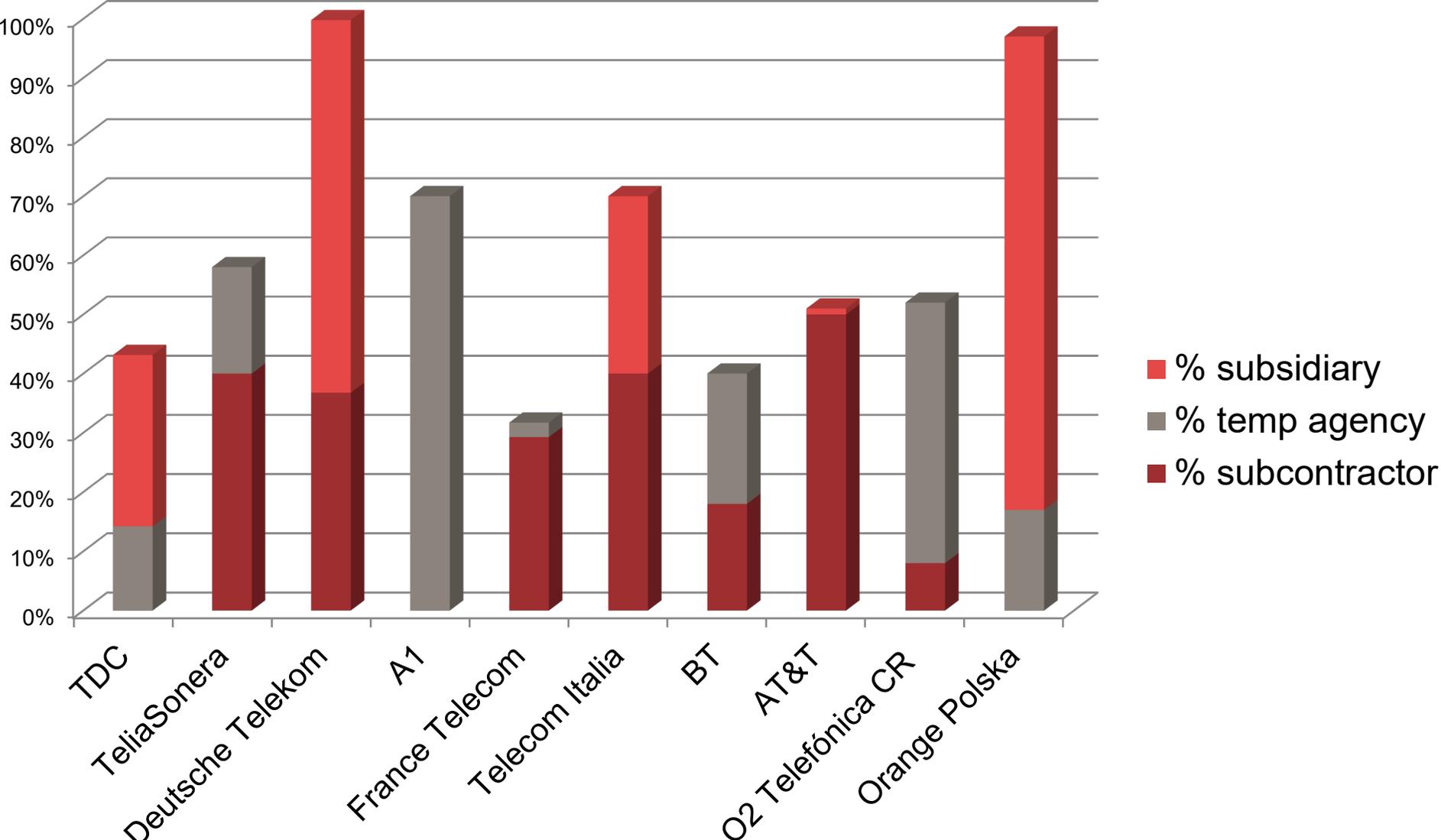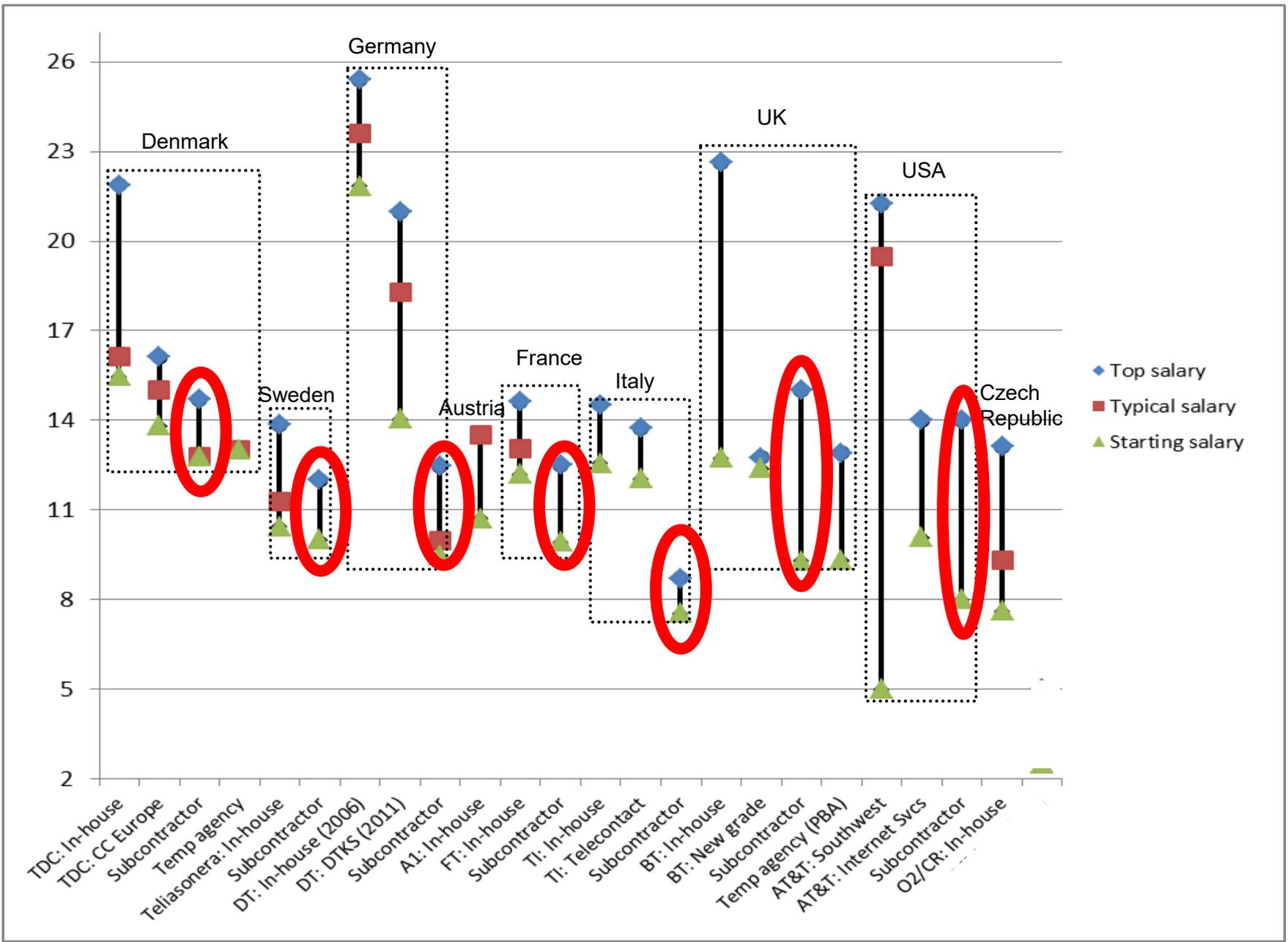
Hourly pay for call center employees: in USD ($) based on purchasing power parity (2010-12)

