

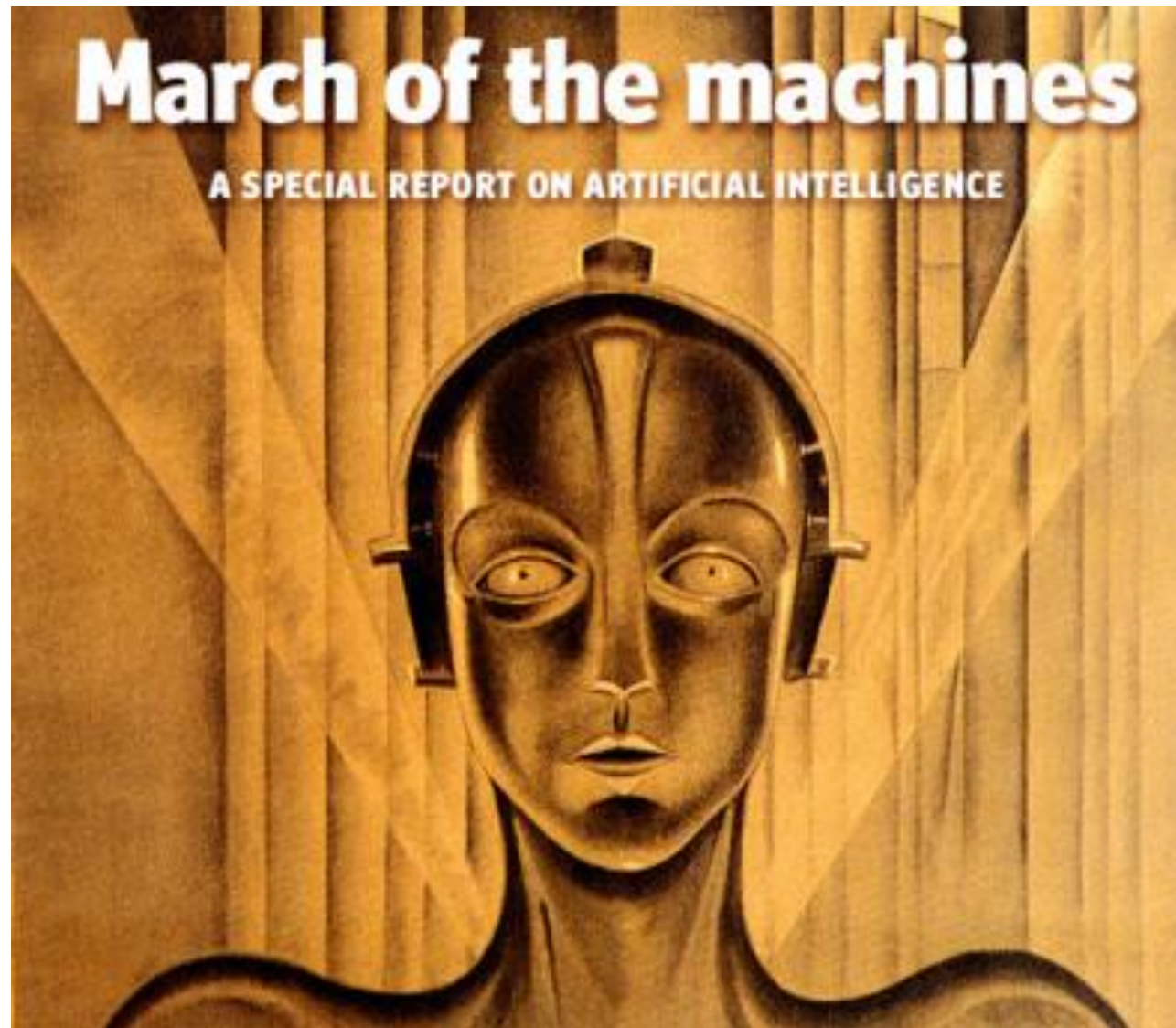
How AI will transform economies, industries and societies

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The Economist Intelligence Unit





The company's mission statement was “solve intelligence”, and then use it to solve everything else

ARTIFICIAL INTELLIGENCE

A program that can sense, reason, act, and adapt

MACHINE LEARNING

Algorithms whose performance improve as they are exposed to more data over time

DEEP LEARNING

Subset of machine learning in which multilayered neural networks learn from vast amounts of data



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Preparing for disruption Technological Readiness Ranking

