From Defender to an Attacker – Call to Arms for Finland

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Digital/McKinsey

Digitalization

What is "Digital"

Digital is a new way of operating that materially improves performance by incorporating analytics, process digitization & mobile, and automation into day to day interactions with customers, employees, suppliers, and partners

Reimagining New Business Models

- New Businesses
- New Channels
- New Products
- Value-added Services

Reinventing the Core

The impact of digital

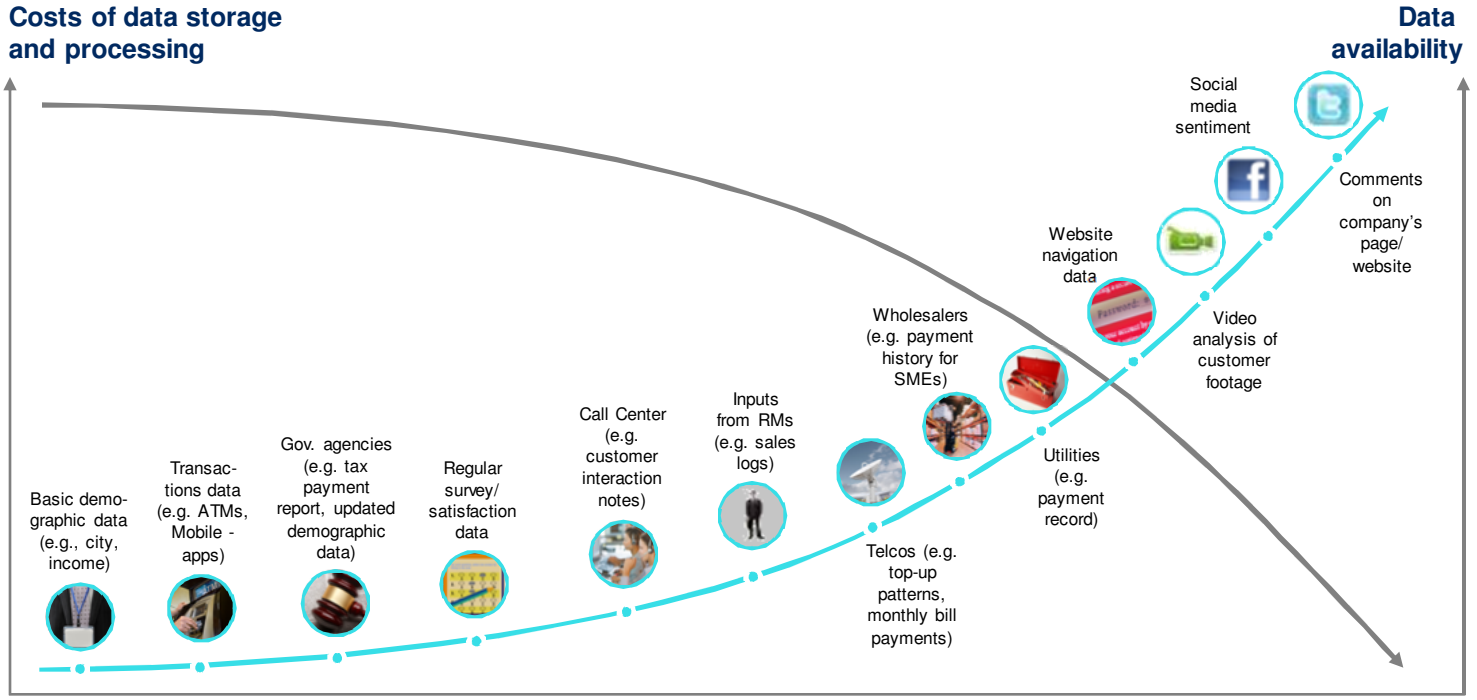
- Extreme winners and losers by industry
- Radically reshaped customer to company interactions
- Dramatically lower cost base driven by technology/labor tradeoffs across "processes"
- Value transfer to the customer
- Dislocations in the "role of the worker"

Section 1

"I'll bet the rest of my professional career that the future of your business is digital, big data and machine learning"

Eric Schmidt, Chairman of Google

Observation#1: Data availability has boomed in the past years while cost of storage and processing has drastically decreased



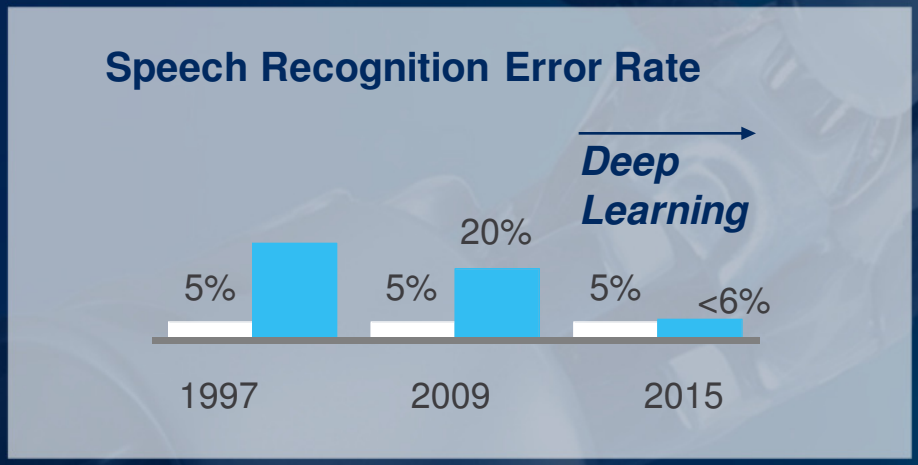
Ability to apply Advanced Analytics to **unstructured data**

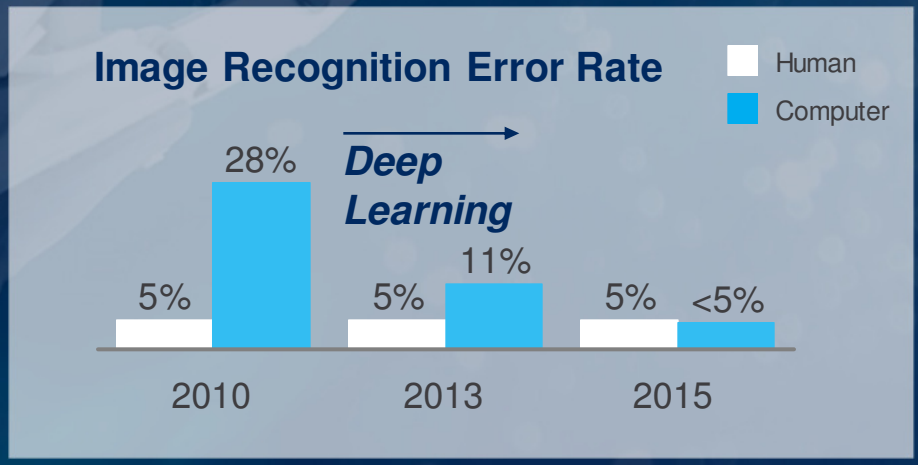
Multiple technologies coming together

- Machine learning
- 3D vision
- Robotics
- Deep learning
- Cloud computing
- etc.

Observation #3: AI and automation are fundamentally changing the way we interact

Robotics | Language | Machine Learning | Computer Vision | Virtual Assistants

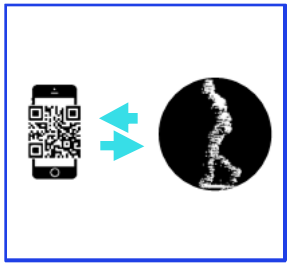




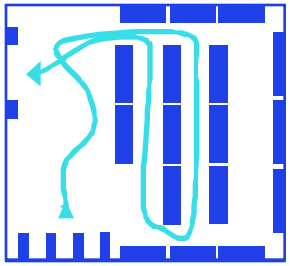
SOURCE: MMC Ventures; Nvidia; Internet research

Example: Amazon Go – from digital to physical, enabled by AI

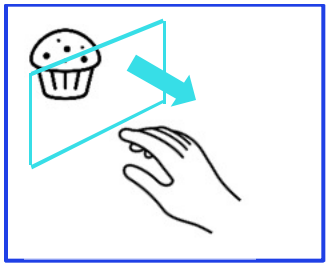
User ID



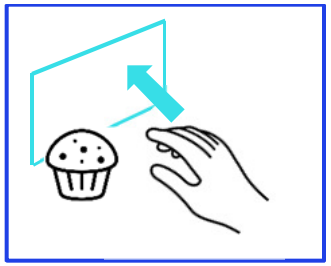
Track user in store



Track picking items

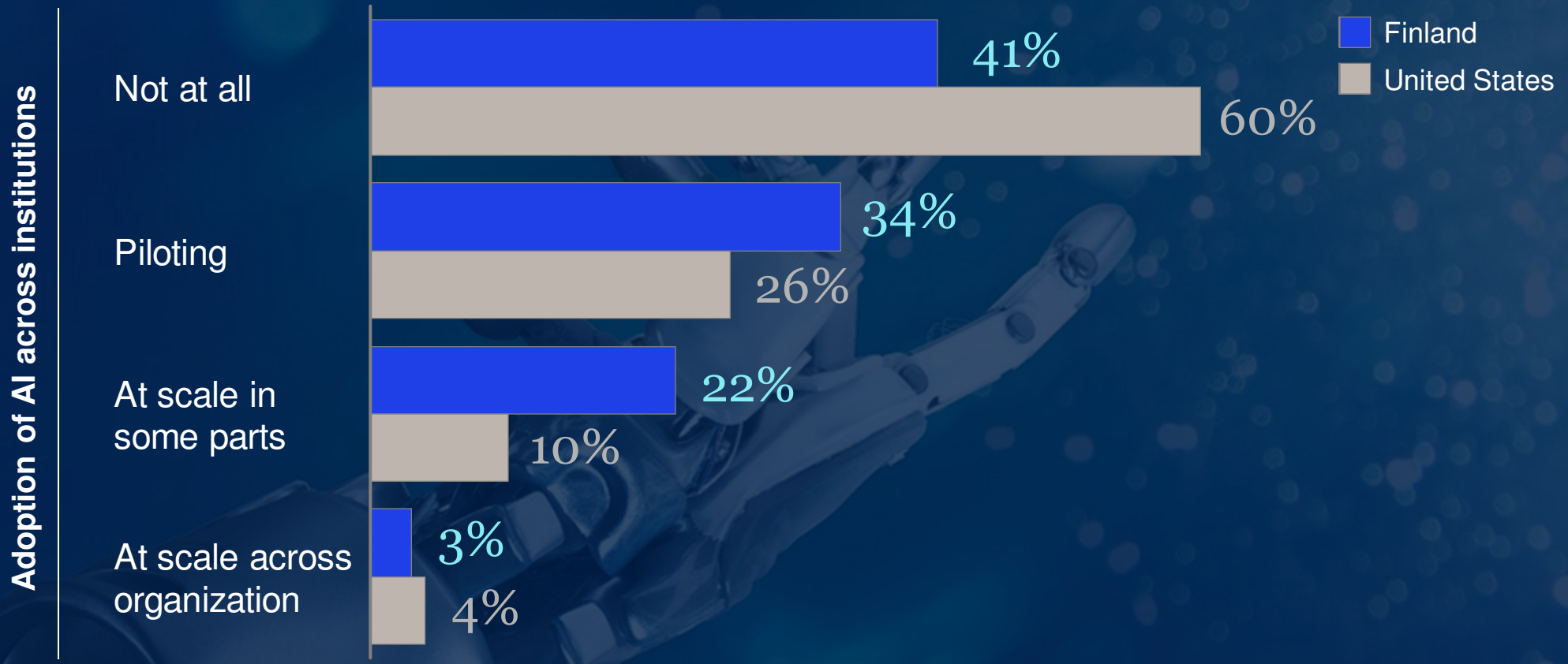


Track returning items



Virtual checkout

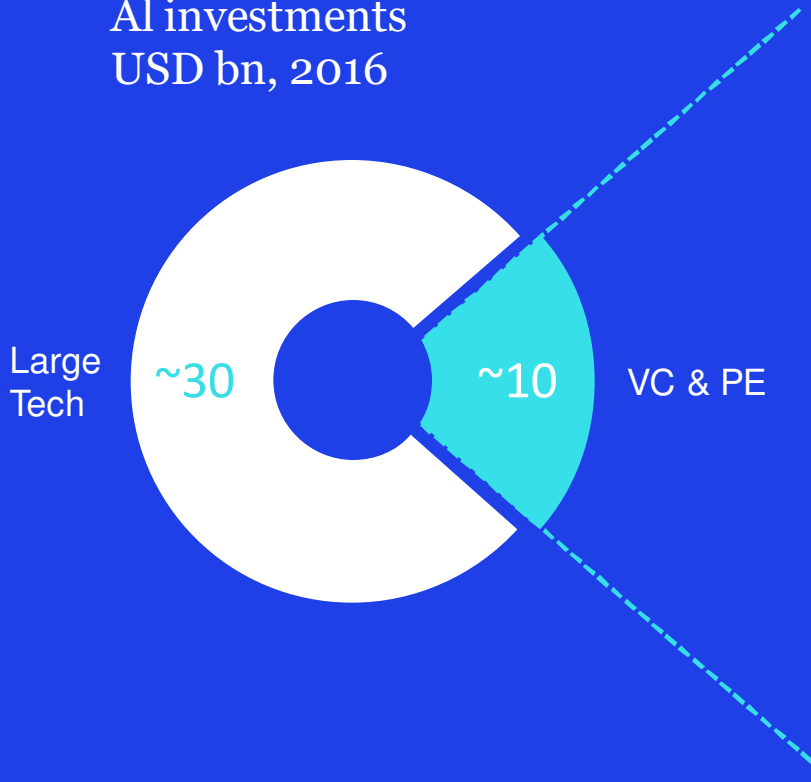
Observation #3: We are still in the early days of AI adoption globally