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Figure 2.6 Framework for comparing the case studies

Constraints on Employer Exit				
	Strong		France Telecom	TeliaSonera A1
	Moderate		Telecom Italia	Deutsche Telekom TDC
	Weak	AT&T BT	Orange Polska	
			O2 Czech Republic	
		Weak	**Moderate**	**Strong**
		Support for collective worker voice		

Structural inclusive solidarity — Inclusive bargaining structures + clear union representation domains

Representation domain divides — Overlap in unions' 'rep domains' - competition between unions, worker reps

Ideological divides — Labor movements divided along ideological lines

Structural exclusive solidarity — Little union reach outside of incumbent firms: inward-focus

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ICT – 2ND 'IT INTEGRATED' DIGITAL REVOLUTION

- **Infrastructure investments**: 5G, fiber – new B2B offerings, run through private networks, combined with cloud computing

- **Cloud and software investments:** Hardware → software-operated businesses – moving from legacy tech to 'open digital architecture' orchestrated using AI – combining software modules from multiple vendors. Software as a service. Telecoms rebuilding IT departments.

- **Automation of networks:** Moving to self-regulating networks – 'autonomous networks' (anomalies detected, fixed using AI)

- **Automation of customer service**: And improving service quality – improve 'net promotor score'. Focus on savings through automation to pay for infrastructure

- **Data analytics, algorithms, and privacy:** 'monetizing data' – collect & use it to make profits. At the same time: protect customer data, creating 'AI governance' – 'ethical & secure framework'
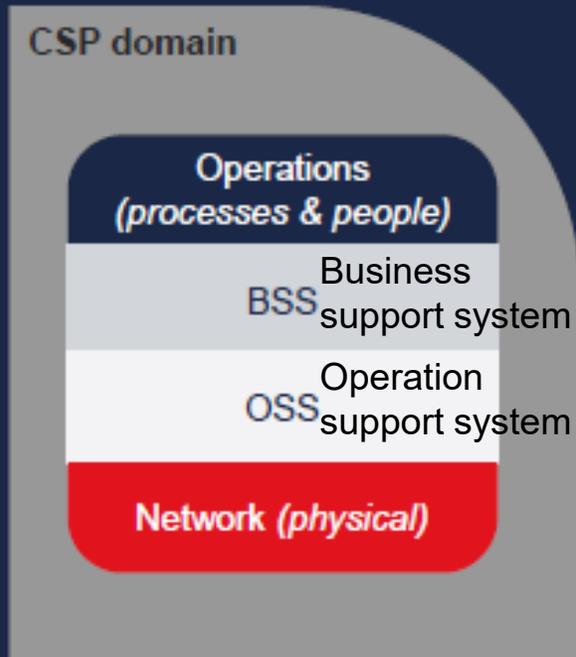
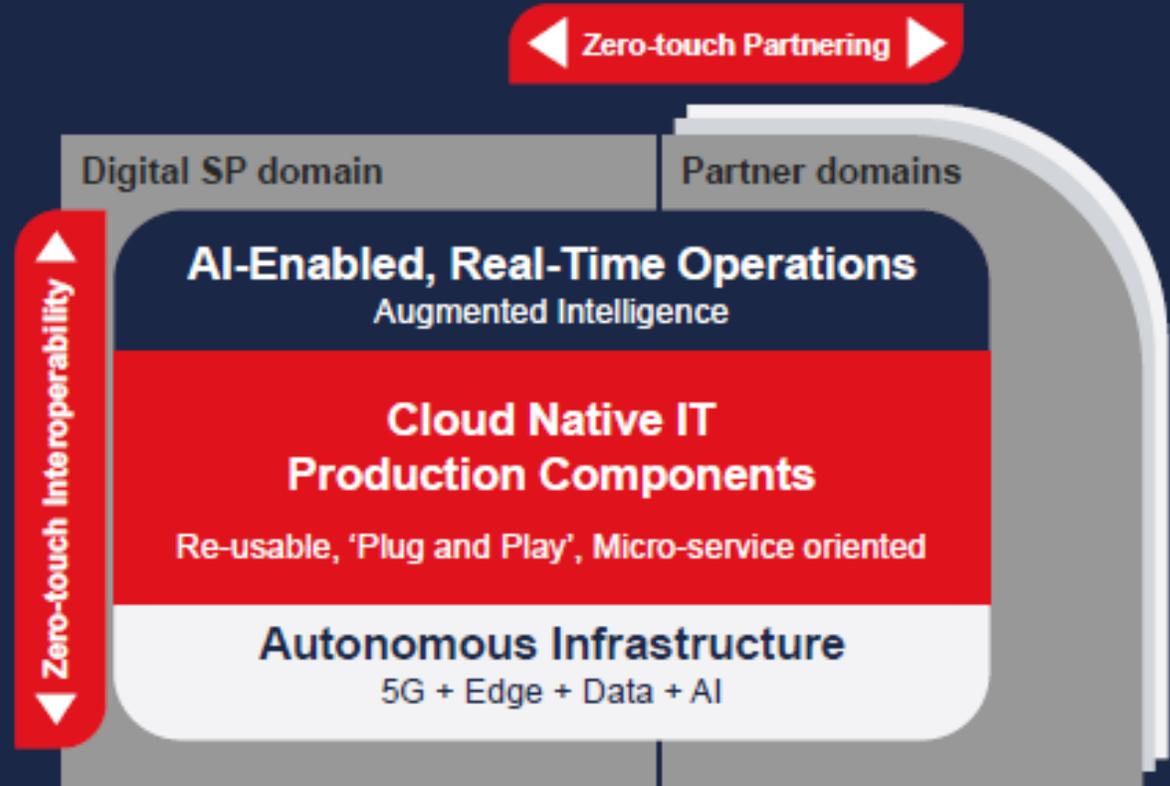# Delivering on the ambition requires change in mindset, end-to-end