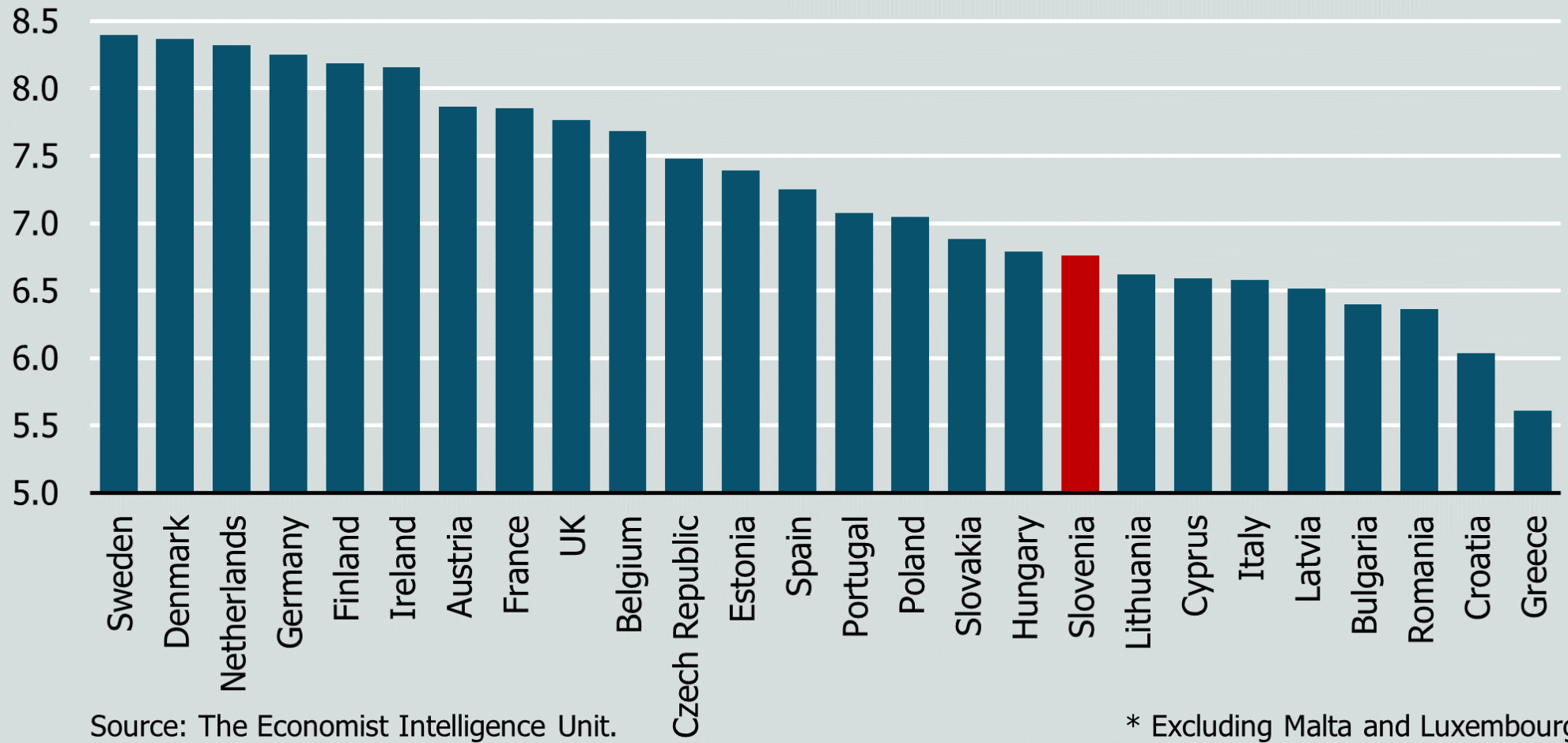
A report by The Economist Intelligence Unit



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Business environment ranking

(scores out of 10, EU member states*)

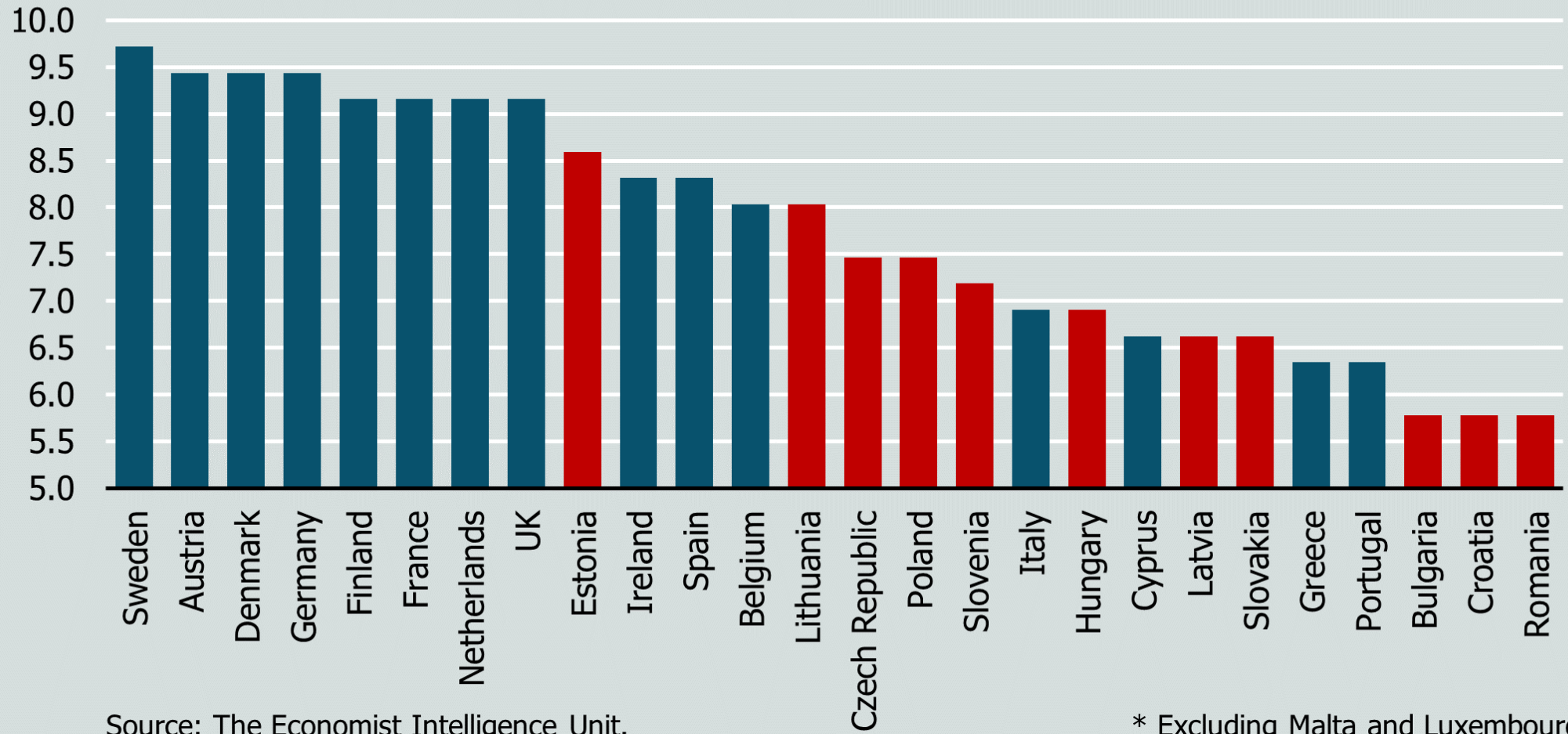


Source: The Economist Intelligence Unit.

