Information Economy 37E00100

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Information Systems, Information and Service Management

Key learning outcomes of the course

- Key terminology, concept, and phenomena associated with platforms
  - Network effects
  - Homing and switching costs
  - Types of platforms
  - Growth strategies
  - Dynamics (rapid growth, winner take all)
- Analytical frameworks / reading academic articles
  - The infamous two-by-two matrices
- Writing skills
  - Producing new and interesting text
- Societal aspects of information economy

Content

- IT and its dualities
- Safe deployment of AI
- Article of the day
  - Zuboff, S. (2015), "Big other: surveillance capitalism and the prospects of an information civilization", Journal of Information Technology (2015) 30, 75-89.

IT and its dualities

- Dualities
  1. Automate / informate
  2. Threat propagation / protection
  3. Abundance of information / digital divide
  4. Positive / negative

1. Automate / informate

- Compared to the earlier generations of mechanization and automation designed to deskill jobs and substitute for human labor, information technology (IT) is characterized by a duality:
  - While automating operations (which might lead to deskilling of workforce), IT simultaneously generates information about the underlying processes and provides transparency to activities and thus translates its action into information
  - This is labeled as Informating in Zuboff 1988

Zuboff, Shoshana. *In the age of the smart machine: The future of work and power*. Basic Books, Inc., 1988.

2. Threat propagation / protection

- Information infrastructures and networks and digital objects facilitate propagation of information effectively and efficiently
- While there are numerous benefits to this development, it also means that threats diffuse quickly as well
  - Think of Case Vastaamo, by having the patient records in electronic format, this opened the door for criminals to get that data quickly
- The duality arises when we consider that IT can be used to safeguard information and privacy in a unique way compared to physical settings
  - Again think of Case Vastaamo and how IT can be used to create audit trails of data that would be very difficult to establish in physical settings

Cybercrime vs. protection

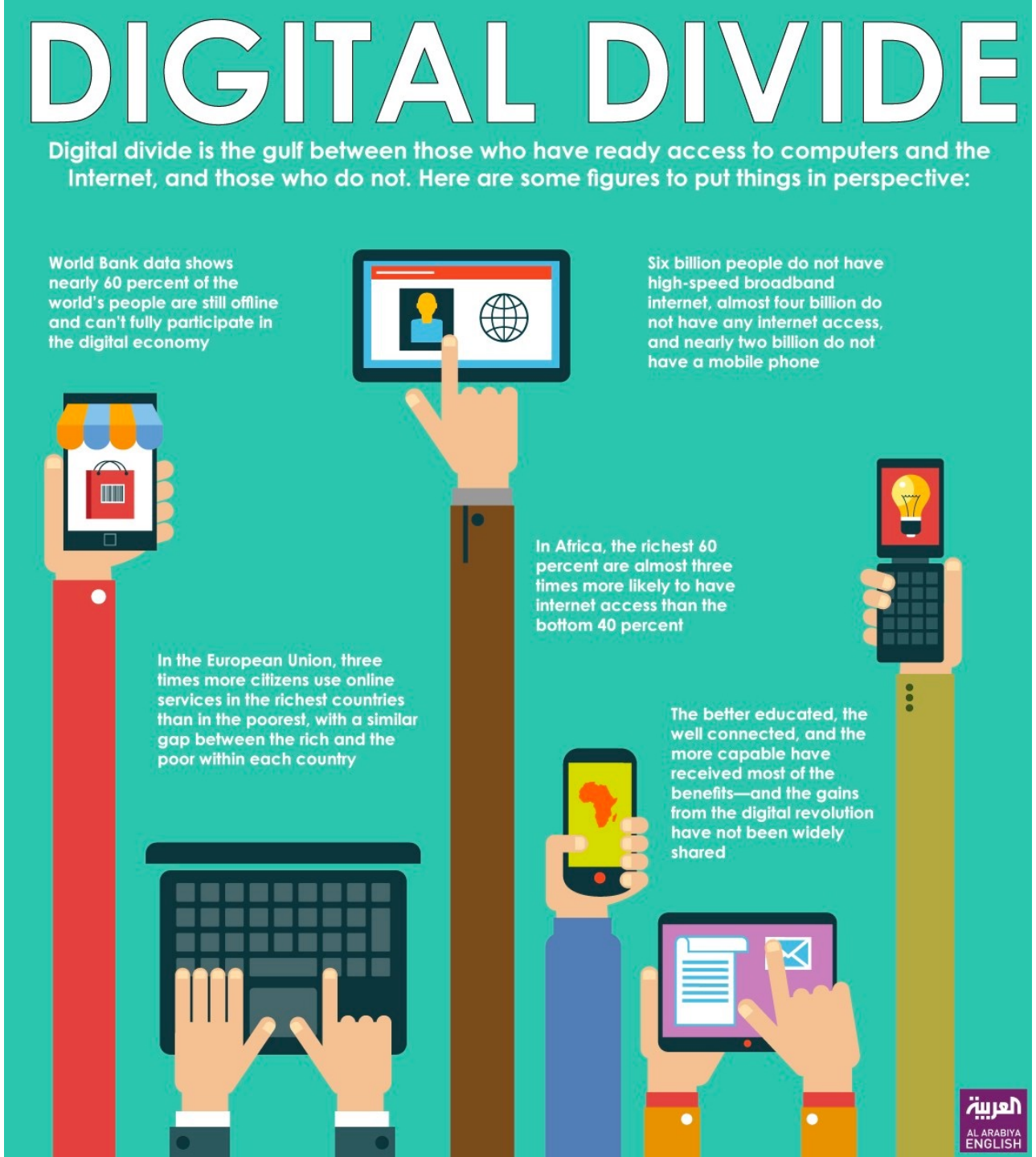
- Cybercrime
  - Identity theft
  - Spam and cyber stalking
  - Infringement of privacy
  - Hacking
  - Cyber warfare
  - Economic espionage
  - Software piracy and other copyright violations
  - Sabotage and extortion by using computer
- Protection
  - Software security
  - Electronic audit trail
  - Transparency of access rights
  - Transparency of government spending
  - Police body cameras