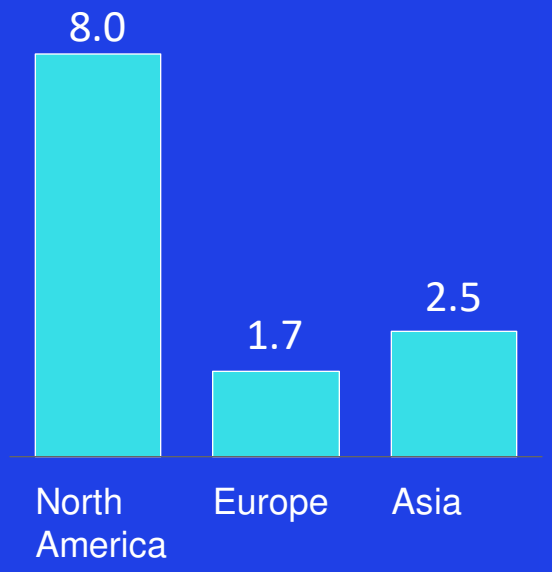
SOURCE: McKinsey Global Institute

Observation #4: Investments into AI fueled by tech giants and North America – Europe falling behind

AI investments
USD bn, 2016



AI external investments including VC, PE and M&A by corporations, 2016[1]
USD bn (estimate)



1 Estimates consist of annual VC investment in AI-focused companies, PE investment in AI-related companies, and M&A done by corporations. Includes only disclosed data available in databases, and assumes that all registered deals were completed within the year the transactions were announced.

SOURCE: Capital IQ; Pitchbook; Dealogic; S&P; McKinsey Global Institute analysis

Section 2

“The trouble is you think you have time”

“Winner takes it all”

Digitalization has been value destroying

-6% Revenue

-12% EBIT

Early movers have the advantage

+6% Revenue growth

+4% EBIT

The digital leaders widen the gap

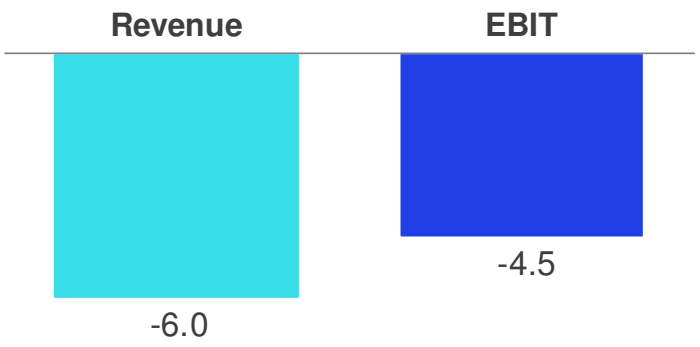
+7% Revenue growth

+2% EBIT

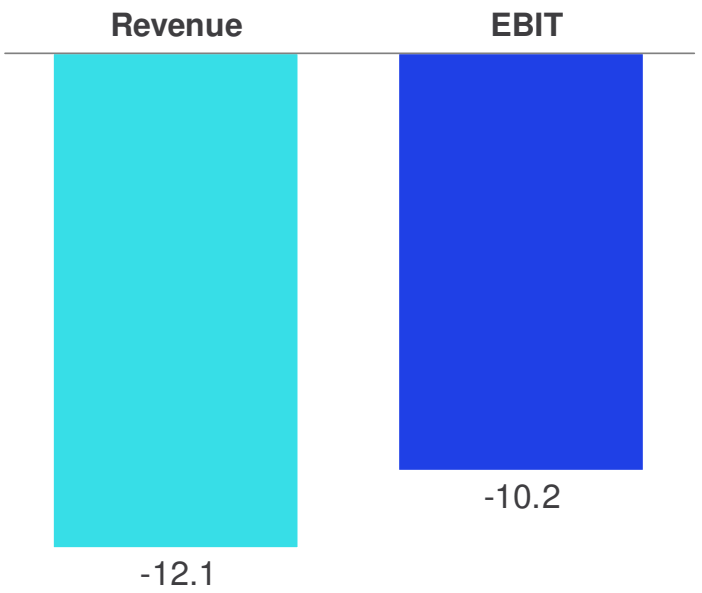
SOURCE: McKinsey Global Institute

Rule #1: Digital destroys value for the incumbents…

Effect 2013–16
% growth



Expected effect 2016–20
% growth, estimated[1]



1 Estimated effect via regression on EBIT and revenue growth of disruption

SOURCE: MGI; McKinsey Digital Global Survey

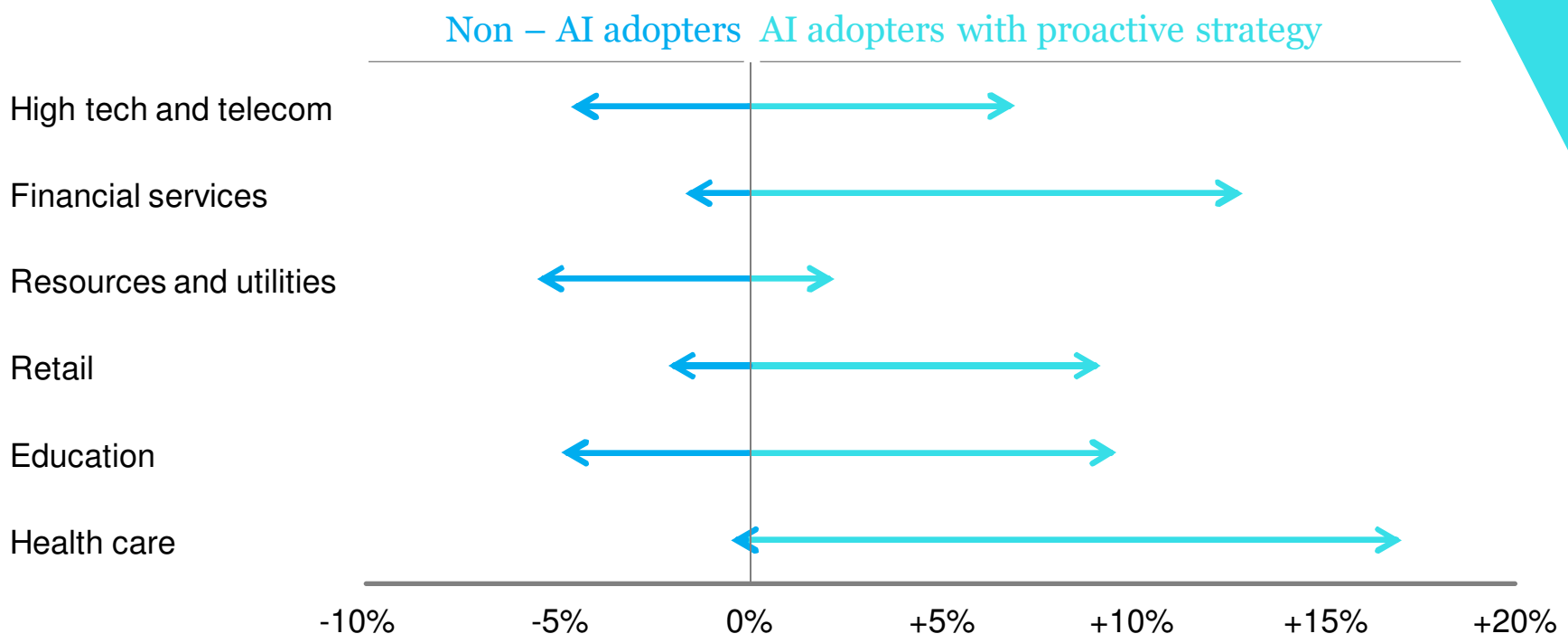
Rule #2: ...value moves to new business models and favors fast movers

Estimated market share of new digital entrants
%, average over past 7 years

SOURCE: McKinsey Global Institute; McKinsey 2016 Digital Strategy Global Survey (n=2,135), Team analysis

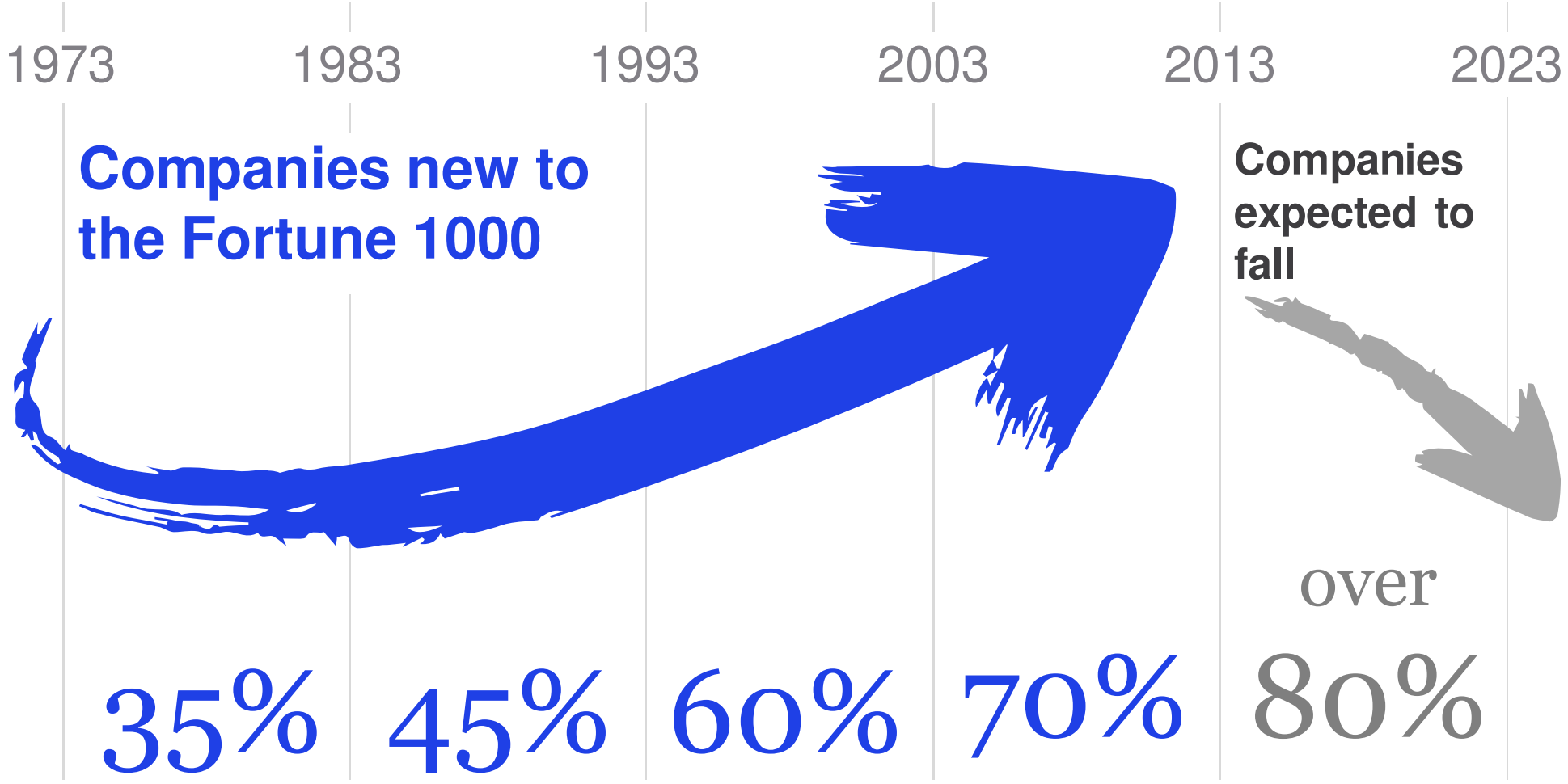
Rule #3: AI is widening the gap between winners and losers