* Excluding Malta and Luxembourg

Technological readiness ranking

(scores out of 10, EU member states*)



Source: The Economist Intelligence Unit.

* Excluding Malta and Luxembourg

Top 10 clusters of inventive activity

(ranked by international patent filings)

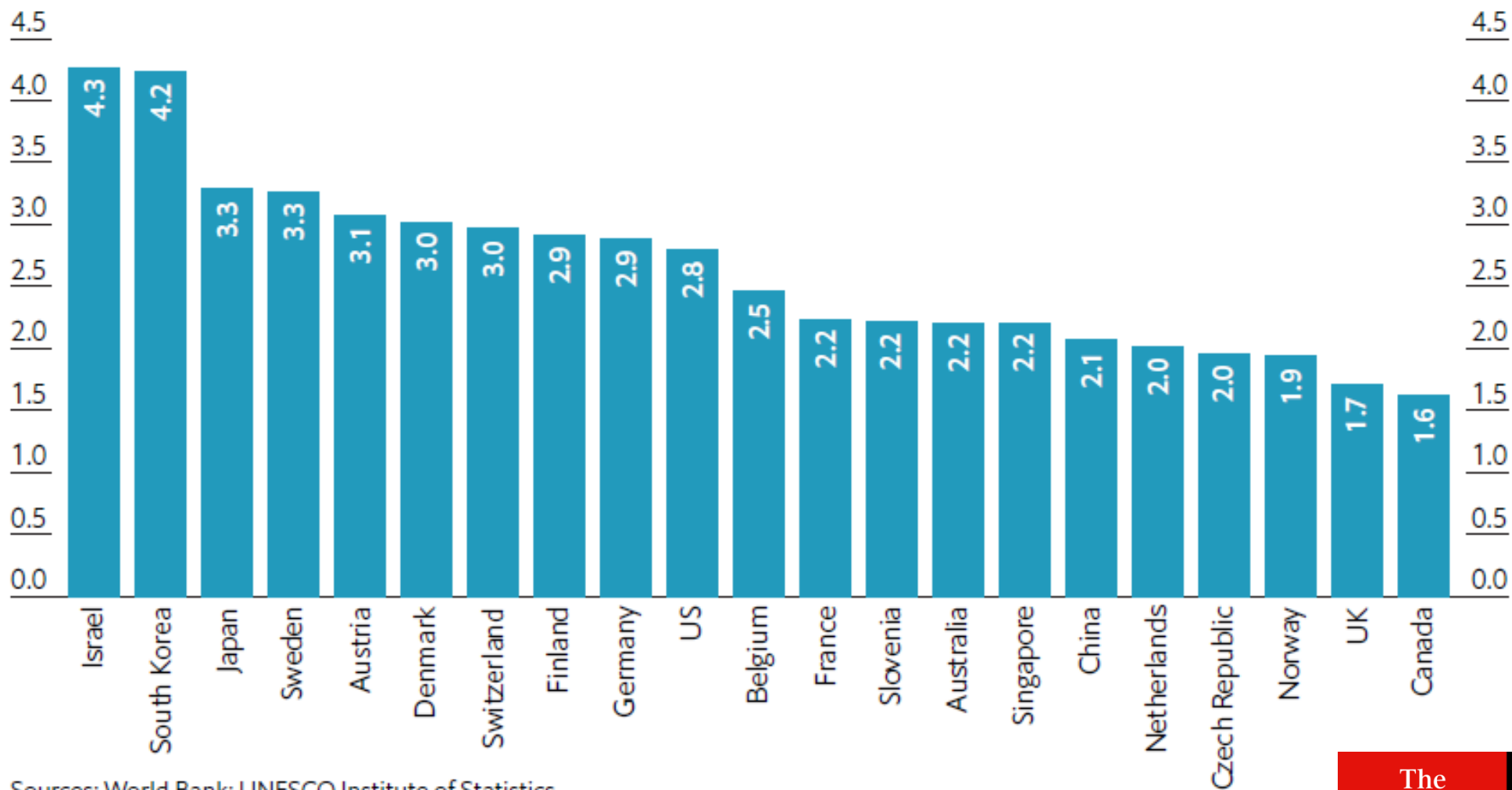
City or city cluster	Country	Largest inventor	Main technological field	Main co-inventing cluster	Ranking
Tokyo-Yokohama	Japan	Mitsubishi Electric	Electric machinery	Osaka-Kobe-Kyoto	1
Shenzen-Hong Kong	China-Hong Kong	ZTE Corporation	Digital communication	Beijing	2
San Jose-San Francisco, CA	US	Google	Computer technology	Portland, OR	3
Seoul	South Korea	LG Electronics	Digital communication	Daejeon	4
Osaka-Kobe-Kyoto	Japan	Murata Manufacturing	Electric machinery	Tokyo-Yokohama	5
San Diego, CA	US	Qualcomm	Digital communication	San Jose-San Francisco, CA	6
Beijing	China	BOE Technology Group	Digital communication	San Jose-San Francisco, CA	7
Boston-Cambridge, MA	US	MIT	Pharmaceuticals	San Jose-San Francisco, CA	8
Nagoya	Japan	Toyota	Transport	Tokyo-Yokohama	9
Paris	France	L'Oréal	Transport	Lyon	10

Note: 2011-15 data for patent filings through the Patent Co-operation Treaty (PCT) system. Main co-inventing cluster is defined as the cluster accounting for the largest share of external co-inventors within the top 100 clusters.

