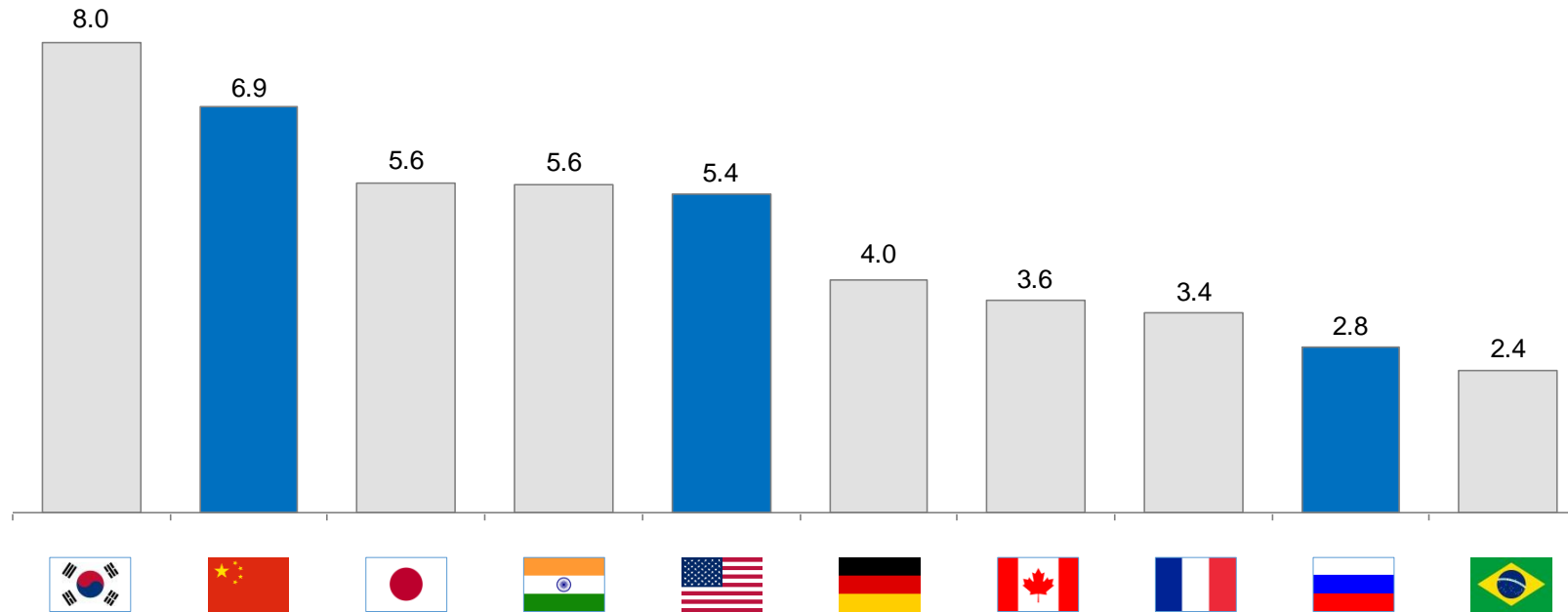


# **Future of work. E-Governance.**

Natalia Milovantseva, PhD  
28.02.2018

# A glance at world's e-GDP

2016 eGDP share (% of national total)

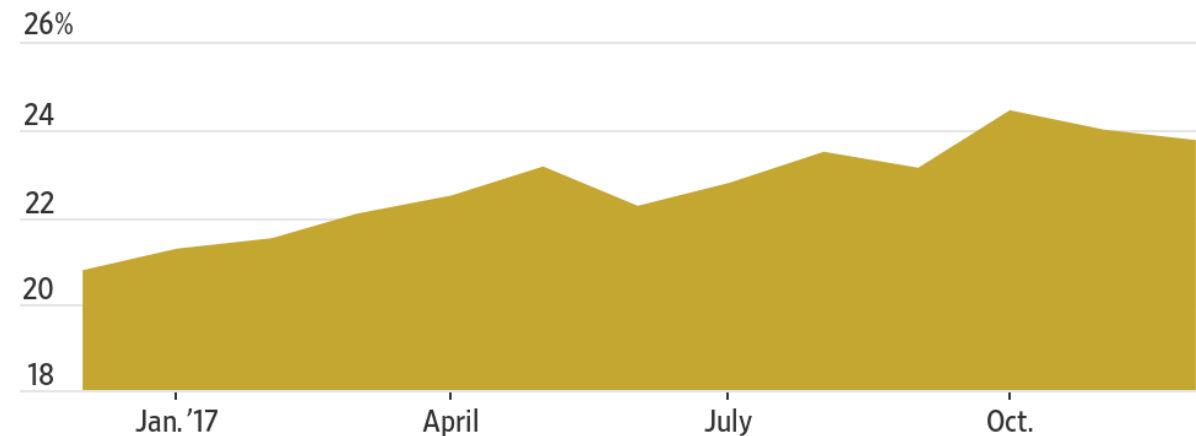


- eGDP, proposed by BCG, calculates digital/internet-related expenditure in private consumption, investment, government expenditure, net export
- Excluding ICT products export, China ranks 1<sup>st</sup> (6.4%), S. Korea ranks 3<sup>rd</sup> (5.8)

# US vs Chinese tech companies, 2017

## Tech-Tonic Shift

The tech sector's big rise in 2017 has grown its share of the S&P 500's market value .