Simplification, automation and intelligence are key principles driving the change

Traditional CSP

Communication service provider

CSP domain

Operations
(processes & people)

BSS — Business support system

OSS — Operation support system

Network *(physical)*

Digital Service Provider

◀ Zero-touch Partnering ▶

Digital SP domain   **Partner domains**

▲ Zero-touch Interoperability ▼

AI-Enabled, Real-Time Operations
Augmented Intelligence

Cloud Native IT Production Components

Re-usable, 'Plug and Play', Micro-service oriented

Autonomous Infrastructure
5G + Edge + Data + AI
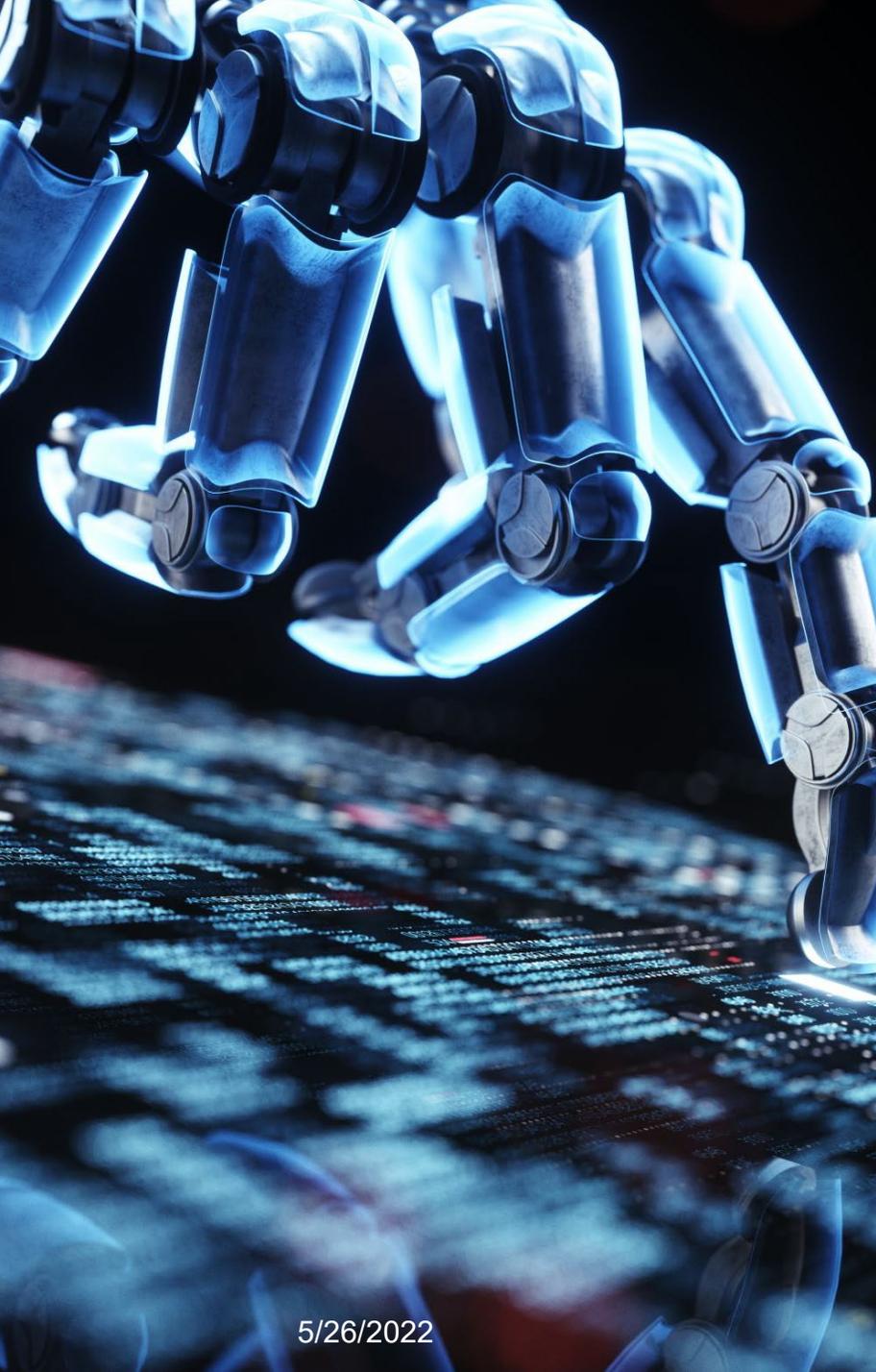
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The next generation of services require zero wait, zero touch and zero trouble