Source: World Intellectual Property Organisation.

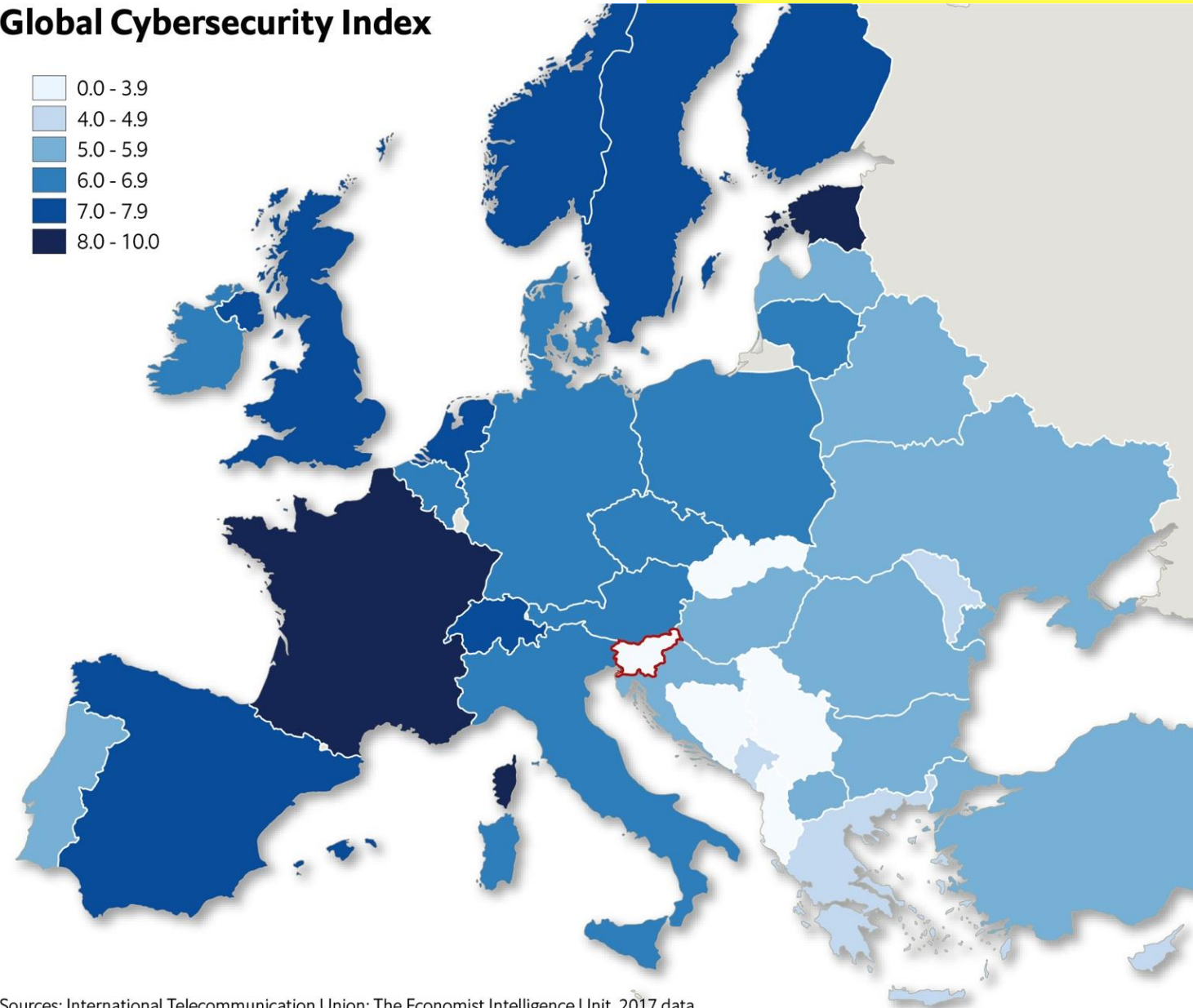
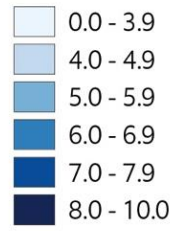
R&D spending

(% of GDP; top 20 countries; 2015)

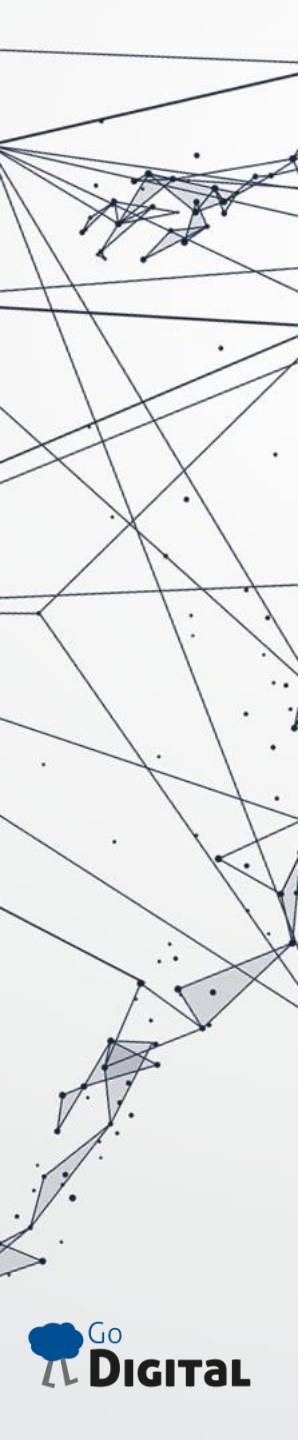


Sources: World Bank; UNESCO Institute of Statistics.