Profit margin difference compared to industry average



SOURCE: McKinsey Global Institute

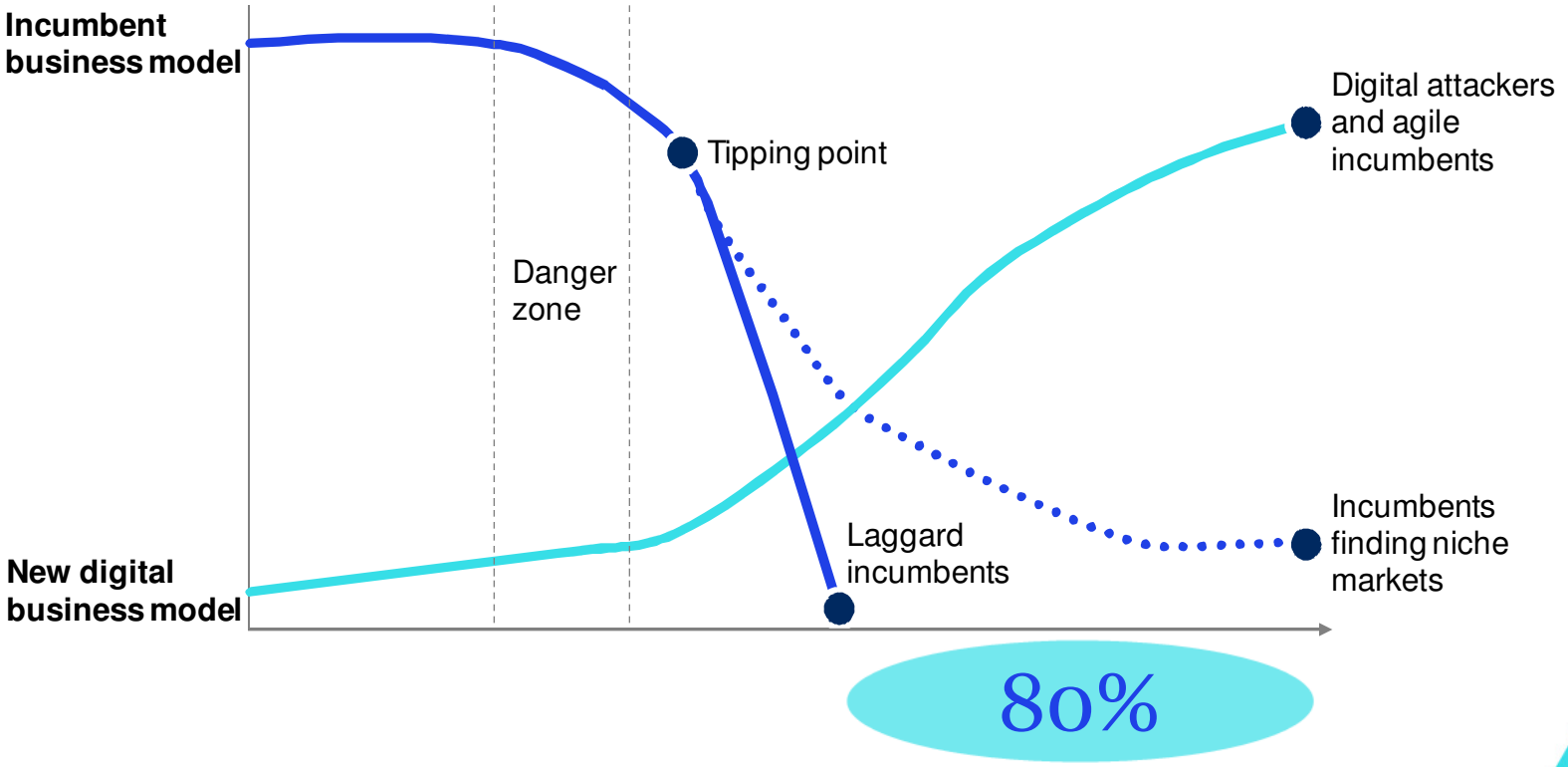
The Fortune 1000 company churn rate



End-result: 80% of incumbents do not survive the transition

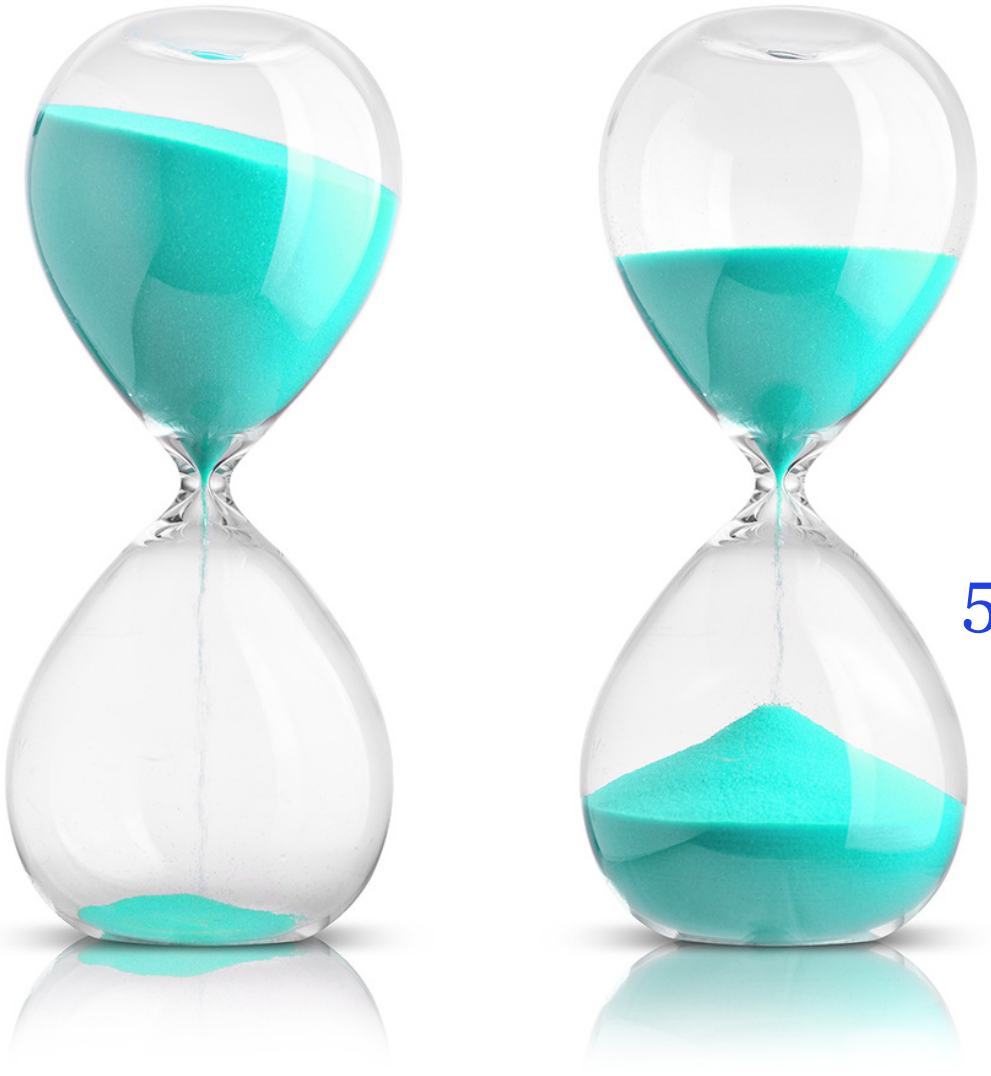
Market share, %

ILLUSTRATIVE



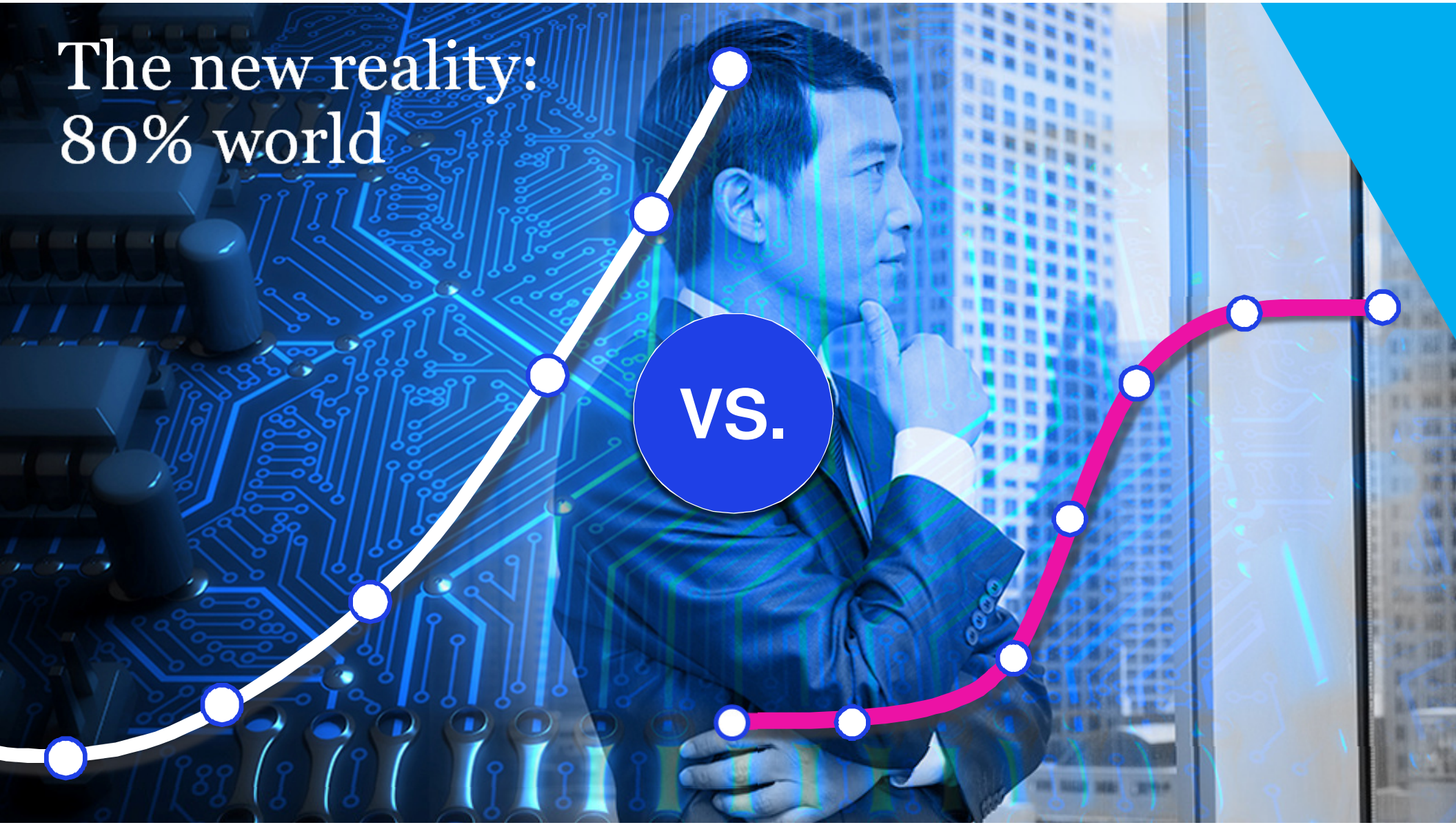
SOURCE : Klepper, S. (1996).“Exit, Entry, Growth, and Innovation over the Product LifeCycle,” American Economic Review, 86(3): 562-583