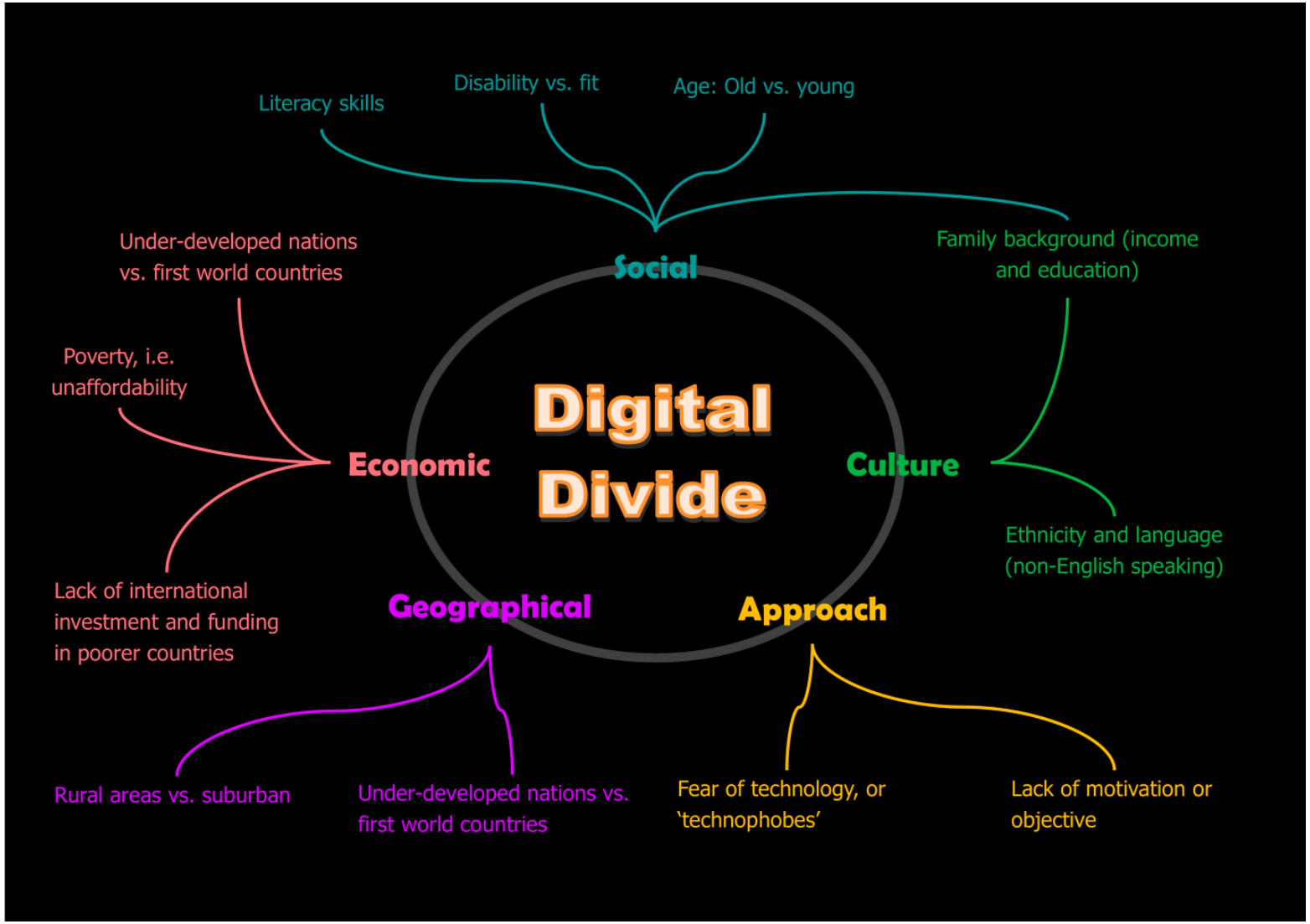
3. Abundance of information / digital divide