Global Cybersecurity Index



Sources: International Telecommunication Union; The Economist Intelligence Unit. 2017 data.

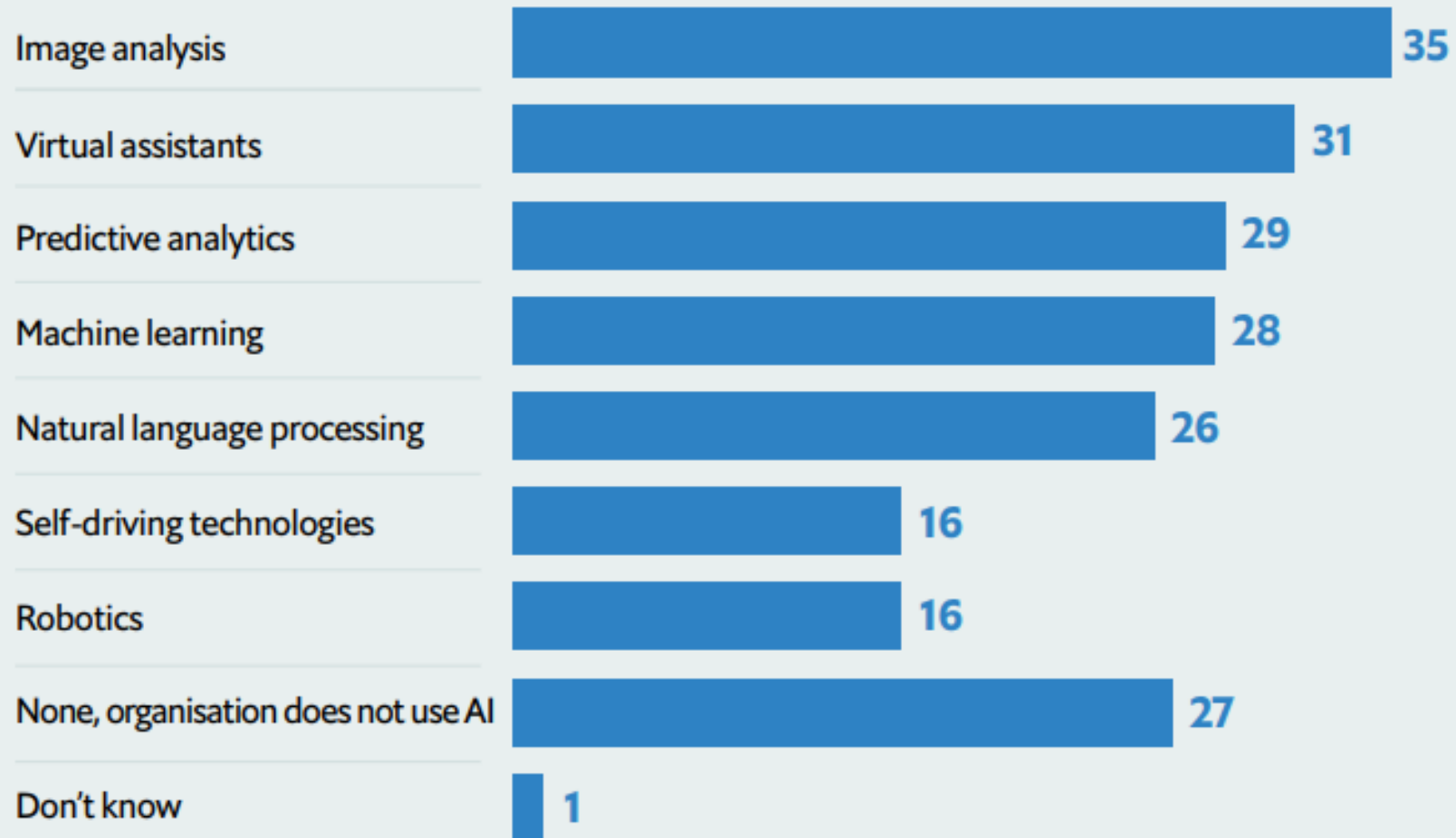


“AI and machine learning are important aspects of a wider trend of digitalisation that promises nothing less than a fourth industrial revolution. I’m a pragmatist at heart, so I don’t make that claim lightly. The innovation opportunity is huge and with it will come productivity and prosperity, if it’s handled right.”