TM Forum 2020

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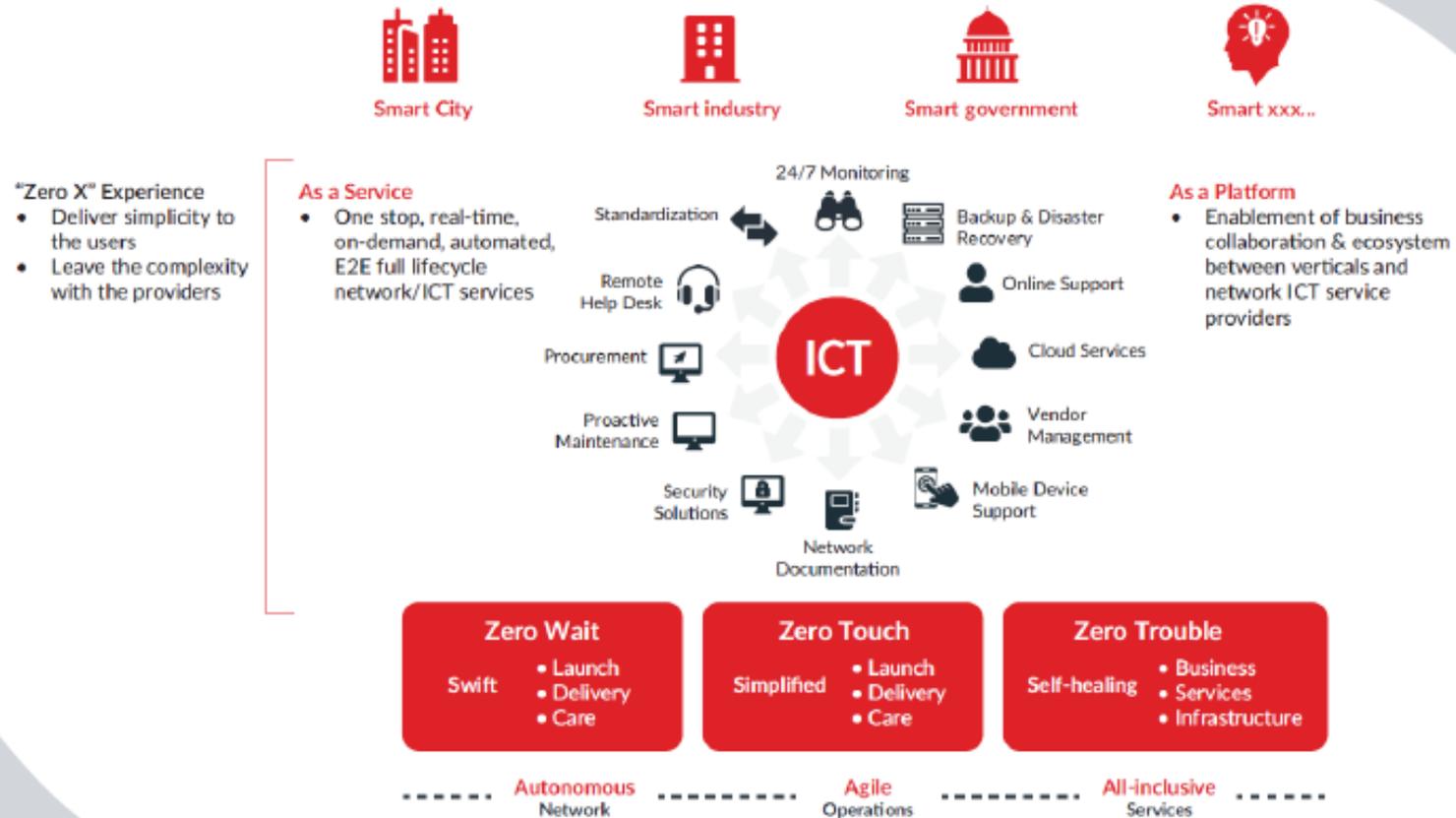
DIGITALIZATION, AI, & THE FUTURE OF WORK

1. **Labor <u>replacing</u>:** automation of jobs and tasks – e.g. robotic process automation