- Oversupply of information becoming a problem in many domains and filtering relevant information growing in importance
  - Consider thesis work: in the past it was difficult to find good source articles, today it is difficult to filter the most relevant articles from the abundance of available literature
- Digital divide refers to the fact that still most people do not have access or cannot use these information infrastructures

Digital divide

- The gap between those who have computers with internet access and those who do not, as well as the gap between those who are computer literate and those who are not
- Unavailability of user interface in regional languages across devices
- Unavailability of devices
- Unavailability of internet facility
- Percentage of digital illiterate





https://medium.com/@ShwetaBarupal/digital-divide-a-critical-analysis-7156333237f7

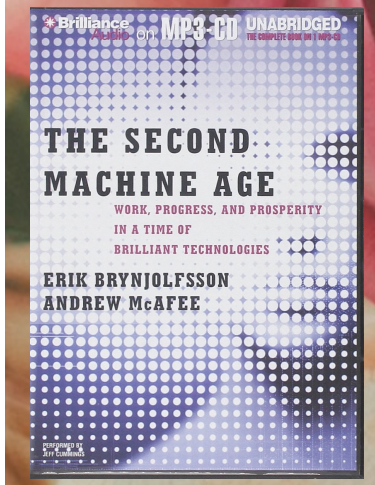
4. Positive / negative

- Positives
  - New / better products and services for consumers
  - New business for incumbents as well as startups
  - Improved efficiencies in government and public services
- Negatives
  - Disrupted work life balance
  - Information overload and technostress
  - IT-related addictions
  - Deceptive computer-mediated communication
  - IT misuse

Amount of manual work decreases – more meaningful work for information workers

Complement

Wonders of Artificial intelligence and Intelligence augmentation



Moore's law (>32)

Technologies are building blocks (3 way matching)

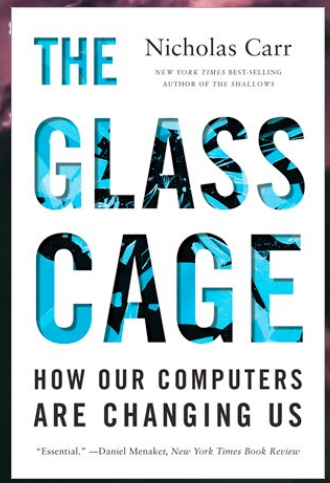
Amount of manual work decreases – jobs are lost