55/60
3% full



59/60
50% full

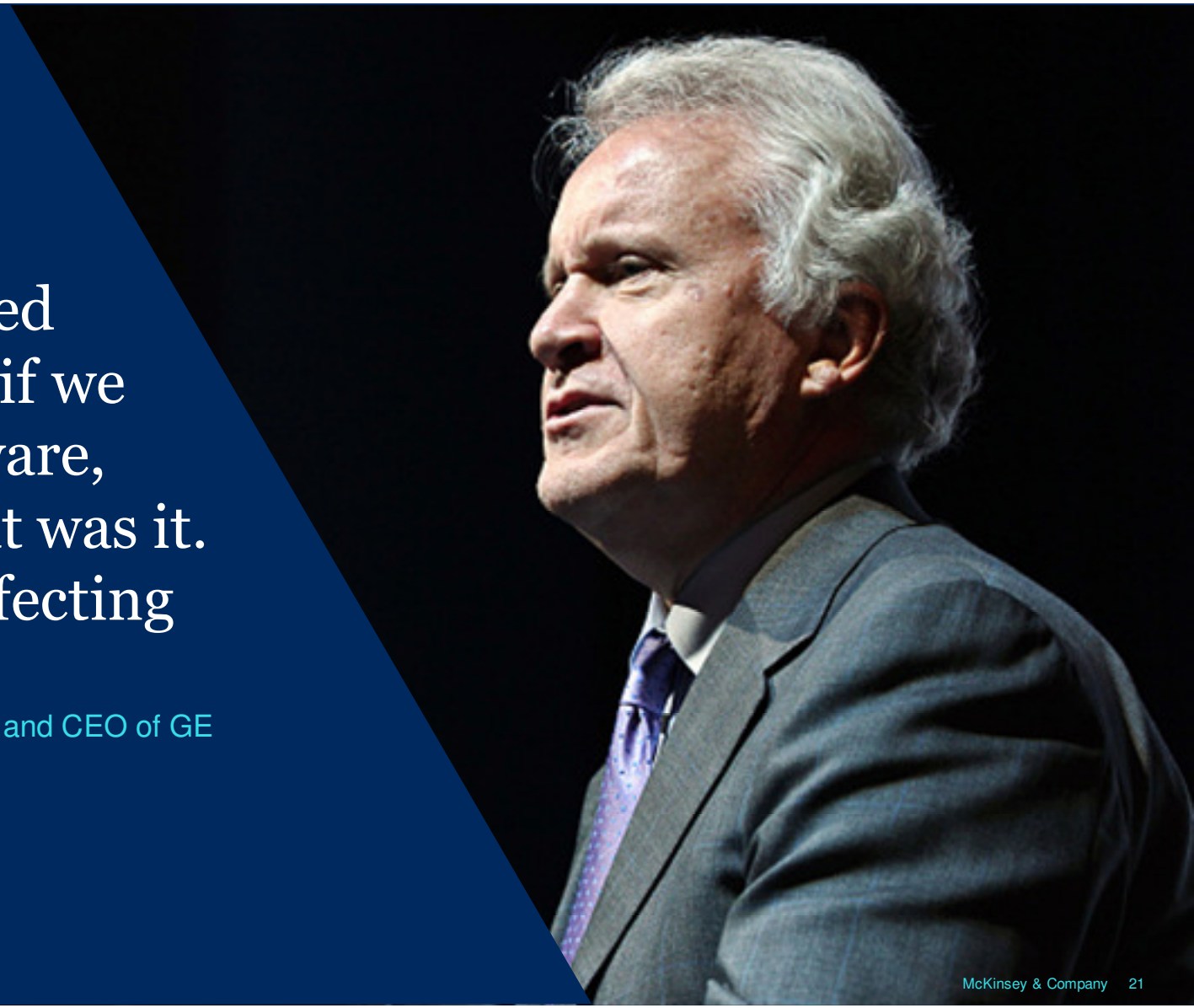
Example: DeepMind's AlphaGo 2016 and AlphaGo Zero in 2017


The new reality:
80% world
VS.

Section 3

"I thought if we hired technology people, if we upgraded our software, things like that, that was it. I was wrong. It's infecting everything we do"

– Jeff Immelt, Chairman and CEO of GE



Challenge #1: We play in the past and defend…

How to play

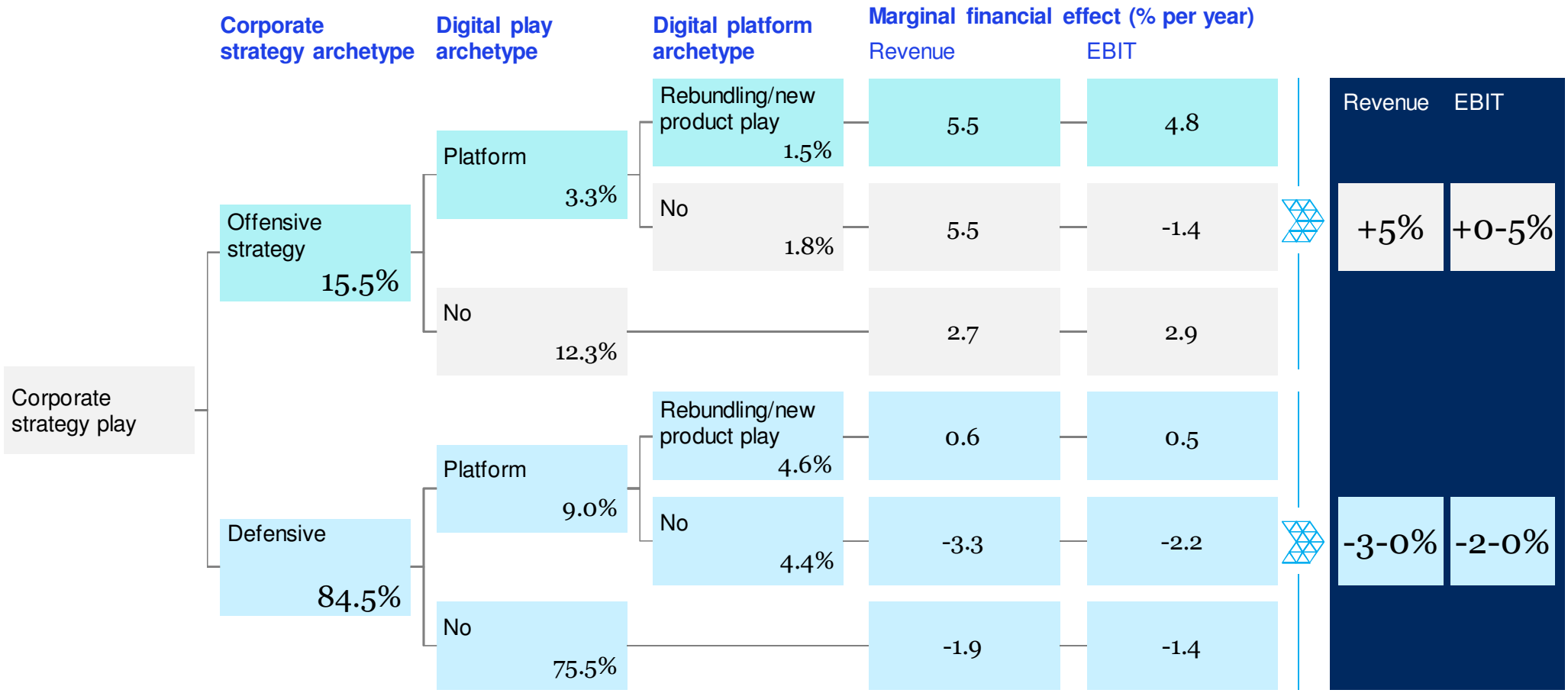
	Defend core	New core play (new business model)
Core only 70%	52%	18%
New digital enabled diversification 30%	15%	15%

What to play

	Expand	Reduce
Keep portfolio 55%		
Adjust portfolio 45%	15%	30%

SOURCE: McKinsey

Challenge #2: ...while offensive strategies yield better results



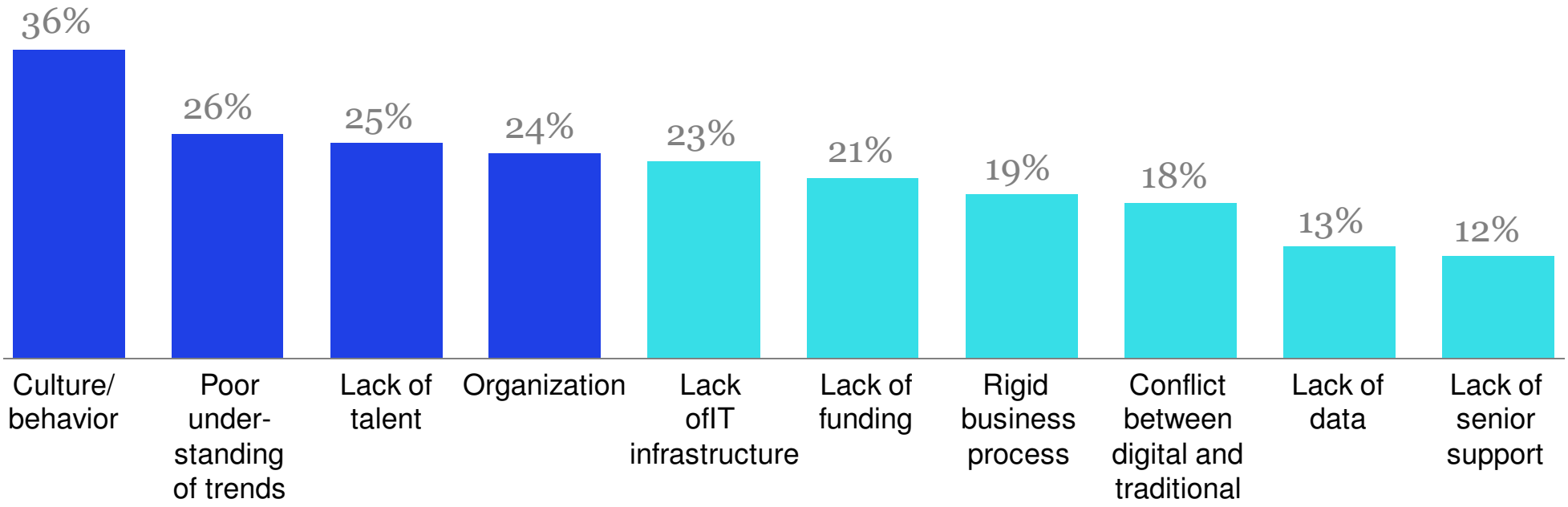
SOURCE: Bughin and Van Zeebroeack

"In the past, a lot of CEOs wished they had started thinking sooner than they did about their Internet strategy. I think five years from now there will be a number of CEOs that will wish they'd started thinking earlier about their AI strategy"

– Andrew Ng, AI thought leader

Challenge #3: For a company, it's not about technology but about culture, organization, and capabilities

Percent of observations why a transformation has failed



Challenge #3: Leadership and organizational challenges amplified by today's organizational paradigms

Taylorism – Optimizing our organizations through

- Efficiency focus
- Expertise through deep specialization
- "Divide, conquer, and delegate"
- "Let me do my thing; I share when its ready"

80% of organizations have lost ability to challenge status quo

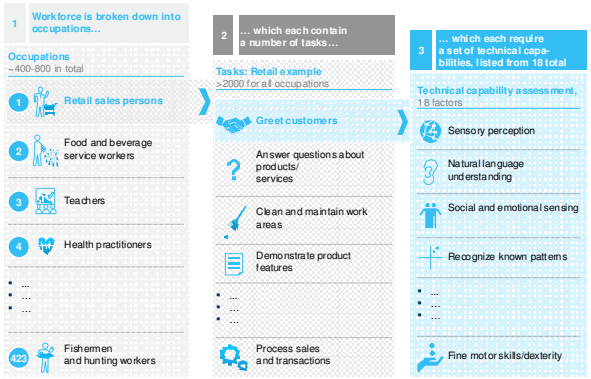
Transformation will only happen with decisive actions; top-down driven

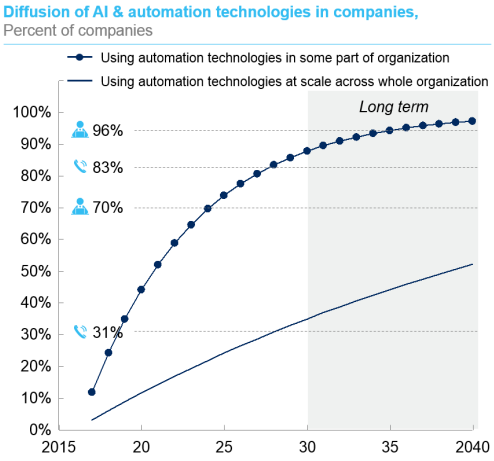
Section 4

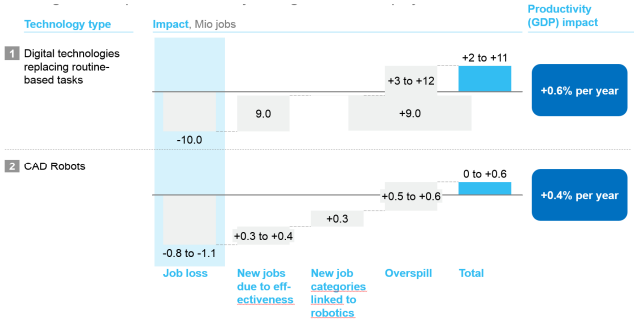
“Change is inevitable, progress is optional” – Finland at crossroads

