národní
úložiště
šedé
literatury

Přehodnocení role šedé literatury ve čtvrté průmyslové revoluci

Savić, Dobrica
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Rethinking the Role of Grey Literature in the Fourth Industrial Revolution

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Introduction

AI: Human Augmenter Or Destroyer?
Forbes - 21 hours ago
The year 2016 saw artificial intelligence (**AI**) reach new heights and 2017 has even more exciting news in store for us. While many have faith in ...

How **robots** could change the jobs market forever
CNBC - Aug 7, 2017
Analysis from management consultancy McKinsey earlier this year showed that 25 percent of a CEO's current job can be handled by **robots** and ...

What jobs will be left in a **robotic** nation?
CBS News - Aug 6, 2017
Today, he's hauling 20,000 pounds of freight down the Florida turnpike in a self-driving, **robotic** truck. It's been retrofitted with a self-driving kit ...

The new industrial revolution: **robots** are an opportunity, not a thre
The Conversation UK - 17 hours ago
These are the kind of words that have been bandied about in news headlines about **robotics** and artificial intelligence in the last few years.

Real estate tech company aims to replace agents with **robots**, data
Newsday - Aug 6, 2017
A real estate technology company that aims to lower the cost of home-selling by using **robots** and "big data" instead of commission-based real ...

The latest innovation to hit the Las Vegas Strip: **Robot** bartenders
Los Angeles Times - 22 hours ago
They will make your drinks, but they won't listen to your problems. **Robot** bartenders have made their way to the Las Vegas Strip — evidence ...

Industrial Revolution: Are machines taking over?
ETMM Online - Jul 25, 2017
The greatest insecurity related to the topic of Industry **4.0** – besides data security – is probably the **fear** of jobs becoming obsolete. According to ...

An artificial intelligence researcher reveals his greatest fears about ...
Quartz - Aug 7, 2017
And yet it is hard for me to look up from the evolutionary computer models I use to develop **AI**, to think about how the innocent virtual creatures ...

CogX 17: How AI is changing the way we live
DIGIT.FYI (blog) - Jul 14, 2017
How is Industry **4.0** transforming manufacturing? ... because, he said, most jobs that would be **killed** off were miserable anyway. ... It's certainly an interesting analogy, comparing the current tech and AI revolution to the **Industrial Revolution**.

The workplace of the future - which **jobs** will **disappear** and which ...
ChronicleLive - Jul 19, 2017
The workplace of the future - which **jobs** will **disappear** and which will ... New **jobs** will also be created, and it is likely that higher-skilled and ...

Artificial Intelligence Will Widen The Gap Between Rich And Poor
Huffington Post Australia - Jul 19, 2017
These jobs are generally those held by the lower socio-economic sector of our community. Once these **jobs disappear**, what will become of that ...