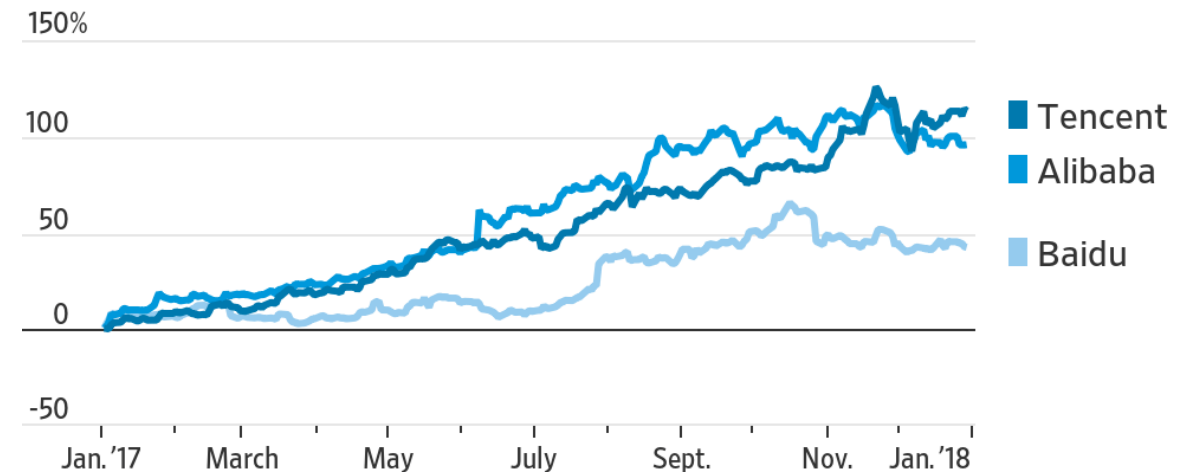
Note: As of Dec. 28

Source: S&P Dow Jones Indices

THE WALL STREET JOURNAL

## Forget FANG

Hot Chinese tech stocks have had an exceptional year.