Our work: Comprehensive assessment of socioeconomics of AI and automation over 3-years

Skill, task, and job level technical automation + Adoption of AI technologies + Economic input / output estimation



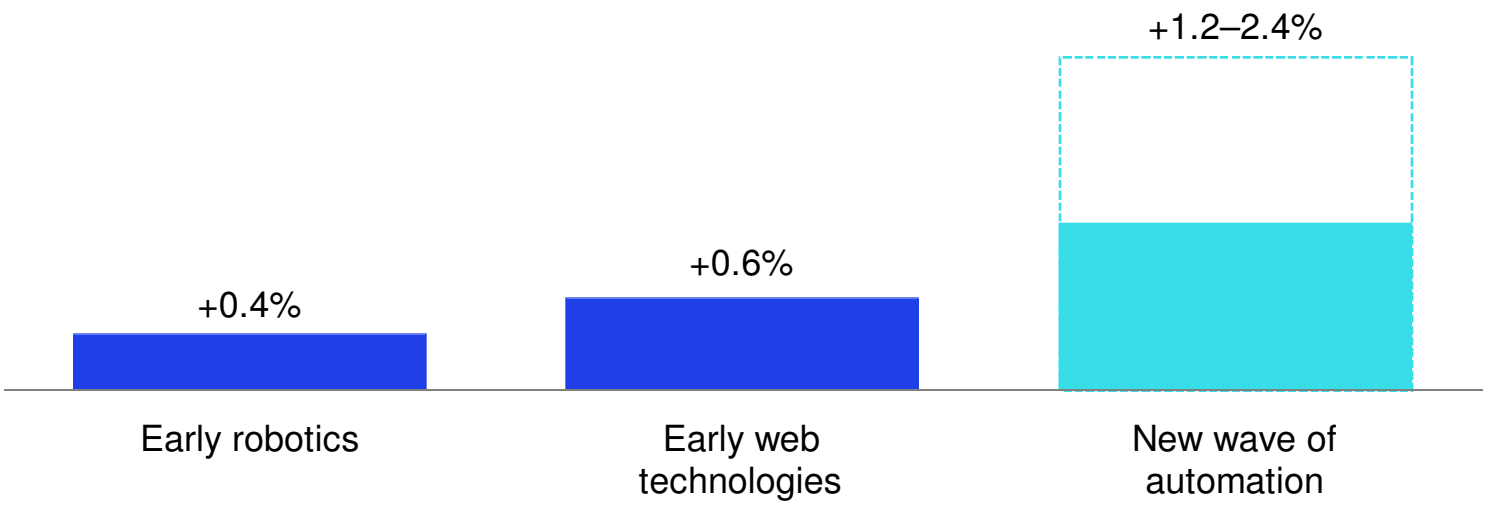




Source: McKinsey Global Institute

Impact of AI and Digital to our society grows 2–4x

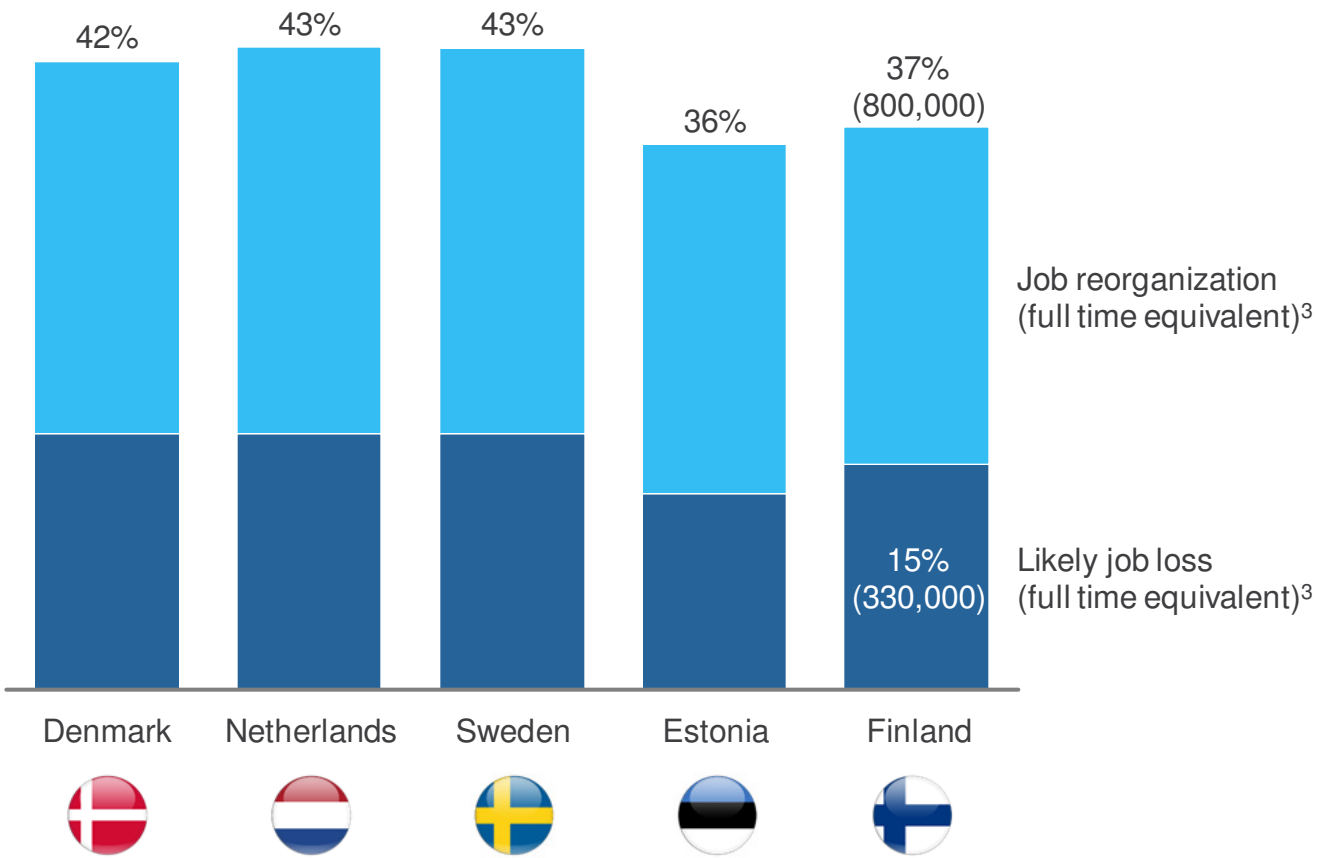
GDP growth impact[1], Percent per annum



1 Impacted through improved labor productivity

SOURCE: ITIF (November 28, 2016); *Graetz et Michaels* (2015); *Evangelista et al.* (2014); McKinsey analysis

Large part of jobs will be lost or re-organized

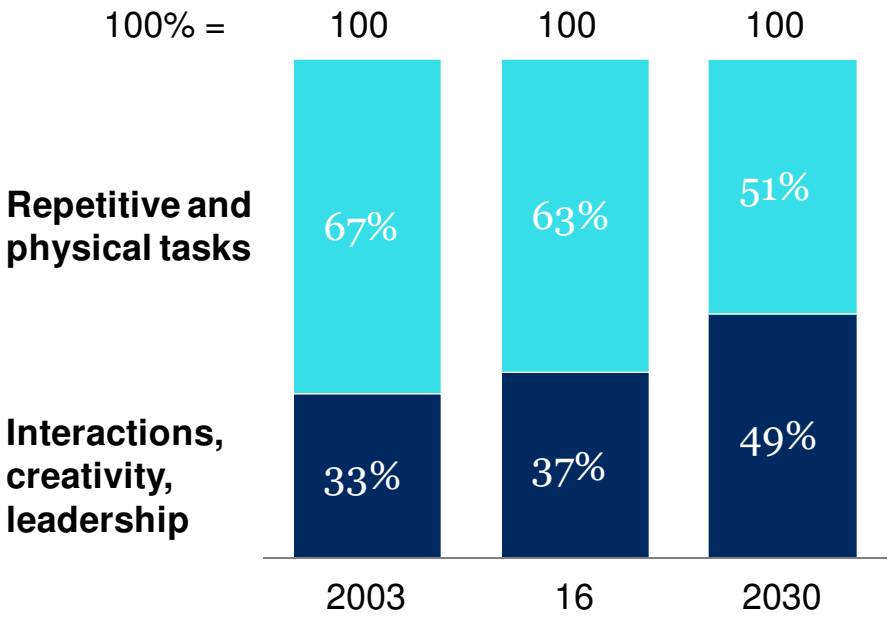


1 We define automation potential by the work activities that can be automated by adapting currently demonstrated technology; 2 France, Germany, Italy, Spain, and the United Kingdom.; 3 Job loss defined as jobs with more than 70% automation potential; job reorganization defined as jobs with less than 70% automation potential; 4 Modelled job substitution by 2030 in midpoint scenario

Source: McKinsey Global Institute

Requirements for work change dramatically

Share of working hours by broad activity category
Change in % points, FTE time, 2003 to 2030