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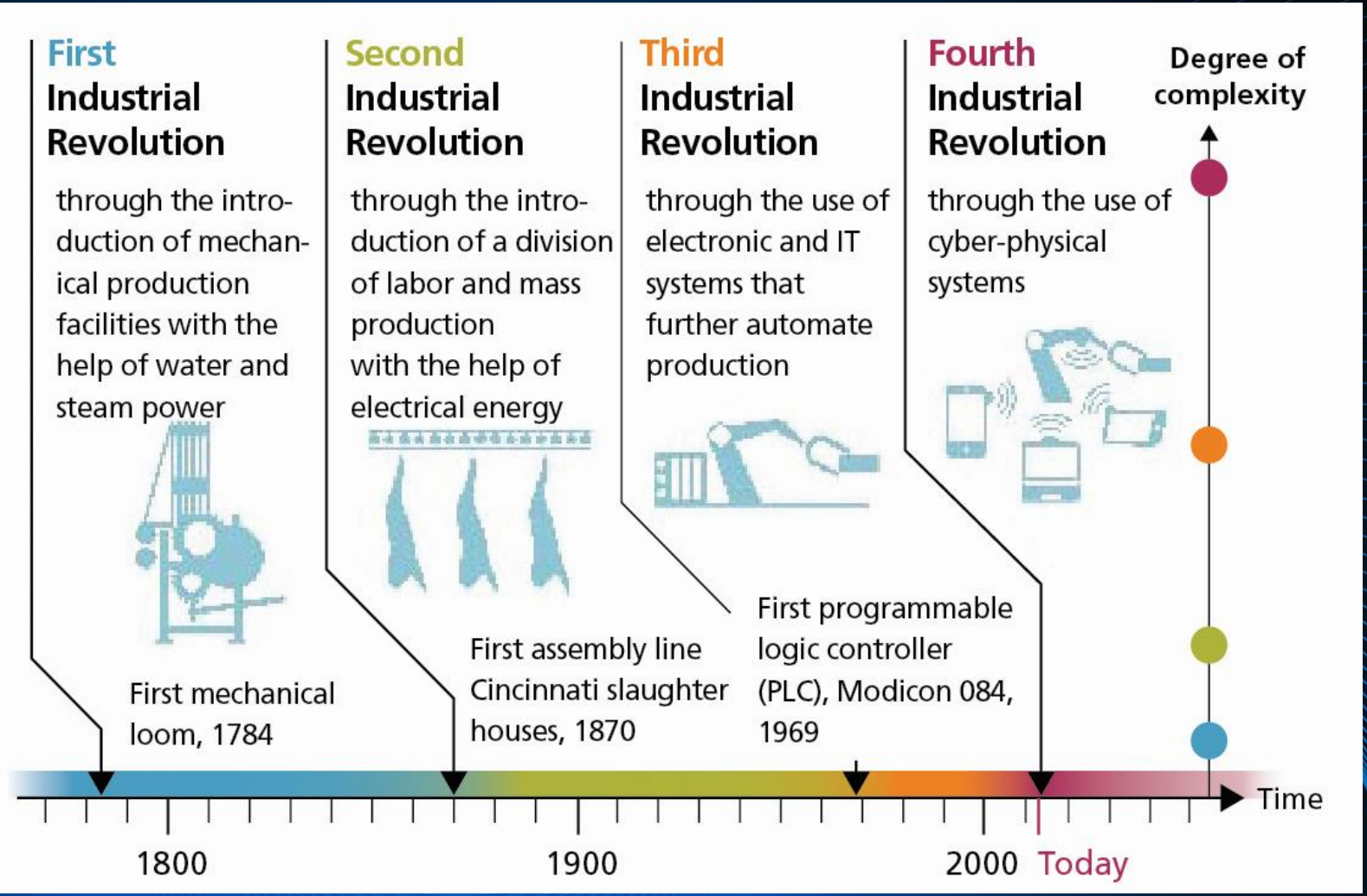
Historical context



Source: DFKI

Historical context

Industrial Revolution 1.0

Water and steam powered machines were deployed in factories to mechanize some of the work

Industrial Revolution 2.0

Mass production using electric power; birth of assembly line and mass production

Industrial Revolution 3.0

Advent of computer, Internet, robots and automation, where machines and humans were replaced with robots

Industrial Revolution 4.0

Cyber physical systems monitor the physical process of the factory and make decentralized decisions

The term

Industry 4.0

Term originates from Germany's 2011 Hannover Fair. It was a project of the German government to promote the computerization and innovation of manufacturing, in particular the reorganization of the global value chains. Industry 4.0 is a modern and modular structured factory where physical processes are controlled by cyber physical systems which create a virtual world to make decentralized decisions.

The Second Machine Age

Digital technologies (hardware, software, networks) are becoming more sophisticated and integrated and are transforming societies and the global economy. The world is at an inflection point where the effect of these digital technologies will manifest with 'full force' through automation and the making of 'unprecedented things'. (Erik Brynjolfsson & Andrew McAfee 2014).