2. **Labor <u>controlling</u>:** new tools for monitoring, evaluating, managing – e.g. algorithmic management, big data

3. **Labor <u>displacing</u>:** new tools for breaking up jobs, moving them to different locations – e.g. cloud computing + 5G & fiber network (increased data speeds and storage), crowdsourcing, app-based 'matching' of customers and workers

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AUTOMATION: LABOR REPLACING
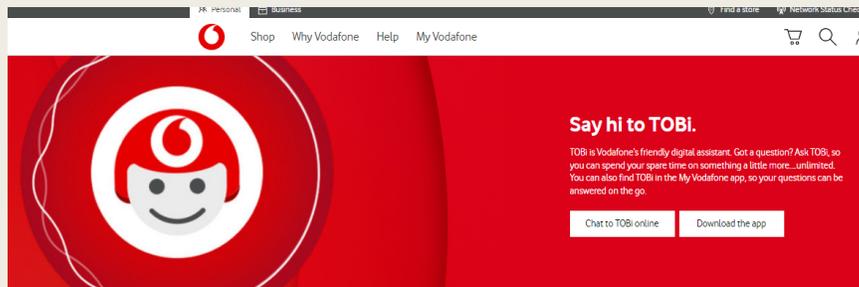
- **Chatbots, voice bots** - enter into a dialogue with people using natural language – can be 'trained' on selected topics… 'powered by AI'. Next generation: the bots learn & improve themselves. Replace contact center workers: shift to self-service.

- **Cognitive or robotic process automation (CA/RPA):** execute standardized processes; or take over extensive business processes. Replace back-office workers.

- **Front-end assistant:** Can support agents in providing customer service; simplify search & form filling; make work more efficient. Improves productivity, allows fewer agents to do more.

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Deutsche Telekom Implements Robotic Process Automation Project with ALMATO

obots have already conquered factory floors. Now, robots are entering more and more offices. Since March of 2015, Deutsche Telekom has implemented almost 400 software robots with ALMATO, one of the pioneers in Robotic Process Automation (RPA).

Higher efficiency through automation

RPA's digital robots automatically handle a wide range of different business processes, e.g. chargebacks or contract changes. Within less than two years, ALMATO has automated more than 40 different processes, including complex ones with handling times of more than 10 minutes. With RPA, Deutsche Telekom was also able to implement new, innovative processes that would have been too costly without automation.

Using digital robots, employees are freed from mundane work so they can concentrate on more challenging tasks. The fully automated handling of processes enables higher efficiency compared to manual work and leads to time and cost savings as well as more satisfied customers through an increase in service quality.

Over 300.000 automated business transactions each month

Overall, the robots currently work with over 30 different applications (e.g. e-mail management, SAP, Siebel CRM, routing and ticketing systems) and successfully complete 320.000 business transactions each month. The project is still evolving, with new processes continuously identified and added to the automation roadmap.

ANALYTICS & ALGORITHMS: LABOR CONTROLLING
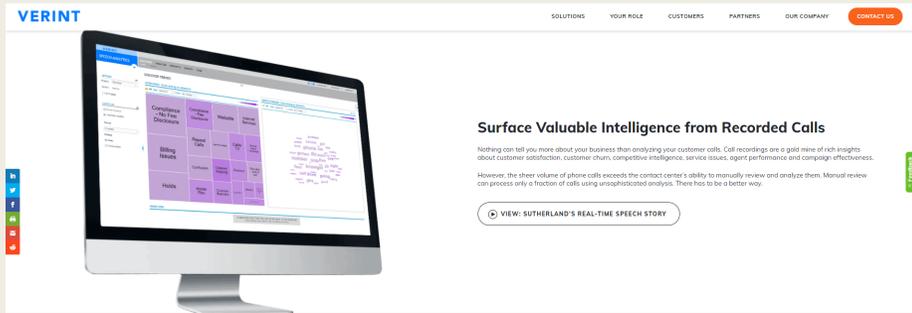
- **Speech analytics – data analytics: e.g. CallMiner,** *VERINT* leverages AI to understand, process, and analyze human speech – used to give feedback to agents on patterns in their performance.

- **Automated coaching: e.g. COGITO '**artificial intelligence coaching system for augmenting the emotional intelligence of phone professionals' – gives call center agents real time, AI-driven coaching on tone of voice, speed, etc.