Note: Tencent priced in Hong Kong dollars

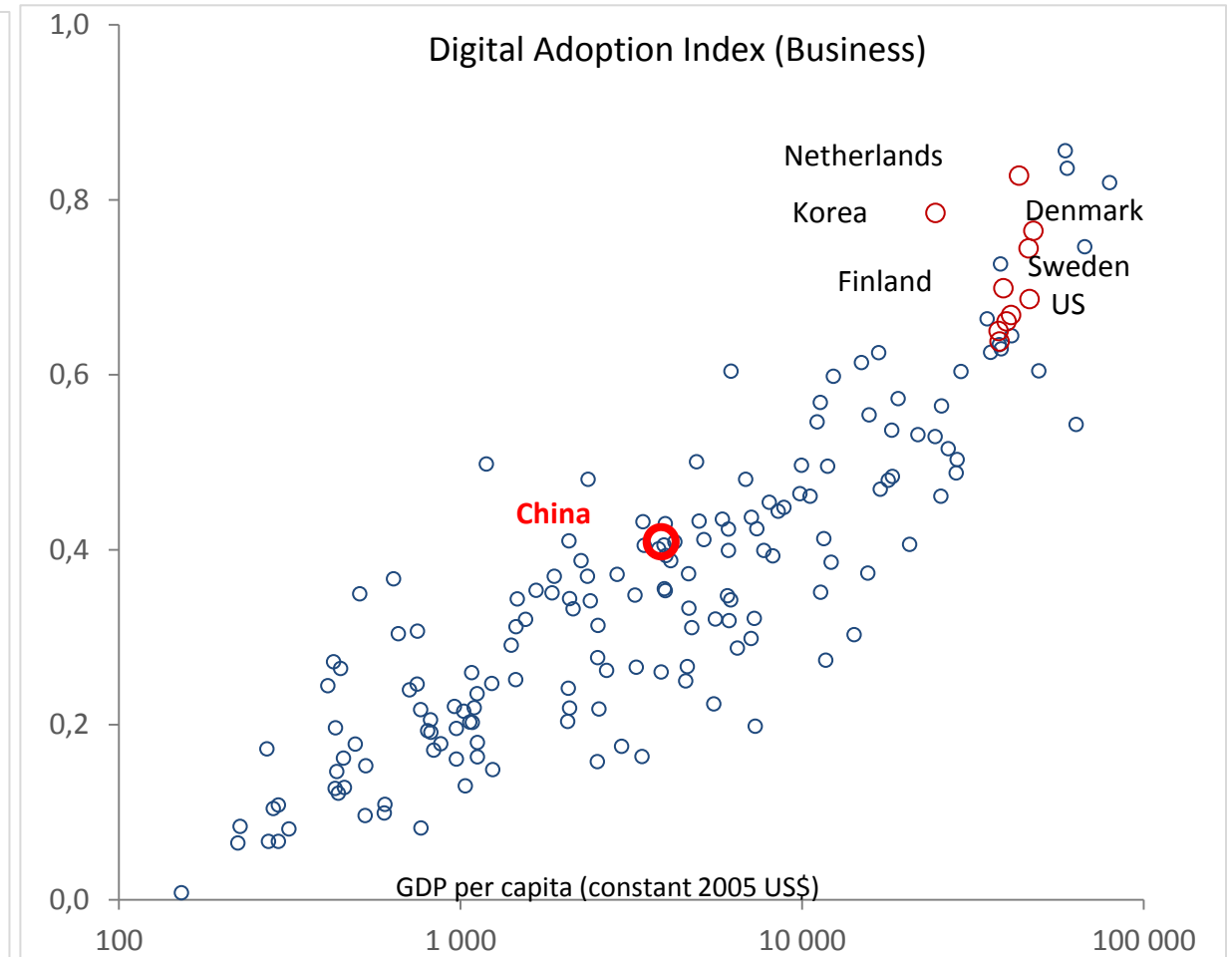
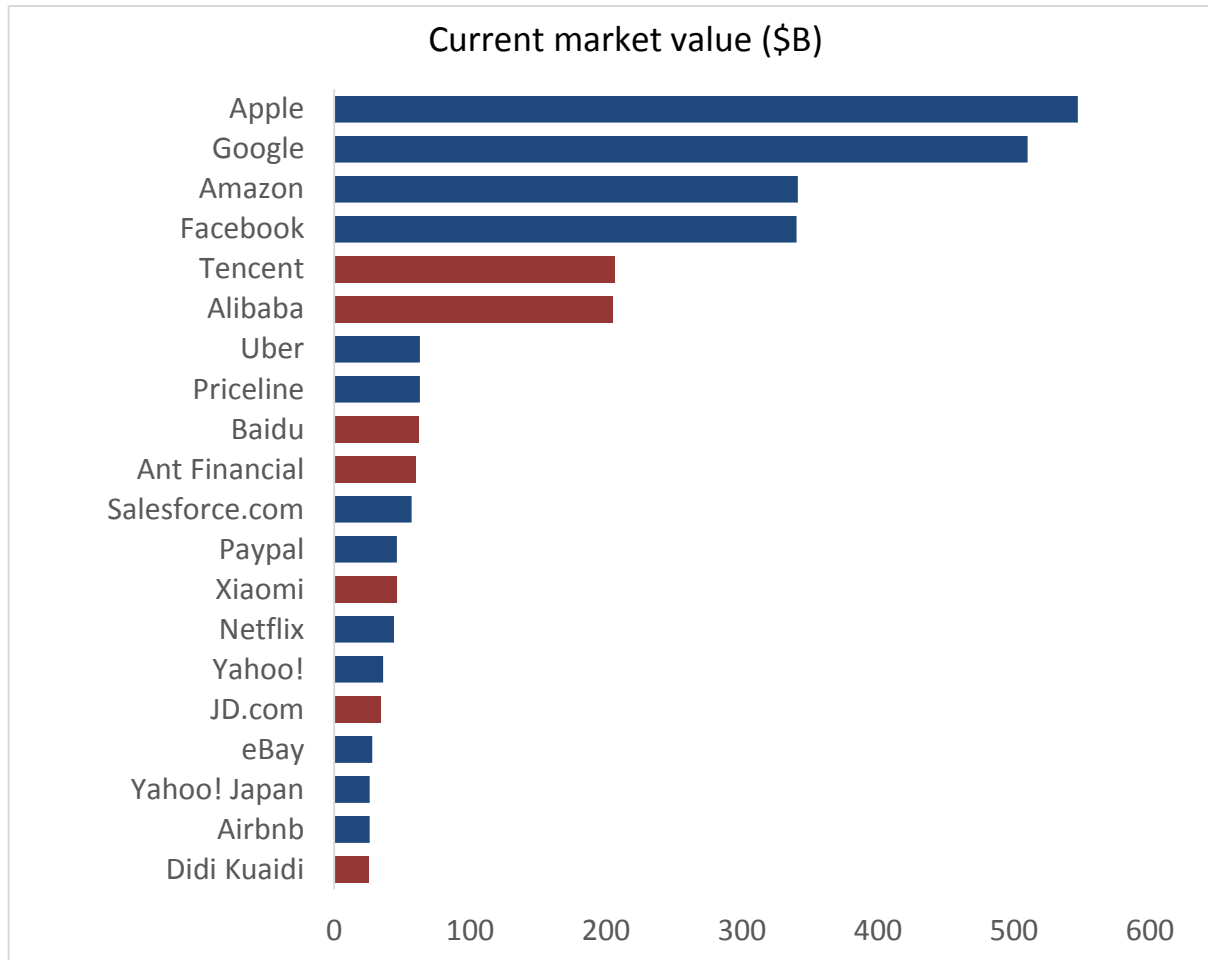
Source: FactSet