The Fourth Industrial Revolution

Characterized by a range of new technologies that are fusing the physical, digital and biological worlds, impacting all disciplines, economies and industries, and even challenging ideas about what it means to be human. (Klaus Schwab 2016).

The term

Smart factory

An environment where machinery and equipment are able to improve processes through automation and self-optimization. 'Smart' because of the combination of production, information, communication technologies, sensors, motors and robotics. Connects the 'shop floor' to the 'top floor'!

Industry X.0

Cyber-physical production systems that combine communications, IT, data and physical elements. Machines "talk" to products and other machines, objects deliver decision-critical data, and information is processed and distributed in real time resulting in profound changes to the entire industrial ecosystem. (Accenture)

Digital workplace

Enables new, more effective ways of working; raises employee engagement and agility; and exploits consumer-oriented styles and technologies. (Gartner)

The pillars

Machines are learning to think!

General impact

On the way we manufacture products

- Reduced manual labor
- Increased use of robots, sensors, AI and machine learning
- Automated supply chain management
- Reduced level of stock
- Stronger link between customer demands and production
- Individualized products

On the way we manage processes and companies

- Horizontal and vertical integration
- Removal of silos, insistence on teams, building the ‘system of systems’
- Real-time planning
- Introduction of Lean concepts (eliminating anything useless)
- Fast response to change and quick delivery using Agile
- From reactive to predictive mode of operation

General impact

On the way we run our personal lives

- Internet of Things (households)
- Smart phones (constant communication, spying)
- Threats to our private lives (security cameras)
- Unpredictable growth of poor, as well as the rich parts of society
- Shopping (drones)
- Work (remote/mobile work)
- Education (MOOCs, jobs vs. skills)
- Open access movement (open science)

"The challenges are as daunting as the opportunities are compelling. We must have a comprehensive and globally shared understanding of how technology is changing our lives and that of future generations, transforming the economic, social, ecological and cultural contexts in which we live."

Klaus Schwab

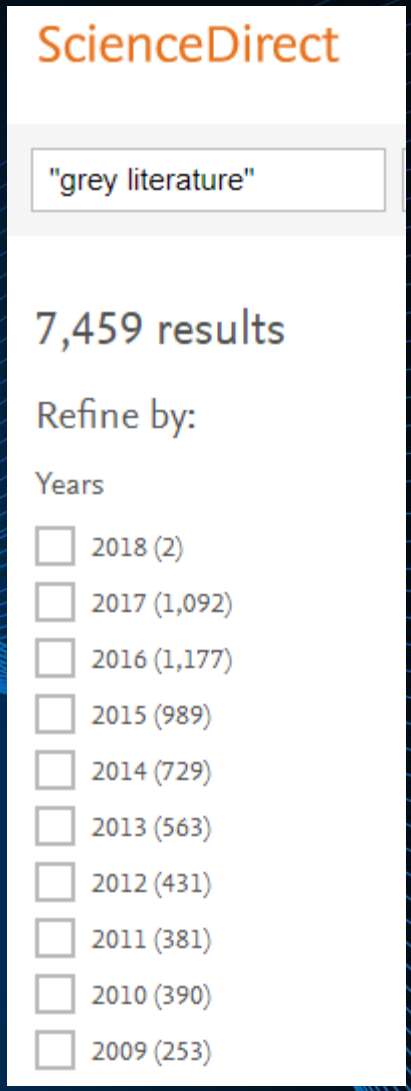
GL: General concept

Definition

Grey literature stands for manifold document types produced on all levels of government, academics, business and industry in print and electronic formats that are protected by intellectual property rights, of sufficient quality to be collected and preserved by library holdings or institutional repositories, but not controlled by commercial publishers i.e., where publishing is not the primary activity of the producing body. *("Prague Definition" 2010)*

The diverse and heterogeneous body of material that is made public outside, and not subject to, traditional academic peer-review processes. *(Adams at al. 2016)*

Easier to describe than to define!