Substitute

Limitations induced by the Frame problem

Navigation

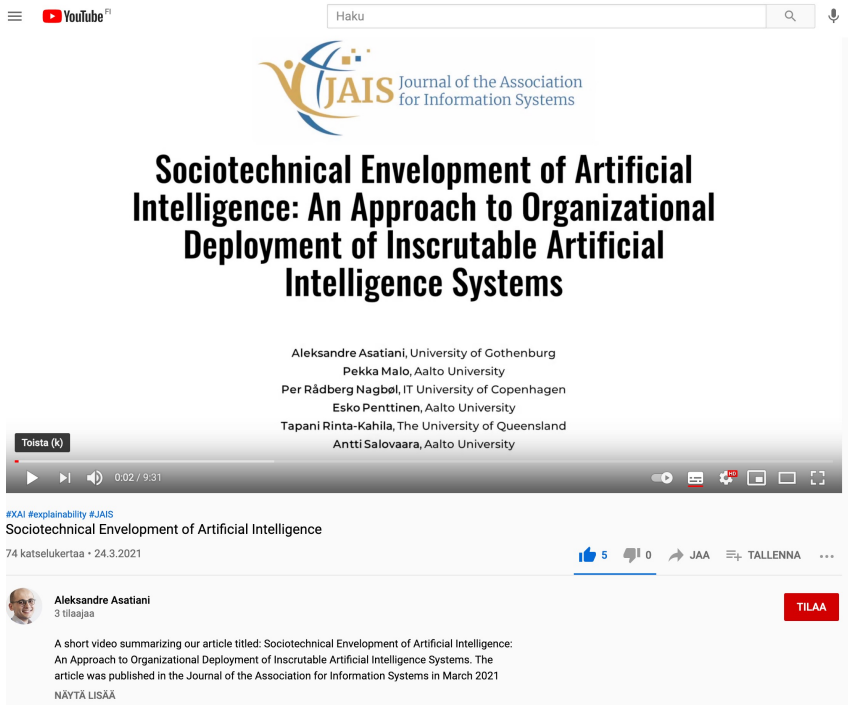
Creativity(3D modeling)