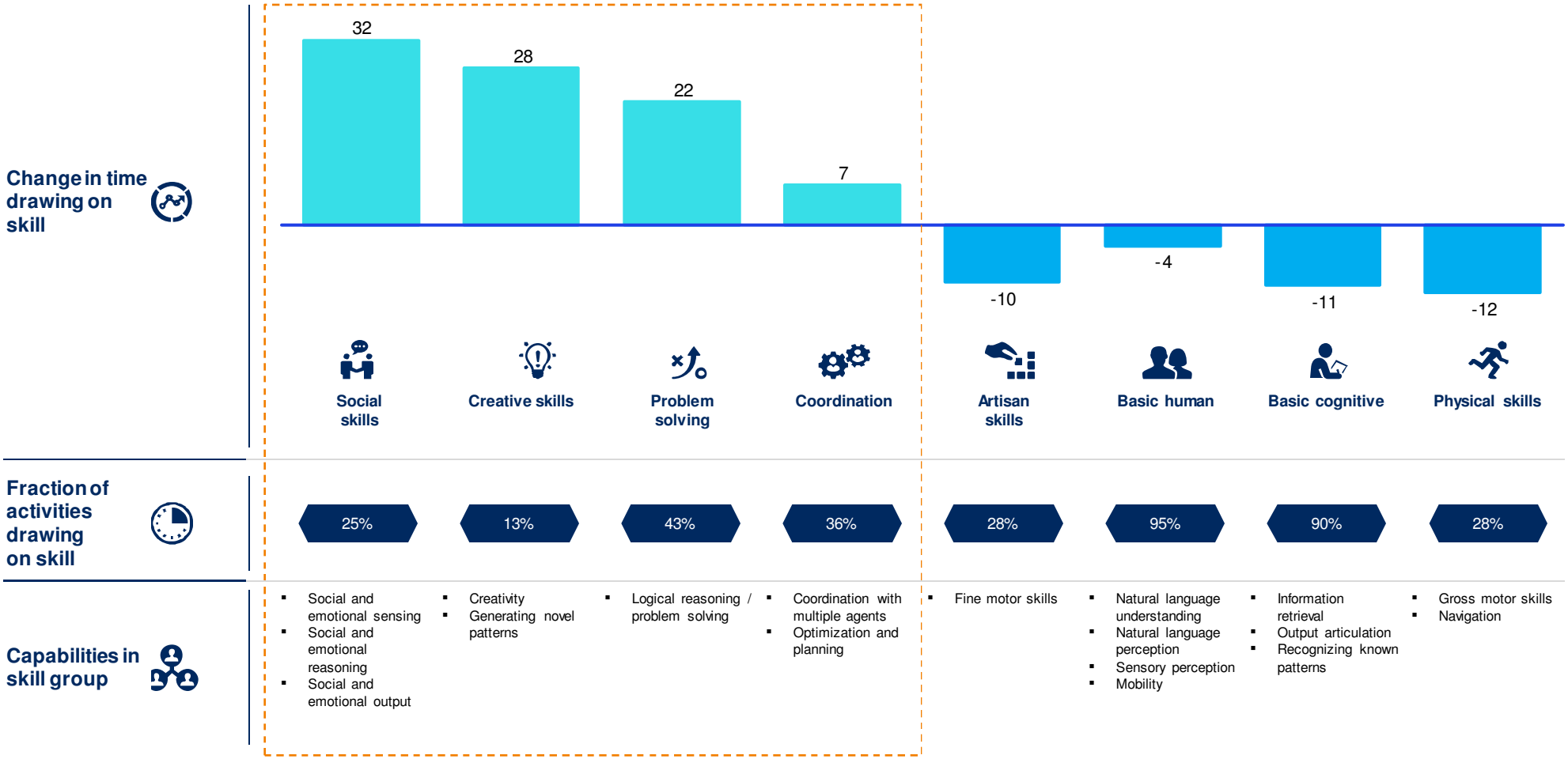
Reskilling needs **2-4x**

Share of Digital jobs **2–4x**

Skill inequality **2–3x**

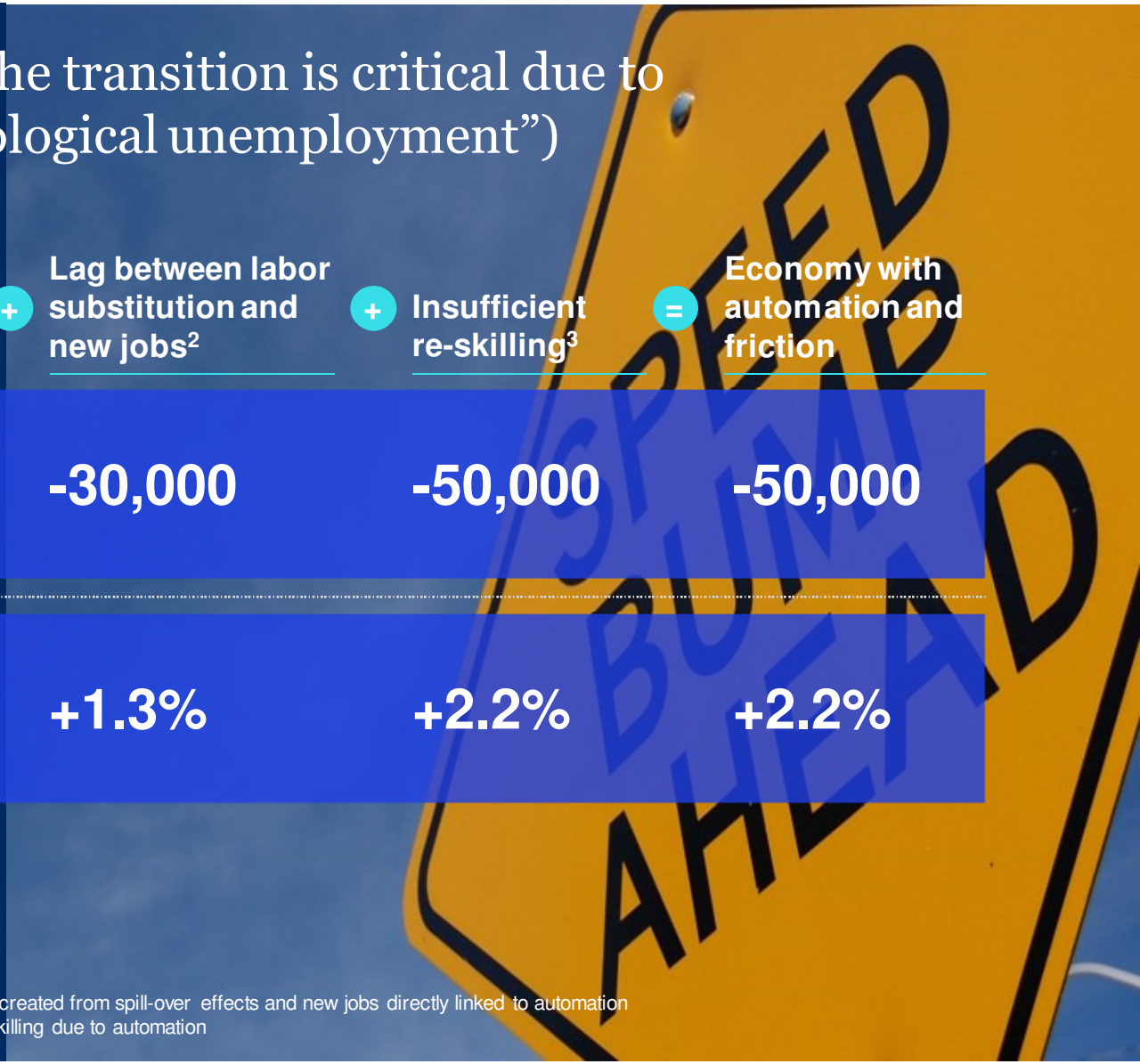
Deep-dive: Skill requirements start to polarize

Skills becoming more important in one or more job clusters



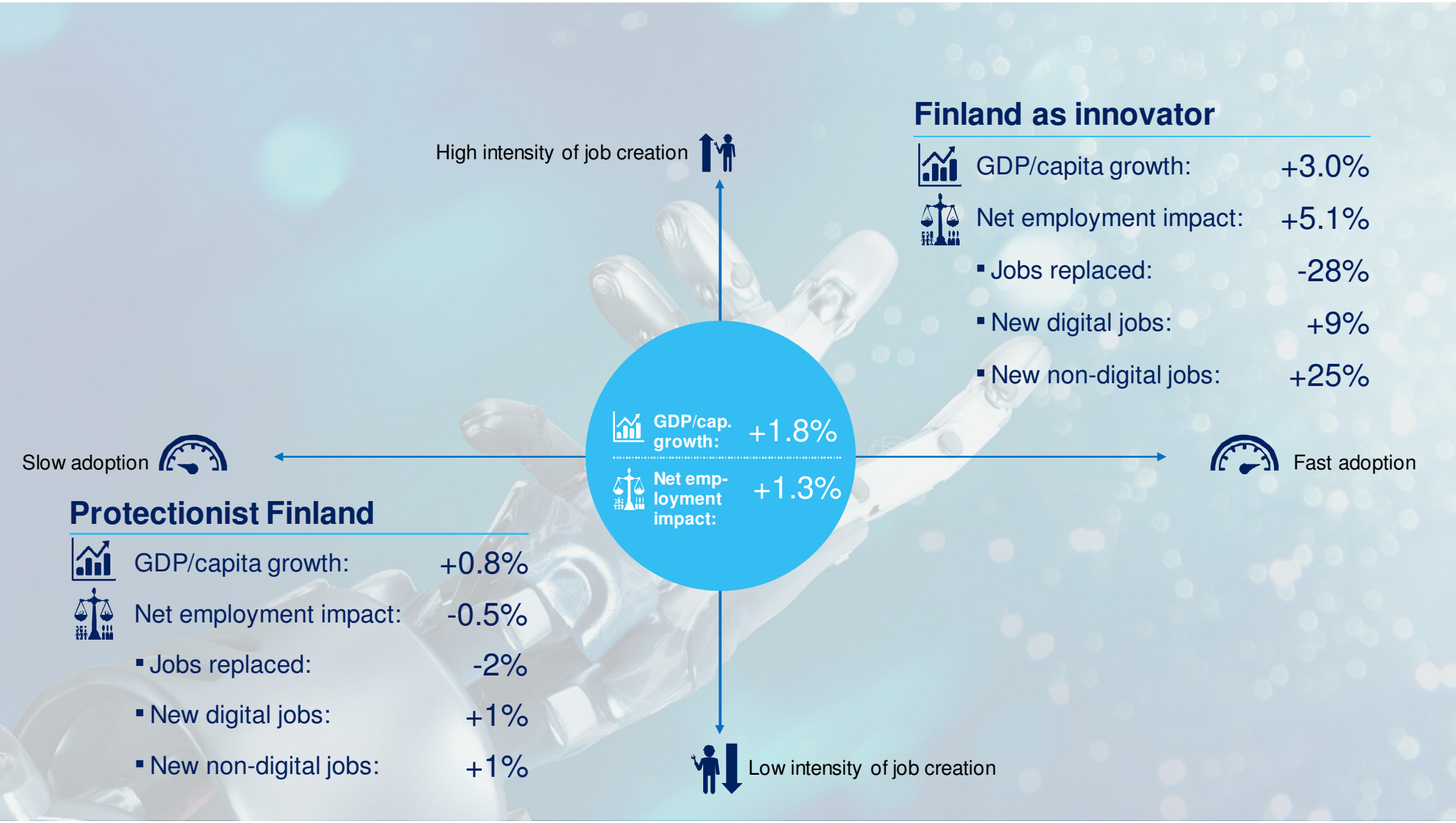
SOURCE: McKinsey Global Institute; Statistics Denmark

Example Finland – Managing the transition is critical due to friction and re-skilling ("technological unemployment")



Impact by 2030	Economy with automation, no friction[1]	+	Lag between labor substitution and new jobs[2]	+	Insufficient re-skilling[3]	=	Economy with automation and friction
Employment # workers	+30,000		-30,000		-50,000		-50,000
Unemployment rate percentage points	-1.3%		+1.3%		+2.2%		+2.2%

1 Midpoint scenario compared to baseline with no automation
2 Assuming a lag of 3 years between robots replacing workers, and new jobs are created from spill-over effects and new jobs directly linked to automation
3 Assuming insufficient re-skilling of 20% of the additional workers in need of re-skilling due to automation


High intensity of job creation
Finland as innovator
GDP/capita growth: +3.0%
Net employment impact: +5.1%
Jobs replaced: -28%
New digital jobs: +9%
New non-digital jobs: +25%
Slow adoption
GDP/cap. growth: +1.8%
Net emp-loyment impact: +1.3%
Fast adoption
Protectionist Finland
GDP/capita growth: +0.8%
Net employment impact: -0.5%
Jobs replaced: -2%
New digital jobs: +1%
New non-digital jobs: +1%
Low intensity of job creation

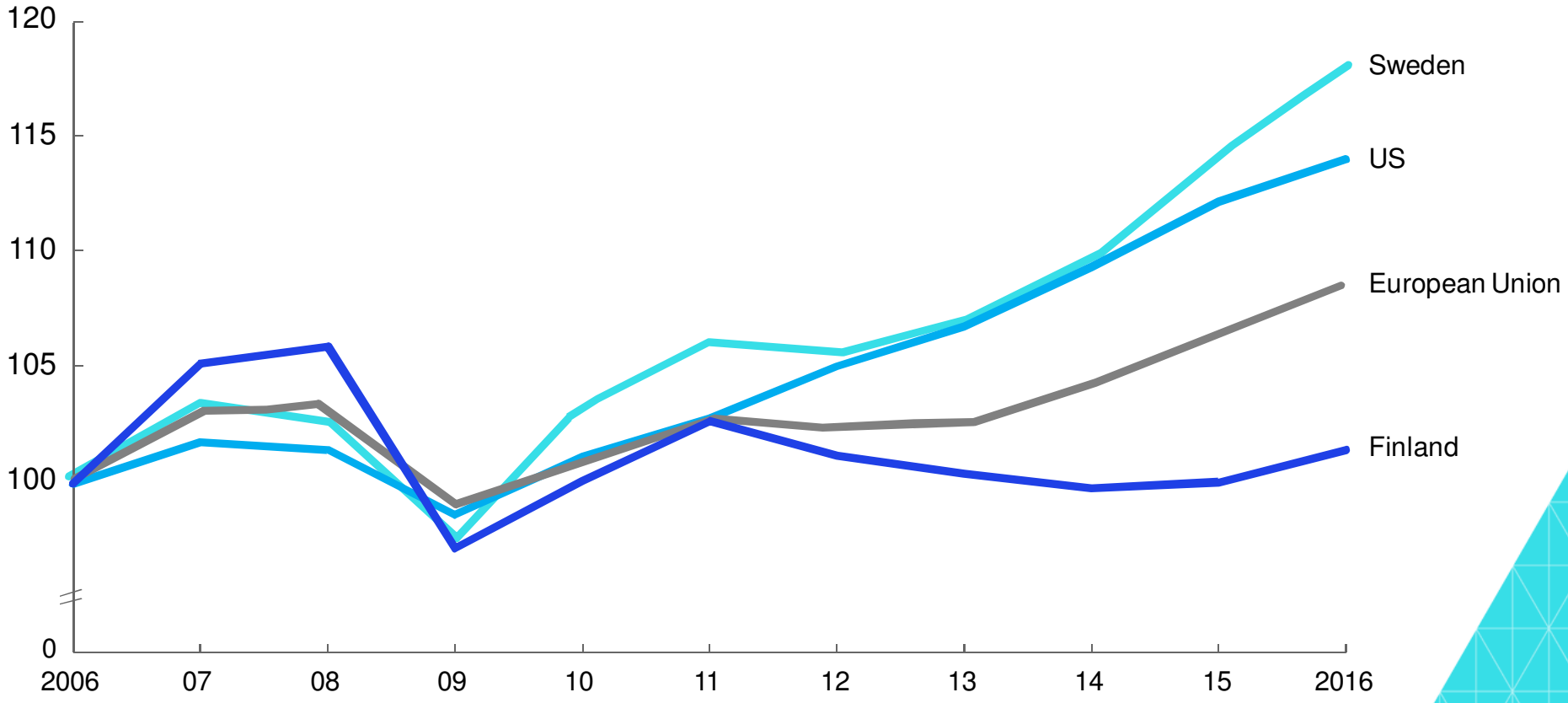

CHAVE
Cervejaria

We have a fantastic base to build on

- #2 Digibarometri 2016 Utilization of digital in society
- #2 Digital Economy and Society Index for EU countries 2016
- #4 IMD World Digital Competitiveness Ranking 2017
- #1 WEF Safest countries 2016
- #1 Freedom House most free country in the world 2017
- #3 Gender Equality Index in Europe 2017
- #1 Environmental Performance Index 2016
- #3 Corruption Perceptions Index 2016
- #1 Travel and Tourism Safety and Security 2017