GL: General concept

Definition challenges

Due to originators, volume, type and speed of GL creation, the focus of GL definition needs to shift to quality, intellectual property, curation and sustainability. It risks becoming obsolete due to its inability to differentiate GL from other documents.

New definition

GL is any recorded, referable and sustainable data or information resource of current or future value, made publically available without a traditional peer-review process.

GL: General concept

Multiple shades of grey

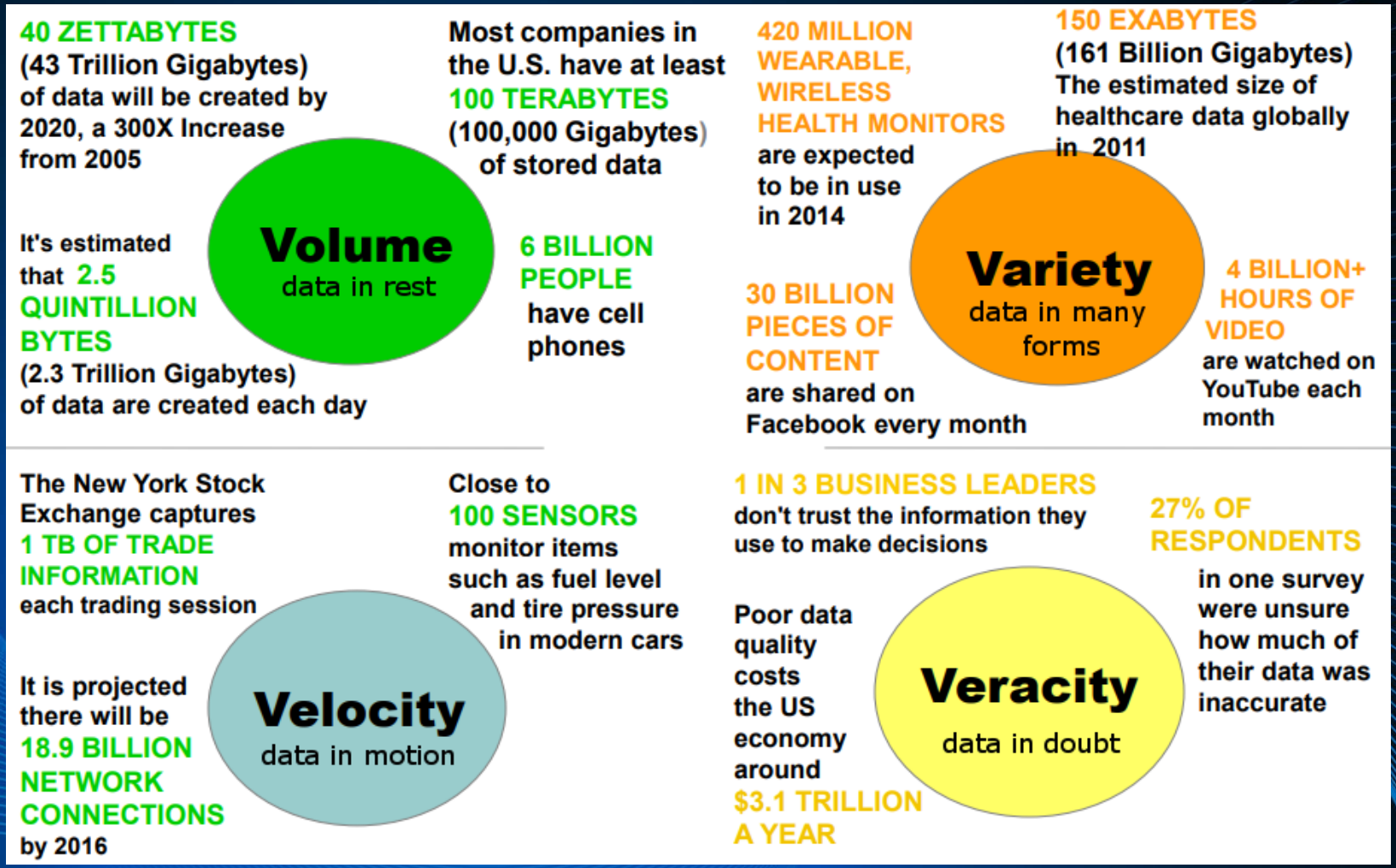
Bibliographies	Rejected manuscripts	Publications from NGOs and consulting firms
Discussion papers	Un-submitted manuscripts	Videos
Newsletters	Conference abstracts	Wiki articles
PowerPoint presentations	Book chapters	Emails
Program evaluation reports	Personal correspondence	Blogs and social media
Technical notes	Newsletters	Data sets
Publications from governmental agencies	Informal communications	Committee reports
Reports to funding agencies	Census data	Working papers
Unpublished reports	Pre-prints	Company reports
Dissertations	Standards	Catalogues
Policy documents	Patents	Speeches
	Webinars	Reports on websites