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FANG: Facebook, Amazon, Netflix, Google

# Dominant digital platforms: top 4 of the global internet market leaders are American; 7 of top 20 are Chinese...

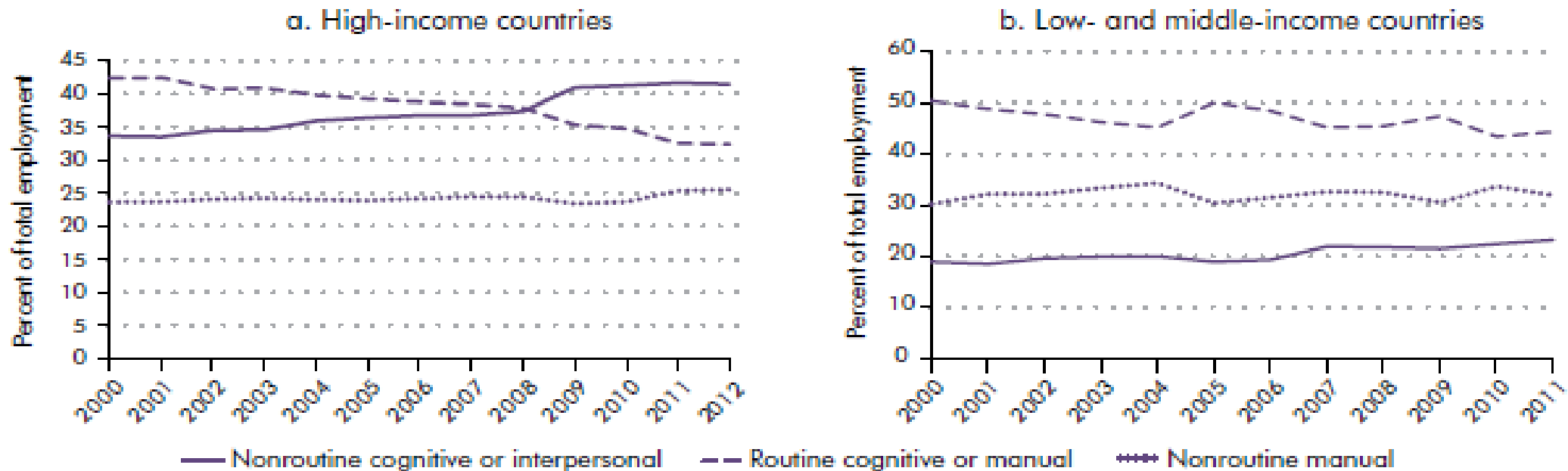
.... yet overall digital adoption by businesses has been significantly low



# Employment requiring non-routine skills becoming more important

**Figure 2.17 Nonroutine skills are becoming more important over time**

Employment composition by type of occupation according to skills requirements, 2000–12