Juergen Maier, CEO of Siemens UK

Figure 3: Most frequently used AI technologies today

% of respondents



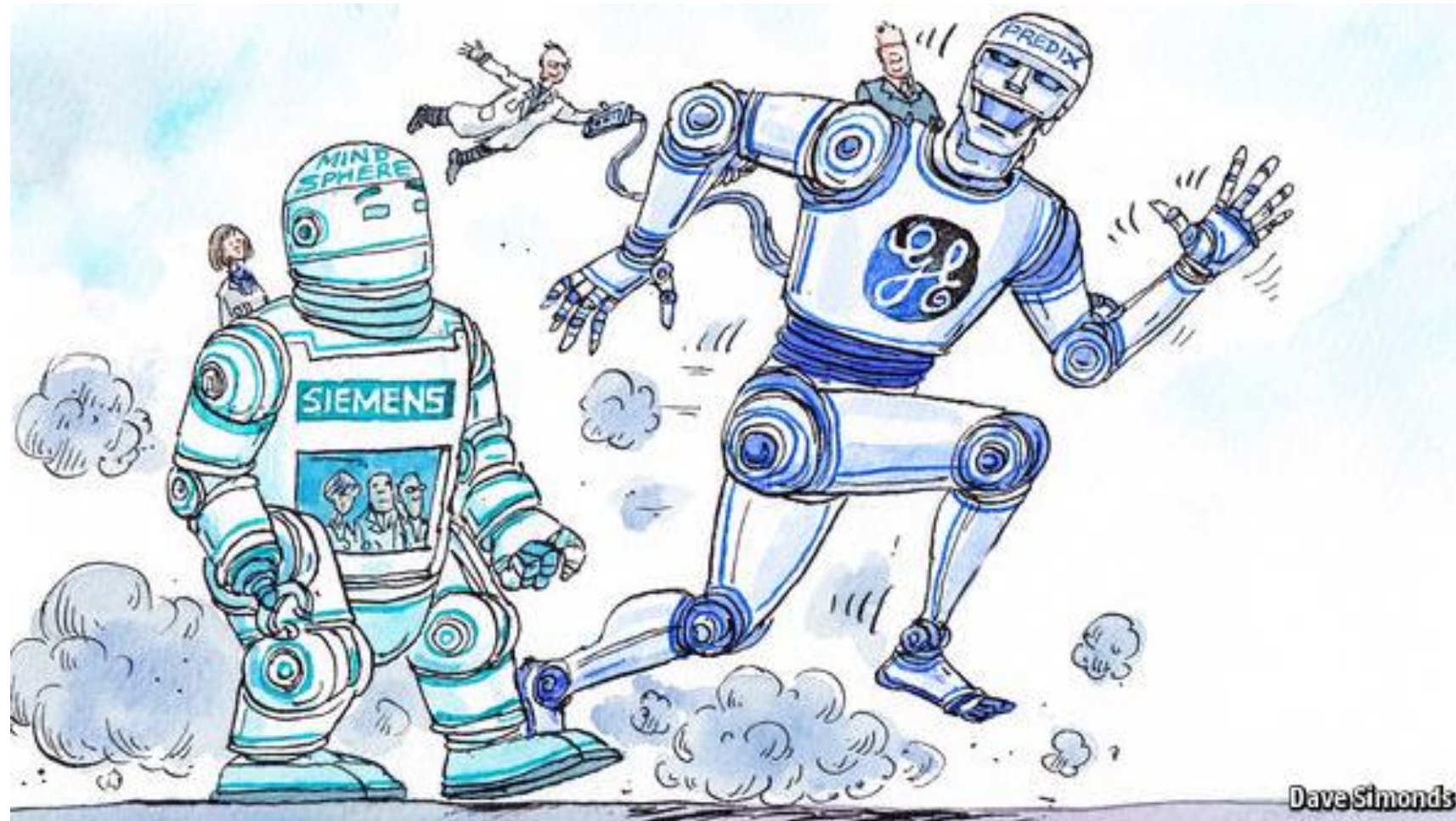


Figure 5: Top three AI use cases by industry

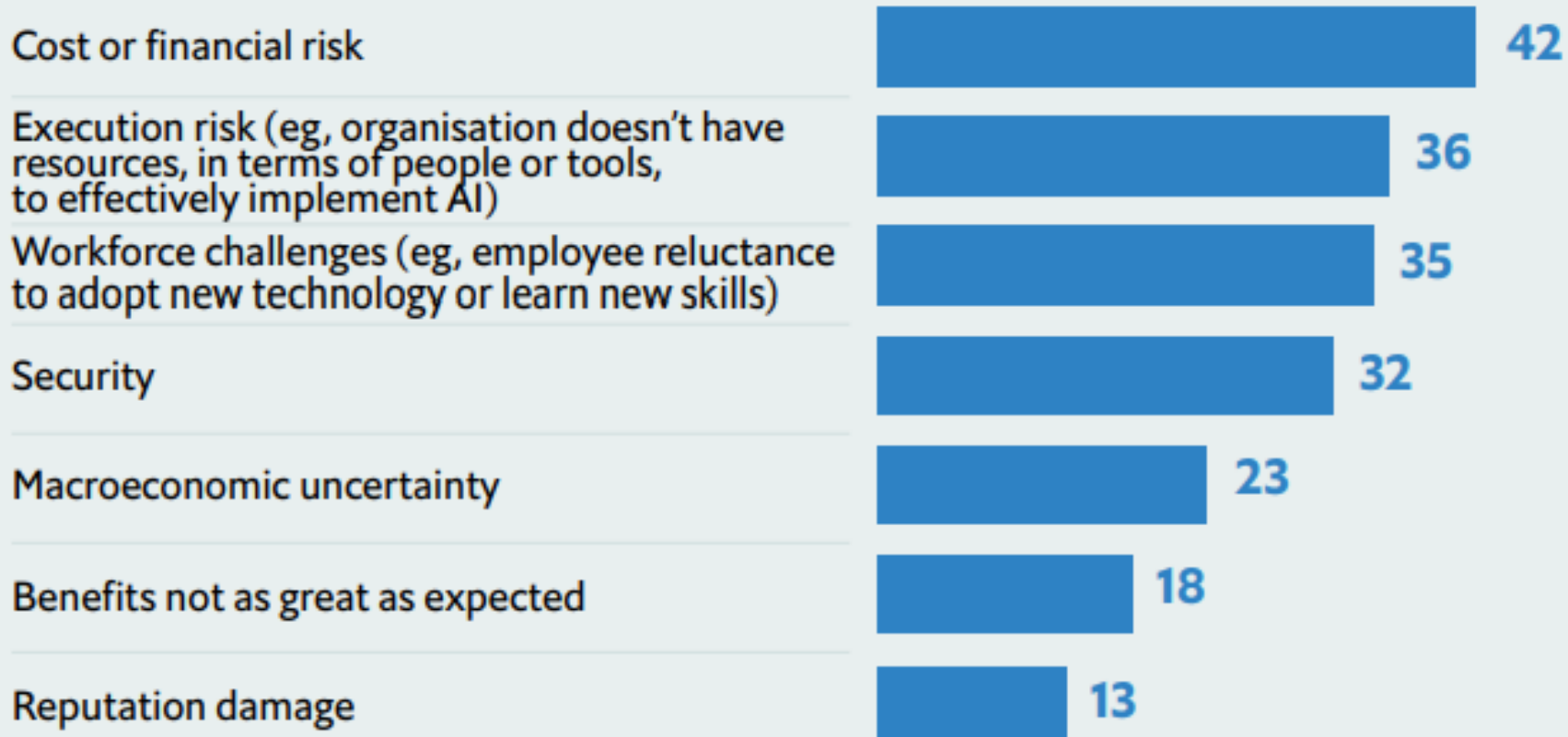
% of respondents

- Highest scoring answer
- Second-highest scoring answer
- Third-highest scoring answer

	Financial services	Government/ Public sector	Healthcare & life sciences	Manufacturing	Retail
Predictive analytics	30	22		28	33
Real-time operations management	26	22		26	22
Risk management and analytics		22	23		
Customer services					31
R&D				30	
Fraud detection	25				
Social engagement			21		
Knowledge creation			21		

“Every advancing wave of technology or successful industrial revolution tends to create a commoditisation of past roles. This leaves workers with more freedom to use human intelligence in emerging roles. So while some roles and tasks will be replaced by AI, others will emerge.”