- **Algorithmic management:** use of predictive analytics through algorithms to hire, evaluate performance, determine training needs, allocate work

  - **Predictive behavioral routing:** match callers with specific personality patterns to agents who can handle those personality types

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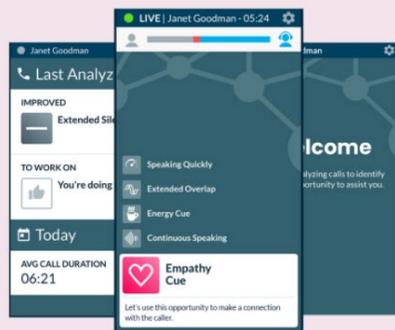
CLOUD, DATA STORAGE, TELCO NETWORK: LABOR DISPLACING

- **'Work from home' service delivery:** COVID sped this up – contact centers, programmers moved to home work, offices closed

  - Enabled by AI monitoring technology, video chat

  - Has accelerated use of algorithmic management

- **Crowdsourcing**: new models of flexible contracts for ICT & contact center workers – can perform work remotely, internationally

- **At same time:** huge investment right now in building fiber, 5G networks and developing, deploying AI-based technologies… new jobs created

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CHALLENGES FOR UNIONS

- **Impact of AI-based tools on number and quality of jobs:** downsizing, rationalization, work intensification – also tools to 'improve' work through reducing mistakes

- **Worker privacy, discrimination, control:** particularly with algorithmic management

- **Representing, organizing workers moving to work-from-home or platforms:** low contact with co-workers, hard for unions to reach them

- **Organizing the growing jobs**: high skilled IT, programming; technicians & engineers building the network – solidarity across 'new' core + periphery

Increasing employer exit --
Constraining worker voice --
Challenging inclusive solidarity

3 UNION ACTION FIELDS

1. State policies

New tools supporting collective worker voice

- **Infrastructure investment, service market regulation, competition rules:** ensure high labor standards and service quality, fairness rules – 'union jobs' (e.g. USA) – EU Digital Services Act (break up big tech)

- **Regulating AI & data protection.** European Union proposed AI regulation -- Courts can be tool (e.g. Norway).

2. Inclusive labor standards & collective agreements

Strengthening constraints on employer exit

- **Employment legislation:** rules on equal pay for temps; constraining freelancers; Campaigns to strengthen regulations for freelancers, enforcement. (e.g. Google & Adecco – proposed EU gig economy directive)

- **Organizing:** unionizing high skilled, white-collar workers; new models of communicating and negotiating with remote, IT-enabled workforce.

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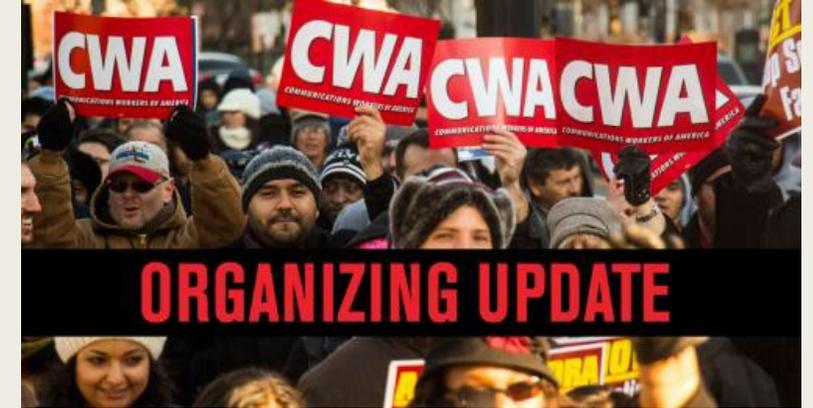
With Biden's Infrastructure Bill Promising Nationwide Broadband Access and Good Jobs, Communications Workers of America Launches Multi-State Effort to Regulate Broadband, Close Digital Divide

Monday, April 12, 2021

European Commission

TECHTANK
Machines learn that Brussels writes the rules: The EU's new AI regulation
Mark MacCarthy and Kenneth Propp · Tuesday, May 4, 2021

Google Could Be Violating Labor Laws With Pay for Temp Workers

The company realized months ago that it could be running afoul of pay laws in a number of countries but has been slow to fix the problem, according to internal documents.