However, we have been beaten to the ground as a country

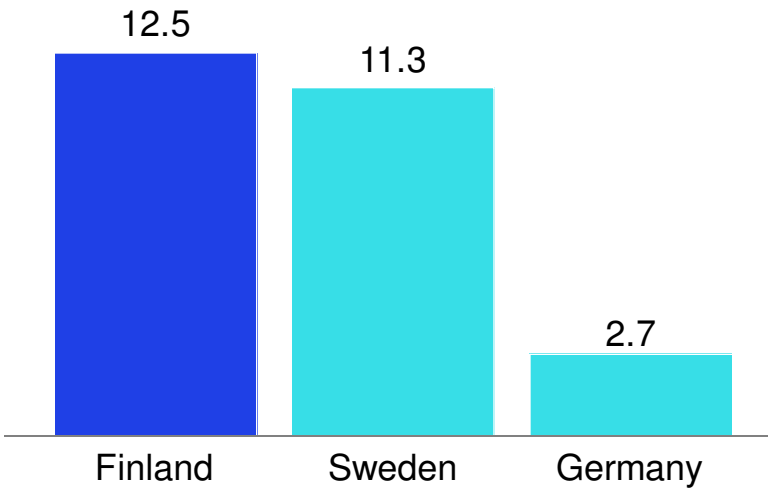
GDP 2006–16 constant 2010 USD , indexed 2006 = 100%



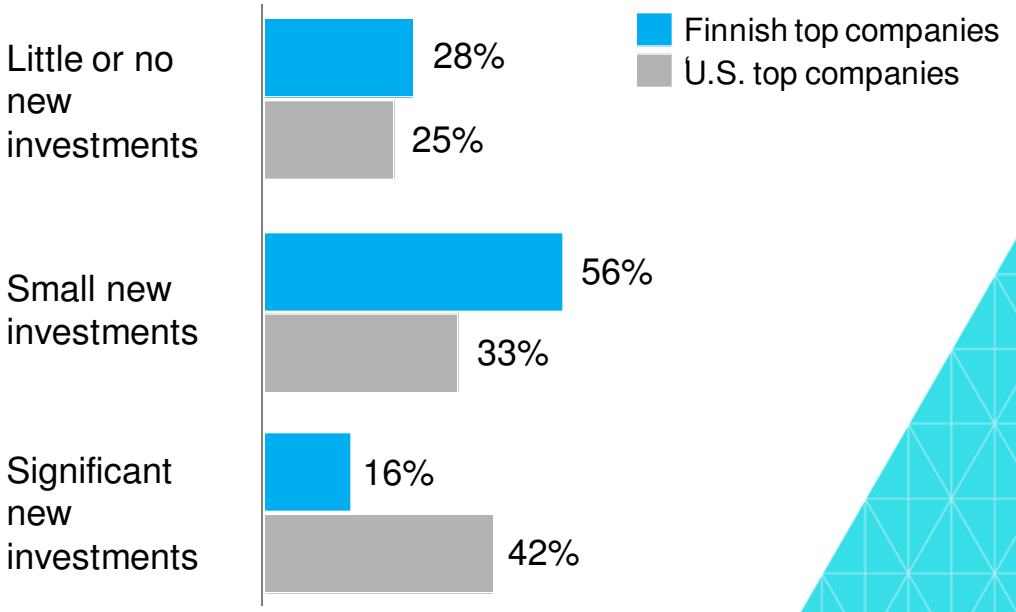
SOURCE: World Bank

Our companies have been fighting a defensive battle

Our companies have cut a lot more workforce than peers
2009–13 as share of total work force for largest listed companies, %



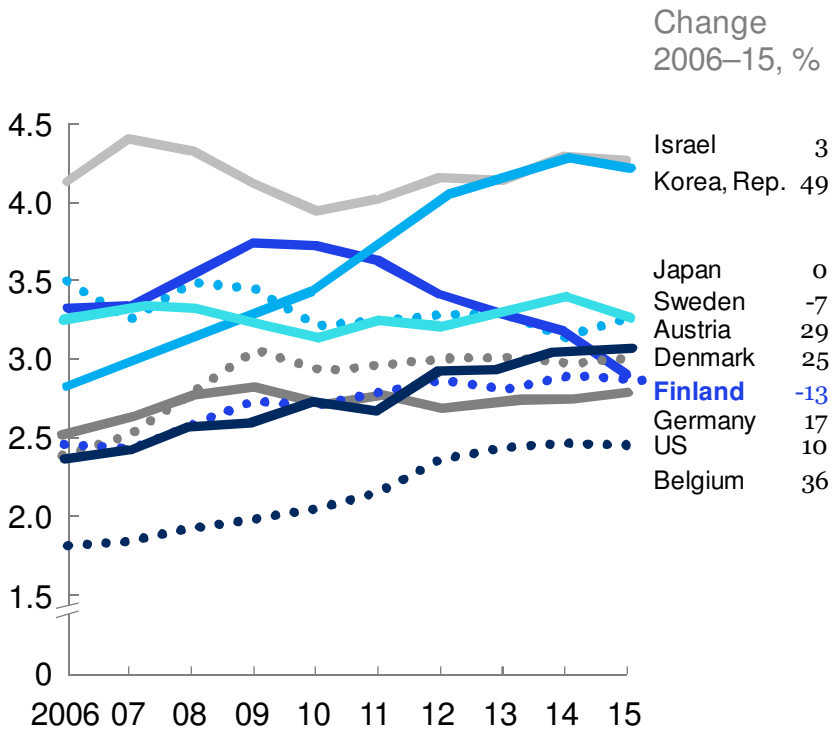
And we have not invested capital to new growth areas
2009-2014



SOURCE: McKinsey Global Institute (US peer TRS CAGR by degree of reallocation research on 1,508 US-based companies, period 1990–2010)

Example: Finnish investments in R&D have declined by 13% over the last decade and we have lost position as an innovation leader

R&D expenditure as % of GDP, top 10 countries in the world in 2015, %



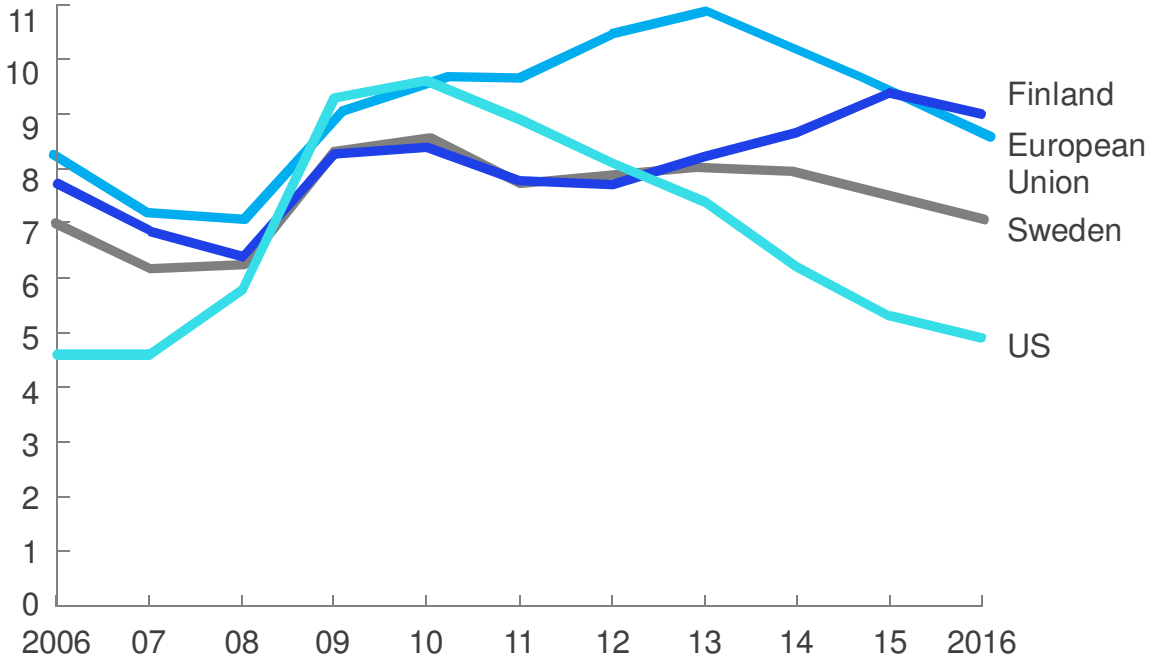
Global Innovation Index rankings top 10, 2009–10 and 2017, Rank #

2009–10		2017	
1	Iceland	1	Switzerland
2	Sweden	2	Sweden
3	Hong Kong (China)	3	Netherlands
4	Switzerland	4	US
5	Denmark	5	UK
6	**Finland**	6	Denmark
7	Singapore	7	Singapore
8	Netherlands	8	**Finland**
9	New Zealand	9	Germany
10	Norway	10	Ireland

SOURCE: World bank, The Global Innovation Index 2009-2010, 2017

Finland suffers from high level of unemployment given our cultural and mindset barriers to mobility (and re-employment)

Unemployment 2006–16, % of workforce



"65% of Finns have negative attitude towards moving after work"

– Kauppalehti

"Rigidities in the labor market in Finland are hampering the smooth reallocation of the workforce"

– OECD

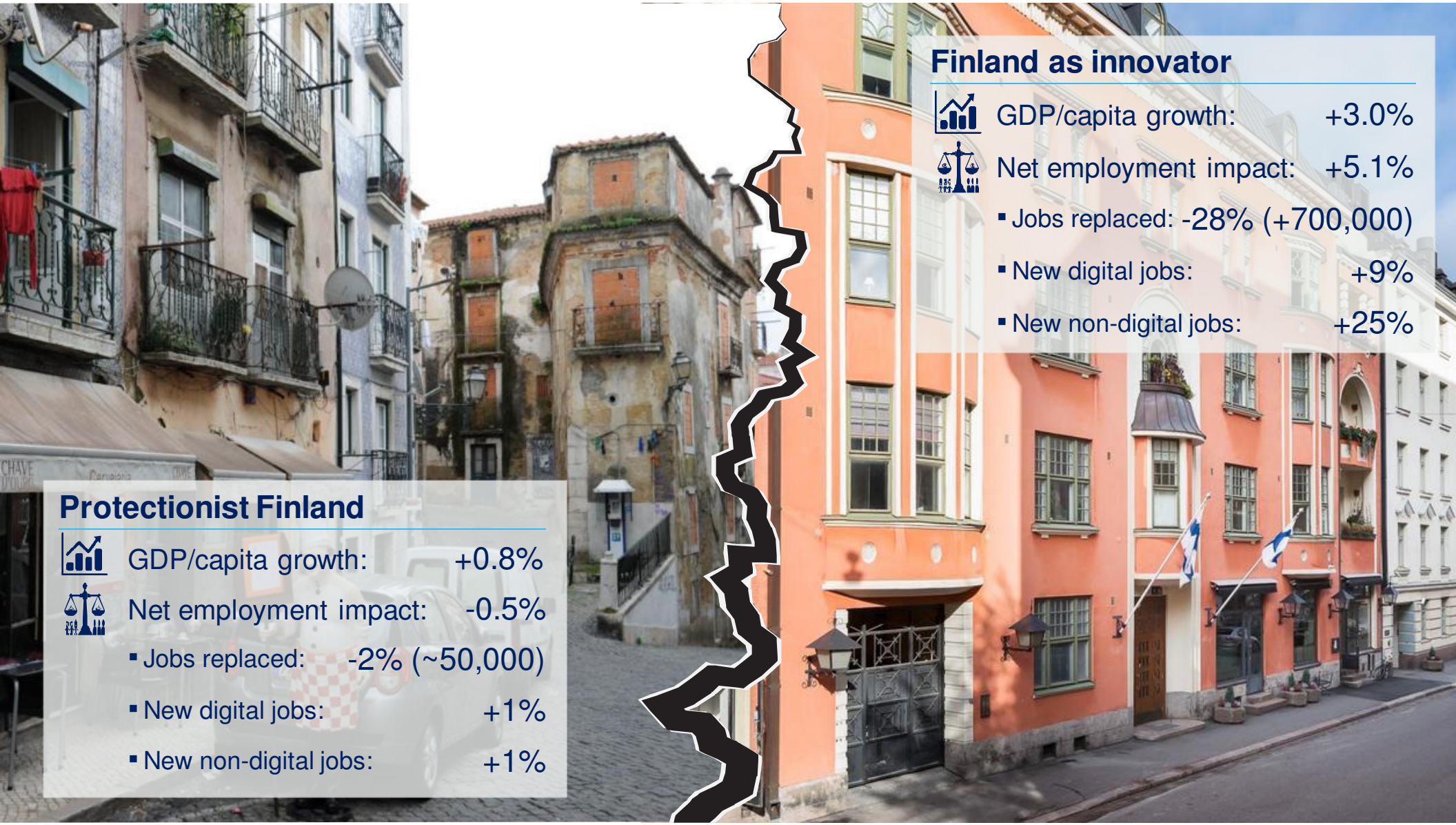
SOURCE: World Bank, Kauppalehti/Duunitori research Nov 15th, OECD Finland Fit for future 2013

Are we stuck in the trenches as a nation?