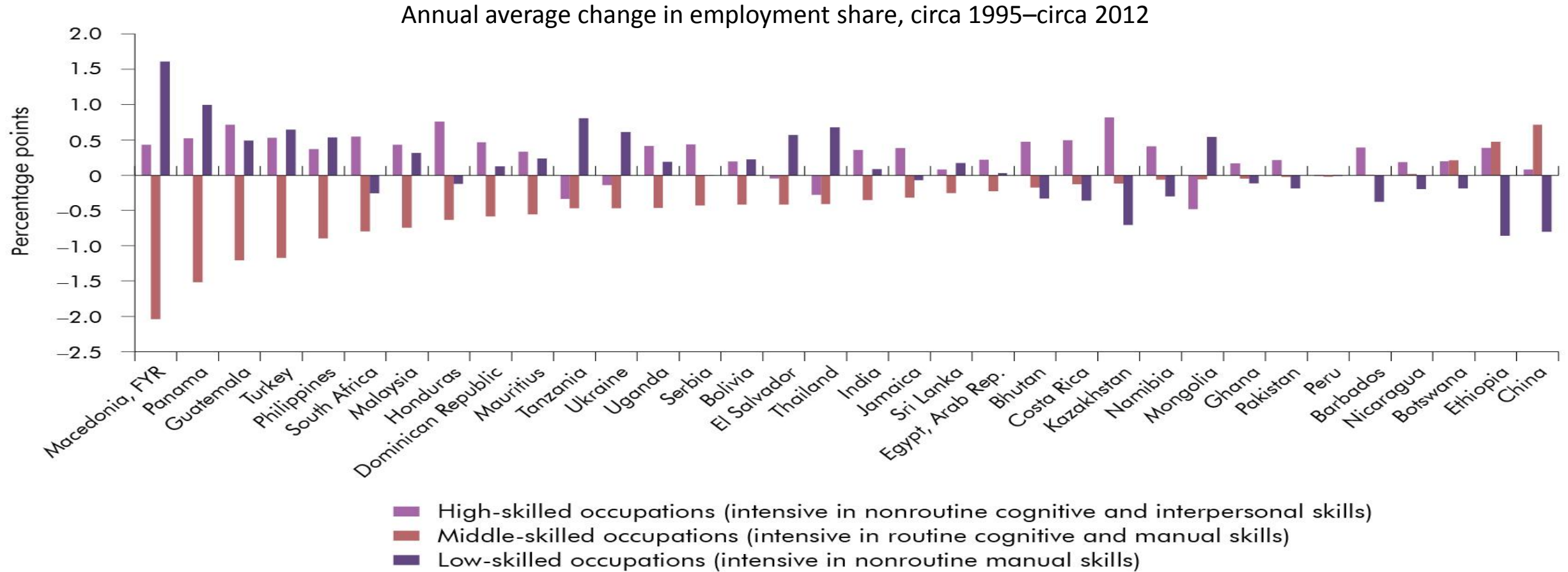


Source: WDR 2016 team, based on ILO Laborsta (various years). Data at [http://bit.do/WDR2016-Fig2\\_17](http://bit.do/WDR2016-Fig2_17).

Note: Data are simple cross-country averages. Classification of occupations according to skills requirements follows Autor 2014 and reflects the types of skills most intensely used in each occupation.

# Automation without SKILLS

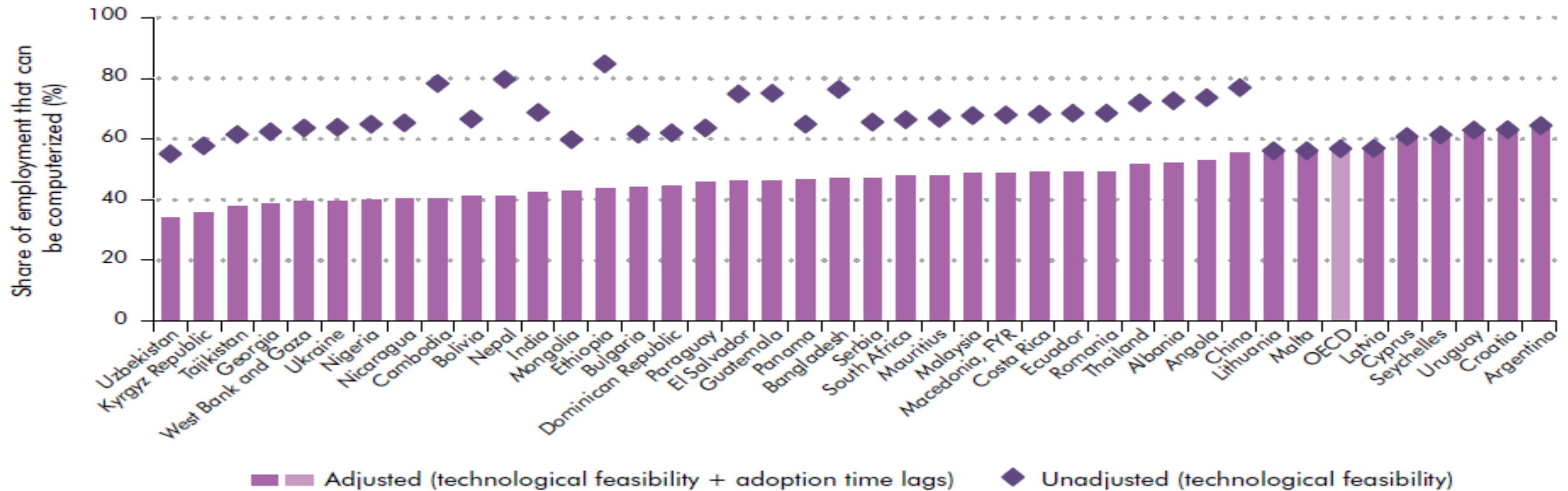
→ *polarized labor markets and greater inequality*



# Automation without **SKILLS**

→ risks of polarized labor markets and greater inequality

Estimated share of employment that is susceptible to automation, latest year



# Future of work – skills

Area	Entry level jobs	Intermediate level jobs	Expert level jobs
<b>Information</b>	<ul style="list-style-type: none"><li>• Finding, evaluating, organizing, and using content</li></ul>	<ul style="list-style-type: none"><li>• Understanding the need for information</li><li>• Identifying what type of information is needed</li></ul>	<ul style="list-style-type: none"><li>• Synthesizing, creating information</li></ul>
<b>Computer</b>	<ul style="list-style-type: none"><li>• Competence in using hardware and software tools</li><li>• Understanding access controls</li><li>• Ability to publish and communicate using available tools</li><li>• Using spreadsheets and word-processors</li></ul>	<ul style="list-style-type: none"><li>• Using IT tools for research and scholarship</li></ul>	<ul style="list-style-type: none"><li>• Ability to evaluate the benefits of new technologies</li></ul>