Mr Rangaswami, chief data officer, Deutsche Bank

Figure 6: Risks to adopting or increasing use of AI*% of respondents*



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RISKS AND REWARDS

Scenarios around the economic impact of machine learning

A report from The Economist Intelligence Unit



Commissioned by Google

The Economist INTELLIGENCE UNIT

Scenario #1: Greater human productivity through upskilling

Scenario #2: Greater investment in technology and access to open source data

Scenario #3: Insufficient policy support for structural changes in the economy

$$\ln Y = \alpha + \beta \ln K + \rho \ln (a * H + M)$$

Where:

Y is output (GDP)

a is the human productivity advantage

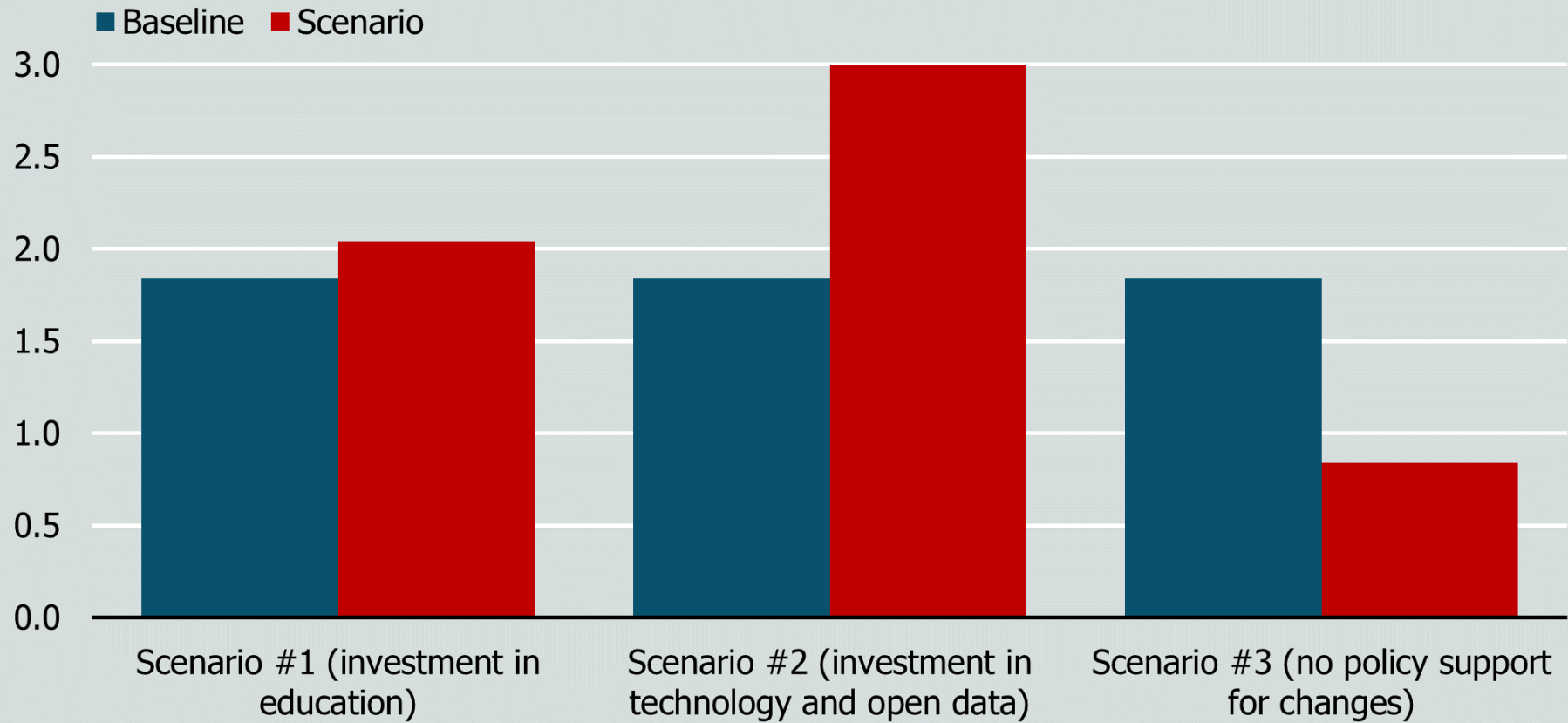
β and ρ is are the output elasticities of capital and labour, respectively