1917

2017


Raatajat rahanalaiset,
Eero Järnefelt 1893



Protectionist Finland

- GDP/capita growth: +0.8%
- Net employment impact: -0.5%
  - Jobs replaced: -2% (~50,000)
  - New digital jobs: +1%
  - New non-digital jobs: +1%

Finland as innovator

- GDP/capita growth: +3.0%
- Net employment impact: +5.1%
  - Jobs replaced: -28% (+700,000)
  - New digital jobs: +9%
  - New non-digital jobs: +25%

Section 5

"Those who cannot change their minds or ways cannot change anything"

Success factor #1: Set a bold aspiration and strategy despite the uncertainty

Reinvent your business & organ. architecture and operating model

RioTinto

Build new business models and ecosystems

JOHN DEERE

CAT

Strengthen your foundation: capabilities and assets

Rockwell Automation

Tyson

Success factor #1: Set a bold aspiration and strategy despite the uncertainty

Johan Tornensis

Exporter of reindeer economy to Alaska, 19th century

SOURCE: University of Bergen Library

Success factor #2: Break the rules

Success factor #2:
Break the rules

Karolina Eskelin

First female doctor of science in Finland, founder of hospitals, 19th & 20th century

Success factor #3: Learning and letting go as a leader

21st century leadership has adaptive challenges

Technical Manager	AND	Adaptive Leader
▪ Cost control		▪ Innovation
▪ Best-practices systems and processes		▪ Vision and values driven; creative
▪ Disciplined		▪ Flexible, responsive
▪ Intellectually intelligent		▪ Emotionally intelligent
▪ Technical manager		▪ People manager

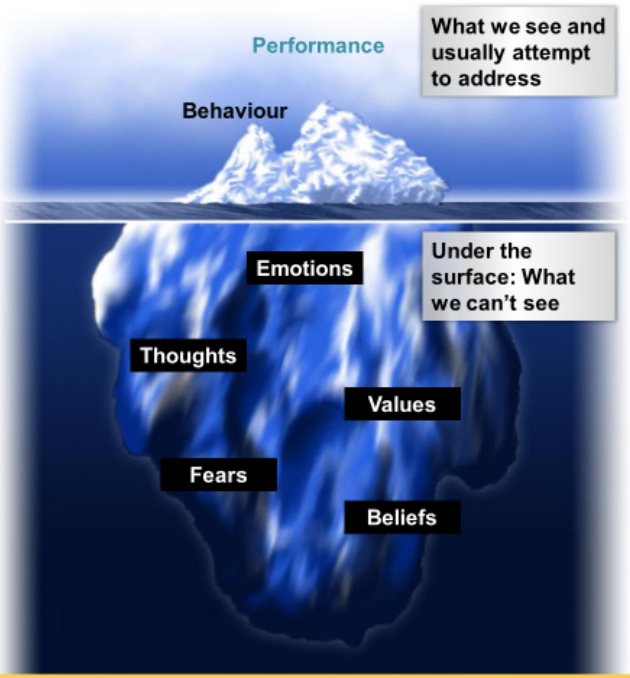
Single biggest failure mode: Trying to solve adaptive challenges with technical means

4

Moving beyond the comfort zone

7

Self-awareness – Uncovering my interferences



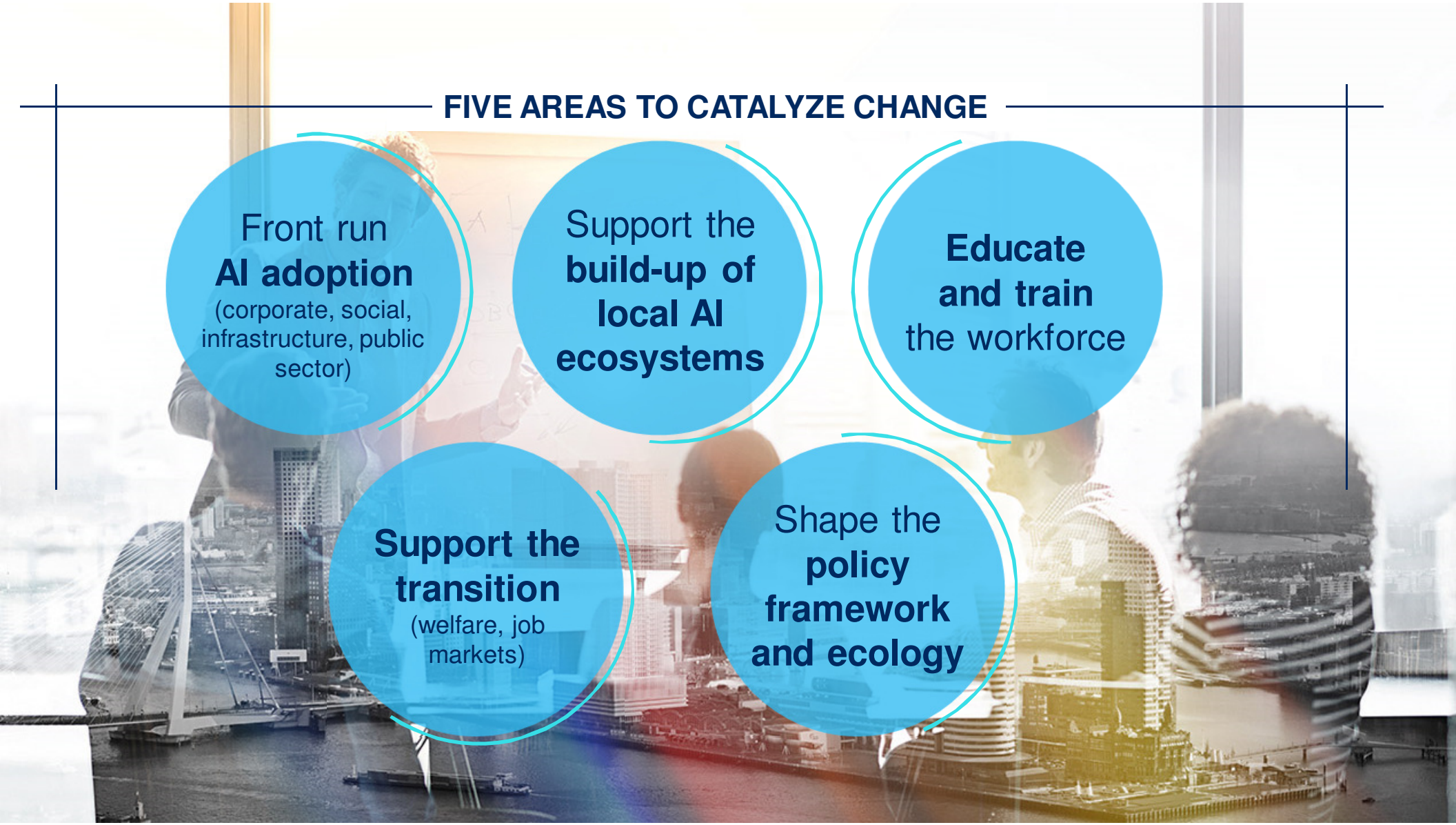
10

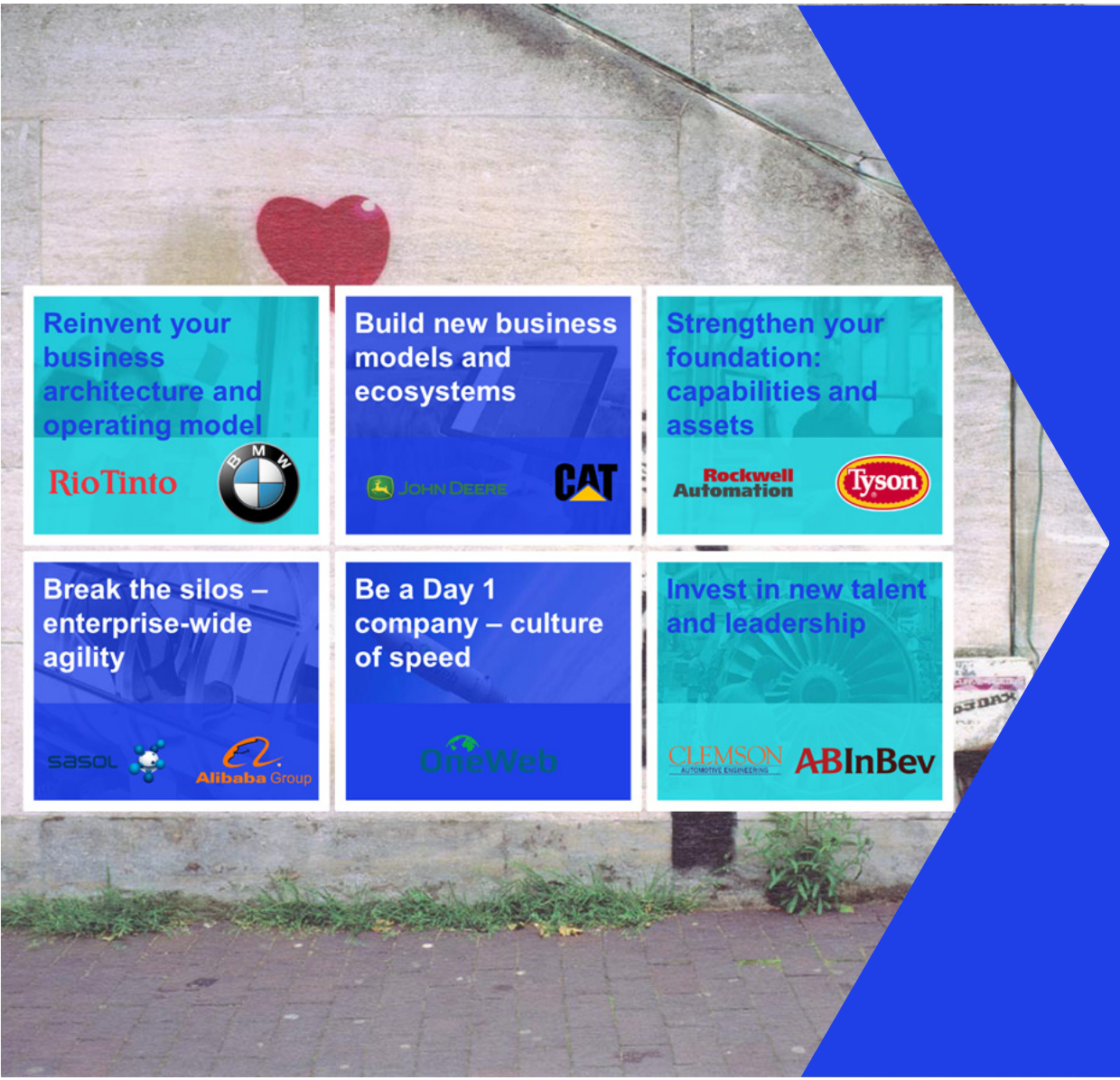
Success factor #3: Learn and let go

"It is not because things are difficult that we do not dare, it is because we do not dare that they are difficult"

– Seneca

FIVE AREAS TO CATALYZE CHANGE





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