# Future of work – skills, cont.

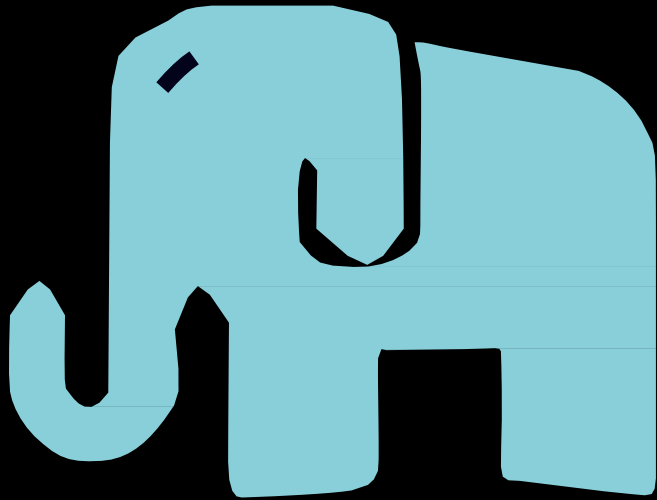
Area	Entry level jobs	Intermediate level jobs	Expert level jobs
<b>Media</b>	<ul style="list-style-type: none"><li>• Access, navigating and edit text, sound, image and video media</li><li>• Communicate via media platforms</li></ul>	<ul style="list-style-type: none"><li>• Understanding graphic design principles, the combination of visuals and text, the use of sound</li><li>• The nature of web authorship</li></ul>	<ul style="list-style-type: none"><li>• Critical analysis and evaluation of mass media</li><li>• Production of multi-media content</li><li>• Integrating and comprehending sensory experiences</li></ul>
<b>Communication</b>	<ul style="list-style-type: none"><li>• Using and constructing hyperlinks between documents and/or images, sounds, movies, semiotic languages used in email, online chat space or in instant messaging</li></ul>	<ul style="list-style-type: none"><li>• Producing ‘non-linear’ texts, navigating three-dimensional worlds online and so on</li></ul>	<ul style="list-style-type: none"><li>• Ability to critically analyze and evaluate ‘non-linear’ texts and three-dimensional worlds online</li></ul>

# Future of work – skills, cont.

Area	Entry level jobs	Intermediate level jobs	Expert level jobs
<b>Technology</b>	<ul style="list-style-type: none"><li>• Ability to use technology within life situations</li></ul>	<ul style="list-style-type: none"><li>• Communicating and negotiating meaningful content through the medium of encoded texts within contexts of participation</li></ul>	<ul style="list-style-type: none"><li>• Ability to adapt, <b>invent</b>, and evaluate technology to positively affect his or her life, community, and environment</li></ul>

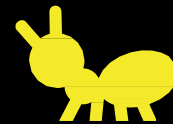
# Digital economy empowers MSMEs to compete with large companies

An MSME cannot compete with a large company

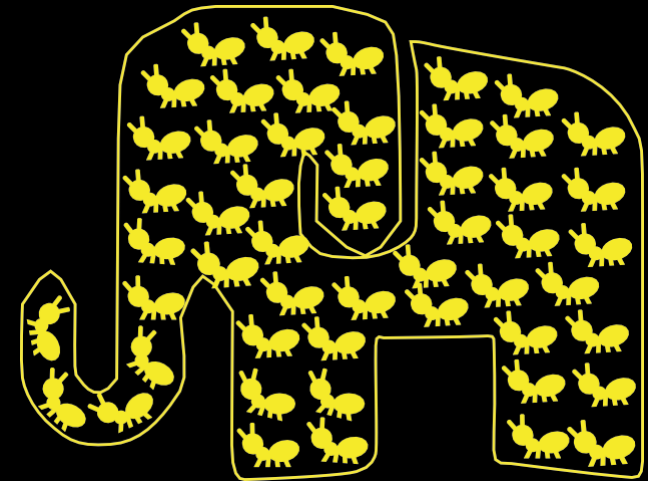


Large company

E-commerce platform empowers MSMEs with technology, trading rules, data, access to value chain, etc. and provides the level playing field with large companies



MSME

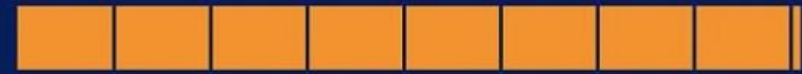


MSMEs on a platform

# Main Areas of AI Use

Forecasted global revenue from AI by type of use (millions of US dollars)

Image recognition and classification



8,097.9

Improvement of algorithmic trading strategies



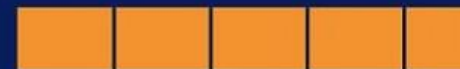
7,540.5

Scalable and efficient data processing



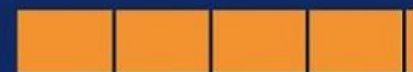
7,366.4

Predictive maintenance



4,680.3

Object identification, detection, tracking



4,201.0

# Impact of AI on industries: Transformation of retail

- Advent of powerful new digital technologies
- Demands of consumers empowered by small and fast devices (laptops, tablets, mobile phones)
- Key trend, driven by technology
  - use of technology to understand rapidly shifting attitudes and sentiments of highly informed buyers
    - example: >50% of Amazon's sales result from suggestions arising from its highly sophisticated recommendation engines
    - traditional retailers and their supply chains are under pressure to change