NEWS

EC proposes new directive to improve gig economy work conditions

Gig economy workers in Europe could be entitled to more rights and better workplace protections under a directive proposed by the European Commission

By Sebastian Klovig Skelton, Senior reporter
Published: 03 Feb 2022 16:37

2022 TOP TRENDS & PREDICTIONS:
Access expert identity and security insights on-demand

3. Negotiating at firm & workplace level

Mobilizing existing constraints on exit, supports for voice…

- **Agreements on which new technology adopted, how it is used:**
  - *Co-determination & bargaining rights esp. important: to negotiate over technology used for monitoring and control (e.g. Germany)*
  - *Existing agreements on monitoring, privacy, health and safety can be extended (e.g. USA)*

- **Agreements on outsourcing, job security:** outsourced work is often cut first: sometimes collective agreements make this explicit.

- **Creative projects to invest in worker skills:** create 'skill maps' and plan for training workers in new digital skills

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DEUTSCHE TELEKOM

■ **Project 'PAKT 2020**' – 'perspectives for all employees in customer service at Telekom' (2016). Part of ver.di project: 'Challenges of Crowd and Cloud'

■ **Works agreements:**

  – *Telearbeit (work from home) (2016)*

  – *IT Systems (2017)*

  – *Digitalisierung (digitalization): DIGI roadmap (2020)*

  – *Digitale Zusammenarbeit (digital cooperation) (2021)*

  – *Workforce Analytics (2021 – pilot)*

■ **Manifesto on Ethical use of Artificial Intelligence** (Manifest KI) (2021)

...FINAL THOUGHTS

Old institutions already adjusting… some attempts to reembed the digital economy

But steep challenges:

1. **Uncertain economic basis for growth** with shared prosperity – perpetual bubble/bust?

2. **Huge potential for job losses**… innovations labor substituting rather than augmenting (Frey, 2021).
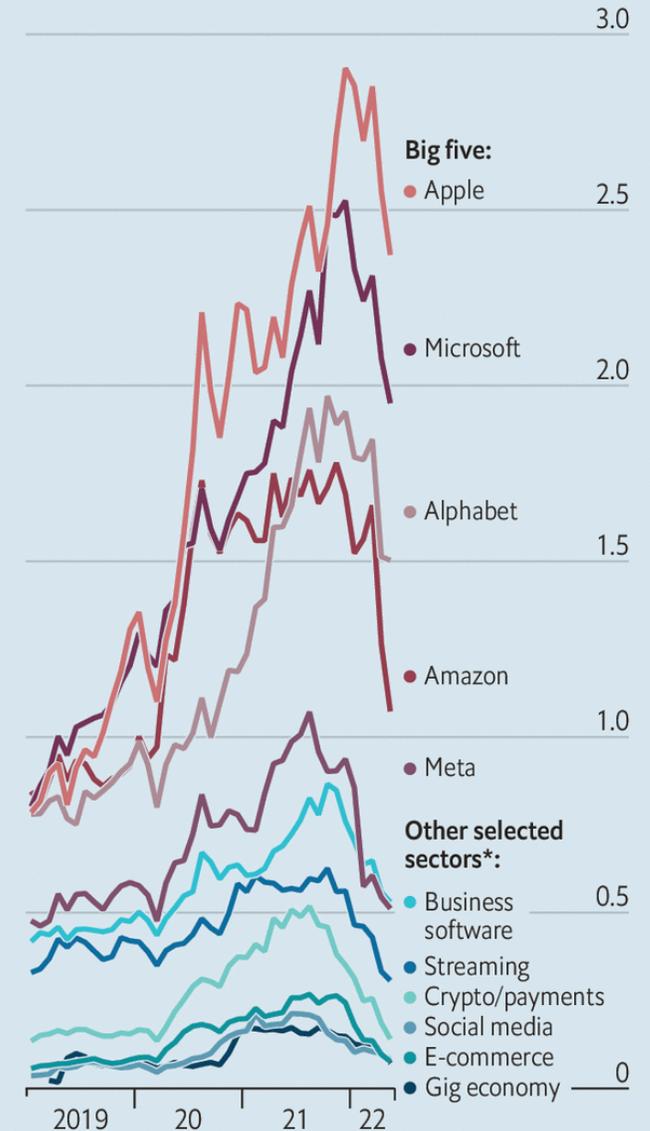
3. **Climate change and natural limits to growth**

Best hope is countervailing labor power, rooted in inclusive solidarity and focused on constraining employer exit & strengthening collective worker voice.

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Snap...
United States, market capitalisation of tech companies, $trn

Big five: Apple, Microsoft, Alphabet, Amazon, Meta

Other selected sectors*: Business software, Streaming, Crypto/payments, Social media, E-commerce, Gig economy

*Combined top three companies, excluding big five
Sources: Refinitiv Datastream; Bloomberg; Dealogic

The Economist

THANK YOU

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