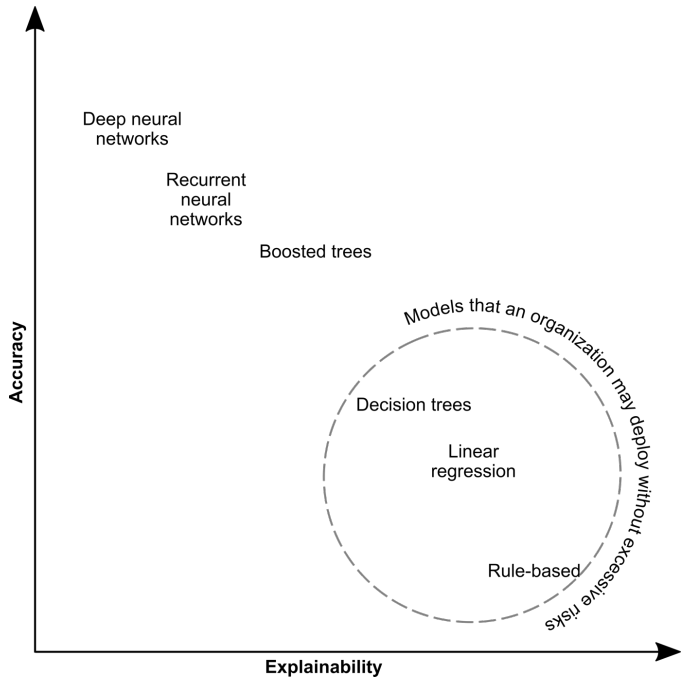
Envelopment of artificial intelligence

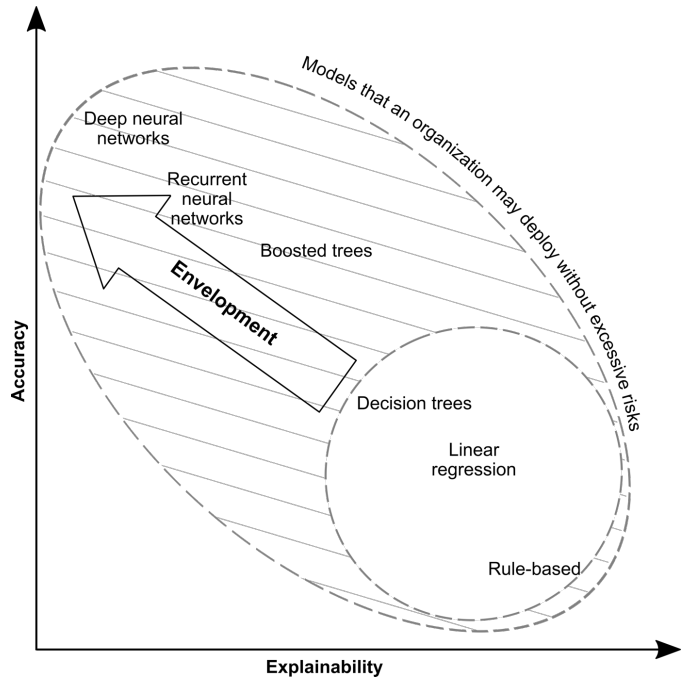
- Many of the drawbacks and inconveniences related to information economy and information society discussed today and in previous lectures can be – at least – partly addressed by the practice of enveloping AI tools

- https://youtu.be/uezESTRkz7A



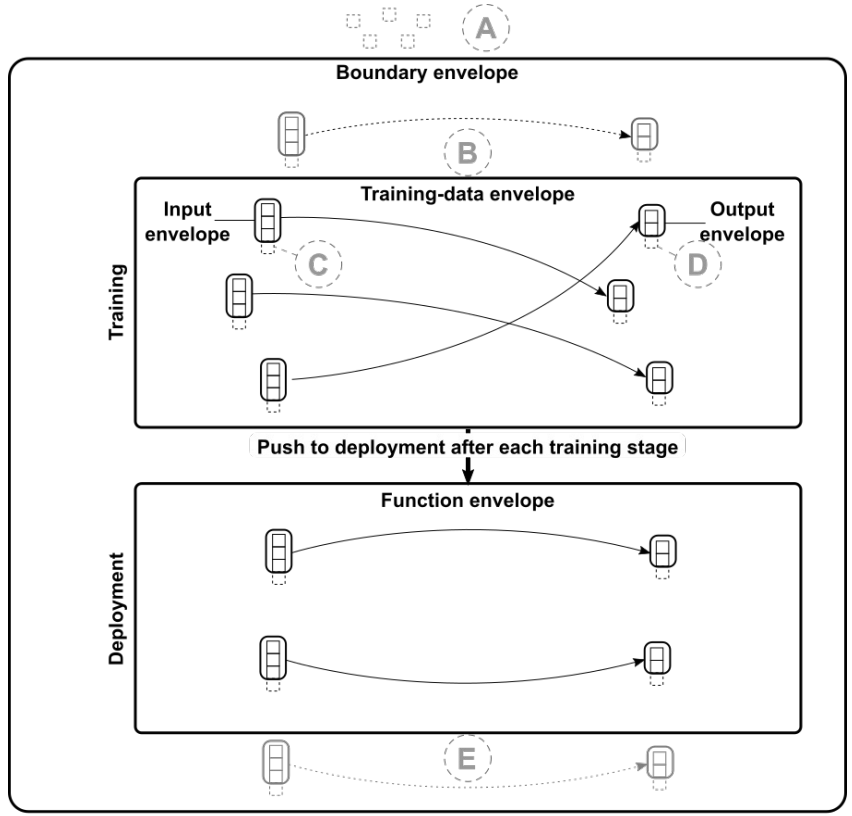
Explainability-accuracy tradeoff





What is envelopment?

- In its original context in robotics, a work envelope is “the set of points representing the maximum extent or reach of the robot hand or working tool in all directions” (RIA Robotics Glossary 73; cited by Scheel, 1993, p. 30).



Legend:

An input or output vector of data. One vector element (dashed gray line) has been enveloped out and is not used in the model. Rectangles with bold stokes denote envelopes.

Examples of what the envelope scope excludes:

- **A** Events and states-of-affairs in the world that the model does not need to "know" about. [Boundary]
- **B** Input–output pairs that could be used in training data but are suspected of bias, errors, or represent cases for which not enough data exists yet and the model should not be allowed to learn from. [Training-data envelope]
- **C** Input sources that would provide low-quality information. [Input envelope]
- **D** Outputs that a model could provide but that are biased, not needed, or redundant. [Output envelope]
- **E** Purposes for which the trained model will not be used (e.g., for ethics reasons), even if it would be capable of accurate performance. [Function envelope]

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