# Future of work in retail

- Help businesses use *predictive analytics to build customer-focused, competitive sales strategies*
- Using deep learning to help working on retailers' *pricing strategy*
- Innovative structure of databases to provide real-time analysis of transactional data of sales
  - example: running *massive profit optimization calculations* each day to know what products to distribute to what stores

# Future of work in retail: cont.

- Fashion apps that make shopping for clothes easier
  - Recommendation of a product
  - Find the right-fitting items to provide individualized experience for customers
- Determine what deals to offer and what to advertise
- Apply deep learning to help shop for gifts by learning about the gift-givers and recipients and *combining that with data collected about general user preferences in the market*

# Impact of AI on industries: Financial services

- Fallout from 2008-2009 financial crisis
  - increased risk management requirements
  - significant changes that increase operational costs
- A wave of agile financial technology startups
- Emergence and deployment of AI tools and solutions by large banks and startups



# Future of work in finance

- Voice analytics on call center data
  - train deep learning networks to predict outcomes and allow companies to provide better call center service
- Tackling complex data security challenges
- Taking telephone calls and converting them into text by using advanced speech recognition
- Using AI algorithms for portfolio management and optimization and risk management

# Telecommunications

- Demand for more connectedness
  - smart homes: lighting, security, entertainment
  - connected cars
  - smart cities: parking, street lighting, security, transportation, wide variety of public services partnering with various
  - partnering with businesses and public utilities to offer new services
- Telcos' opportunities are in data analytics, innovation, and research groups

# E-Governance

## Existing services

E-Governance

E-Tax

Digital ID

I-Voting

Public safety

Blockchain

E-Health

E-residency

## Developing services

New digital nation

Cyber security

Data embassy

Intelligent transportation

Reporting 3.0

Cross-border data exchange

Healthcare 4.0

Digital transformation in education

Real-time economy

Industry 4.0





- E-Governance
  - Citizens can select e-solutions among a range of public services at a time and place convenient to them
  - 99% of public services are now available to citizens as e-services
  - In most cases there is no need to physically attend the agency providing the service
- E-Tax
  - electronic tax claims
  - ~95% of all tax declarations in Estonia are filed electronically

# E-Governance: cont.

- X-Road
  - Various e-service databases, both in the public and private sector, link up and operate
  - No centralized or master database – all information is held in a distributed data system and can be exchanged instantly upon request, providing access 24/7
- Digital ID
  - mandatory national card with a chip that carries embedded files and uses public key encryption
  - functions as definitive proof of ID in an electronic environment
  - provides digital access to all secure e-services
    - makes daily tasks faster and more comfortable: banking, business operations, signing documents, obtaining a digital medical prescription

# E-Governance: cont.

- I-Voting
  - allows citizens to vote at their convenience, no matter how far they are from a polling station
  - the ballot can be cast from any internet-connected computer anywhere in the world
  - works when the majority of residents have a unique secure digital identification provided by the state
- Public safety
  - use of IT tools in the security services (e-Police, rescue board, emergency center)
  - allows remotely determine 35% of the locations of accident victims to within a 5-metre radius
  - 93% of emergency calls are answered within 10 seconds
  - Estonian police are no longer allowed to stop cars for technical checks, as all the relevant data is available using their onboard computer. This has made the police 50 times more efficient

# E-Governance: cont.

- Blockchain
  - used in registries, such as national health, judicial, legislative, security and commercial code systems
- E-Health
  - patients own their health data
  - over 95% of the data generated by hospitals and doctors has been digitized
  - blockchain technology assures the integrity of stored e-medical records and system access logs
  - doctors can access patient's e-records, no matter where they are

# E-Governance: cont.

- E-Residency
  - like citizens and residents of Estonia, e-residents receive a government-issued digital ID and full access to Estonia's public e-services
  - this enables e-residents to establish a EU business
  - they can then use their secure digital identity to manage their company entirely online



# Malaysia's digital free trade

- eFulfilment Hub
  - To help SMEs / businesses in exporting their goods easily, with the help of leading fulfillment service providers
- eServices Platform
  - To efficiently manage cargo clearance and other processes needed for cross-border trade
- Satellite Services Hub
  - To connect SMEs / businesses with leading players who offer services like financing, insurance and other important in cross-border trade