K is other forms of capital such as plants and human capital

H is human labour

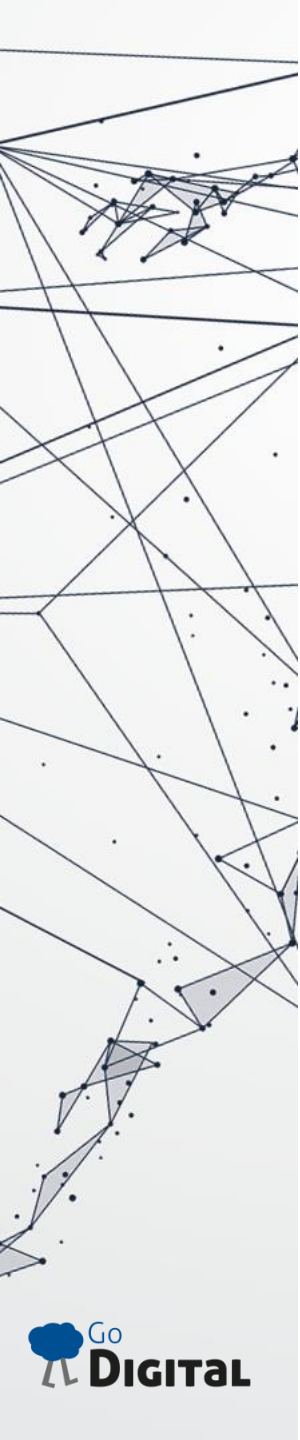
M is computer capital

Compound annual US GDP growth rate out to 2030

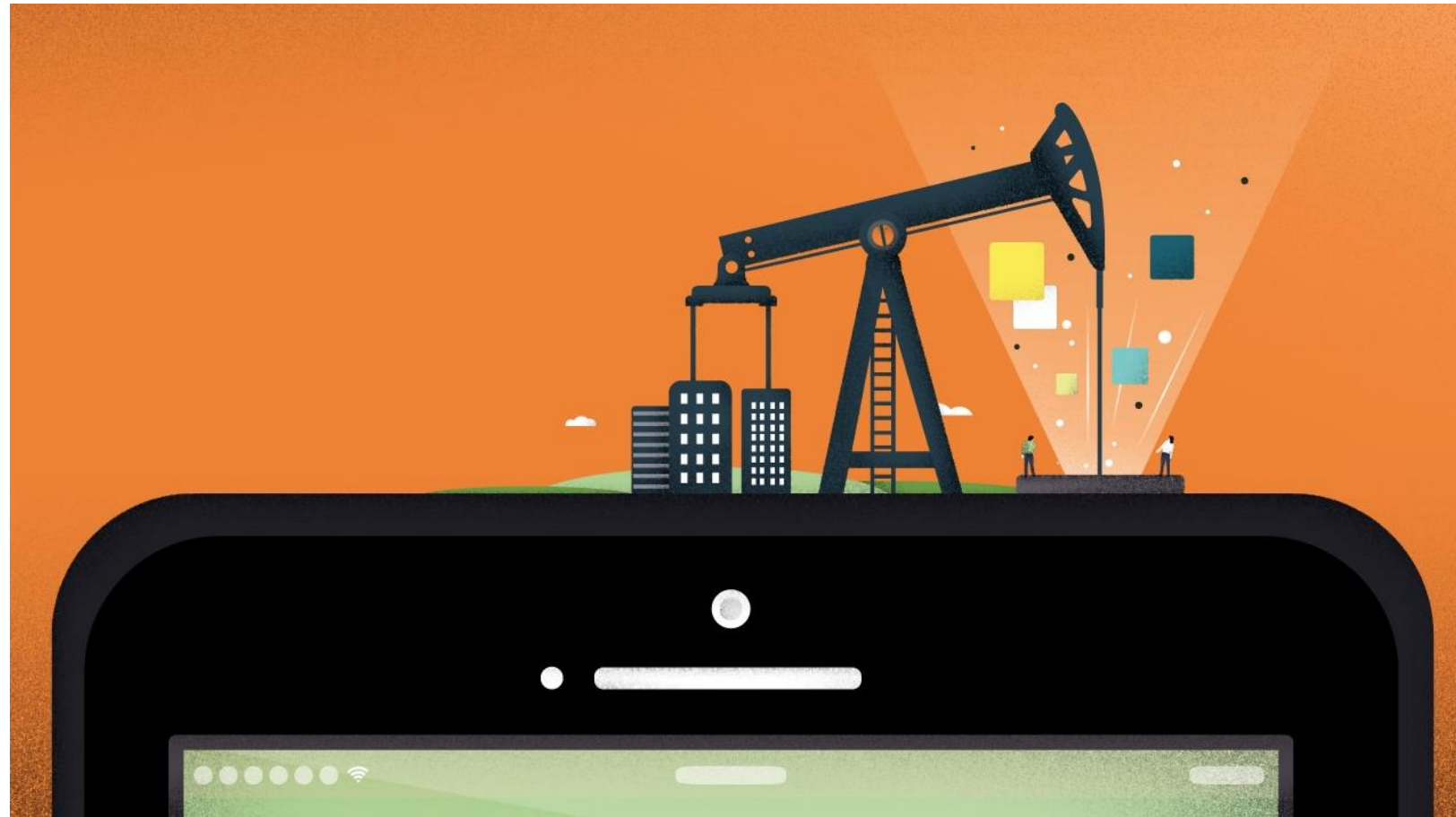


Source: The Economist Intelligence Unit.

Scenario #1: Greater human productivity through upskilling



Scenario #2: Greater investment in technology and access to open source data



**Scenario #3: Insufficient policy support
for structural changes in the economy**

**Anything you can do,
AI can do better**