Data sets

- Internet of Everything (IoE)
- Internet of Things (IoT)
- Industrial Internet of Things (IIoT)
- Machine to Machine communication (M2M)
- Self-driven cars
- Robots, Sensors, Security systems

Estimates for the number of connected devices vary in billions. Gartner says some 20 billion by 2020. Allied Business Intelligence says more than 30 billion, Nelson Research says 100 billion, Intel says 200 billion, and International Data Co. says 212 billion.

GL: Processing



Source: Wayne Balta, IBM

GL: Sustainability

"The ability to be maintained at a certain rate or level."

"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Brundland Report for the World Commission on Environment and Development (1992)

Environmental/technical

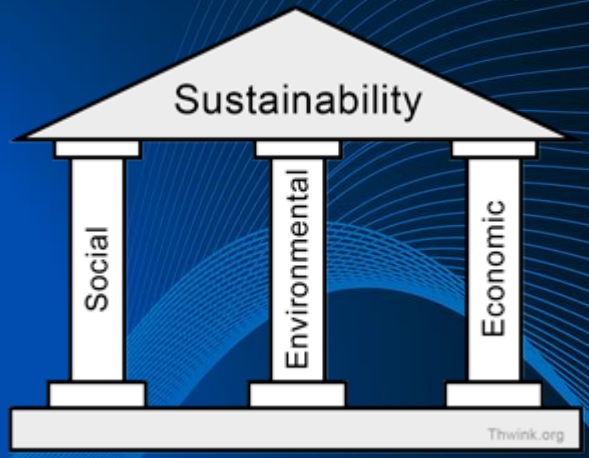
- Long-term preservation
- Organization & management
- Operability

Economic/Financial

- Level and duration of support
- Return on Investment
- Future value

Social/Organizational

- Audience
- Information ownership & governance
- Freedom of access to information



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GL: Usability

Tools for analysis

- Old vs. new tools and technology
- Different software functionality, concepts, expectations
- Dynamic vs. static information and documents

Visualization

- 2-D & 3-D
- Virtual and augmented reality
- Requirement levels and technical skills

Intellectual property

- Over protectionism
- Open access and open science
- Doubts about IP helping development, health, innovation

Privacy

- Protection of sensitive personal information
- CCTV cameras in public
- Social media photos

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Conclusions

Future

- GL will not disappear
- Volume of GL will experience exponential growth
- Number of GL formats will increase

New definition

- Take into consideration volume and speed of GL creation
- Refocus on quality, intellectual property, curation and sustainability
- Differentiate GL from other documents

Increase knowledge, visibility and relevance of GL

- Work on theoretical research and practical applications
- Develop training courses and tutorials
- Establish cooperation with data and information specialists, librarians and archivists
- Invest in promotion
- Demonstrate value of properly managed GL collections

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Invention is the most important product of man's creative brain

Nikola Tesla

Thank you!

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