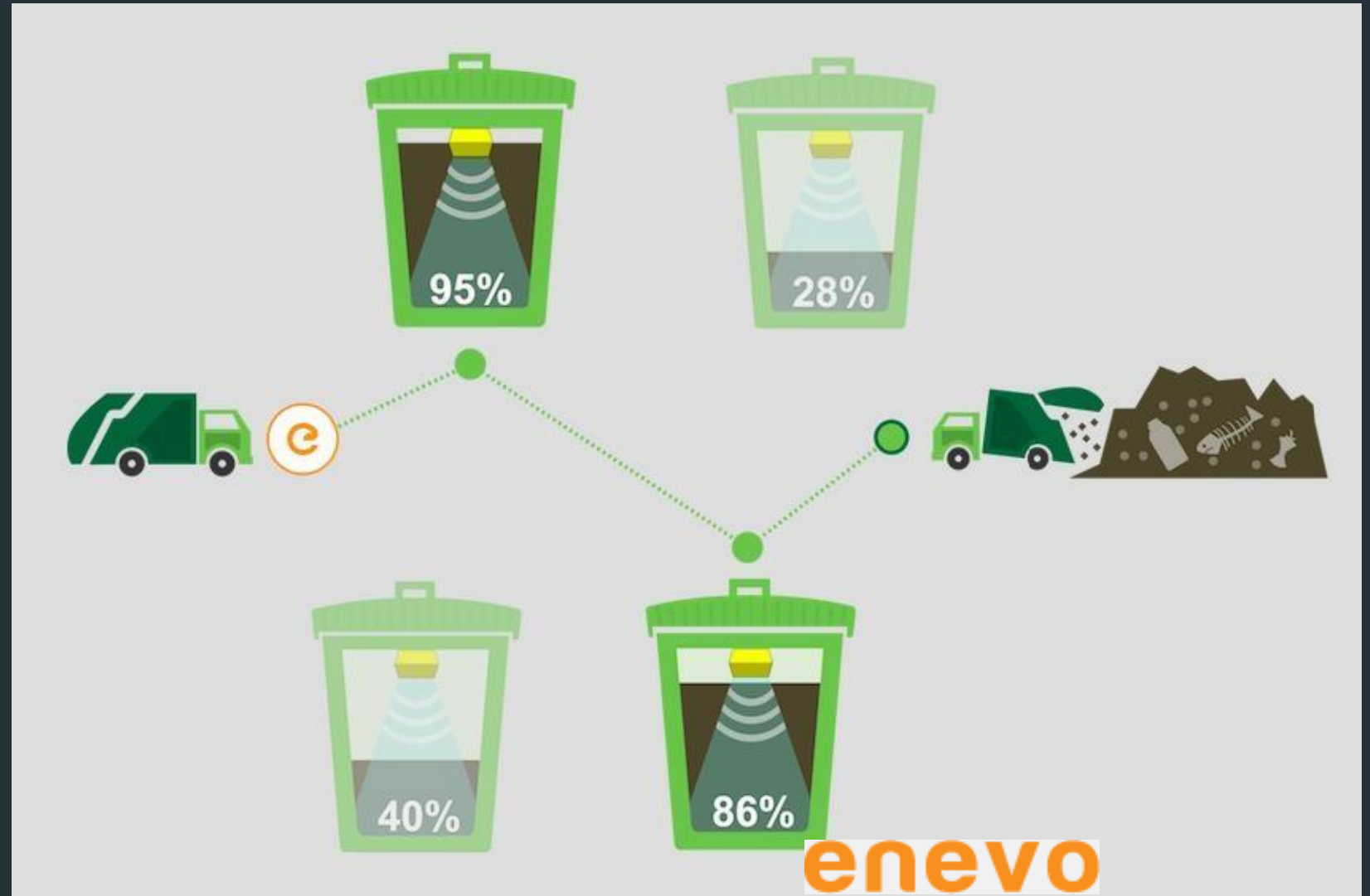
# Local e-governance

E-Sensors for city  
waste collection

Impact:

Regenerative  
resource use

& More efficient  
energy use



# BIG DATA ANALYTICS TO PREDICT REPAIRS



## 135 million data records

For the foundation repair model, data records from the following institutions were selected and processed: **Parteon**, expert building data | **Zaanstad**, foundation data | **KNMI**, weather data | **Kadaster**, property data | **Sky Geo**, subsidence measurements | **ESRI**, sea level data | **Het Waterschap**, water level measurements | **NLextract**, various geographic data

Impact:

**Extend lifecycles**



# DIGITAL PLATFORMS TO EXCHANGE WASTE



**Impact:**  
**Waste as a  
resource**

A screenshot of the CircleMarket website. The header includes the 'CIRCLEMARKET' logo and a 'Sign in' link. The main content area has a colorful background of fabric rolls and features the headline 'A global marketplace for the recovery, reuse and resale of textiles'. Below this is a bulleted list of benefits: finding and trading used and surplus textile materials, eliminating landfill or incineration costs, freeing up factory and warehouse space, and finding trusted partners. To the right of the list are input fields for 'E-mail' and 'Password', and a 'Sign In' button. At the bottom of the main section is a dark banner with the text 'Have a positive impact by transforming waste into a valuable resource!'. Below this is a section titled 'Latest listings' which shows the beginning of a list of items for sale.