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Impact of Emerging Information Technologies on Grey Literature

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Presentation at a glance

- **Grey literature definition**
- **Current grey literature challenges**
- **Review of information technology trends**
- **Trends impacting grey literature**
  - AI and machine learning
  - Virtual and augmented reality
  - Internet of things
  - Digital platforms
  - Big data
  - Analytics
- **Conclusions**

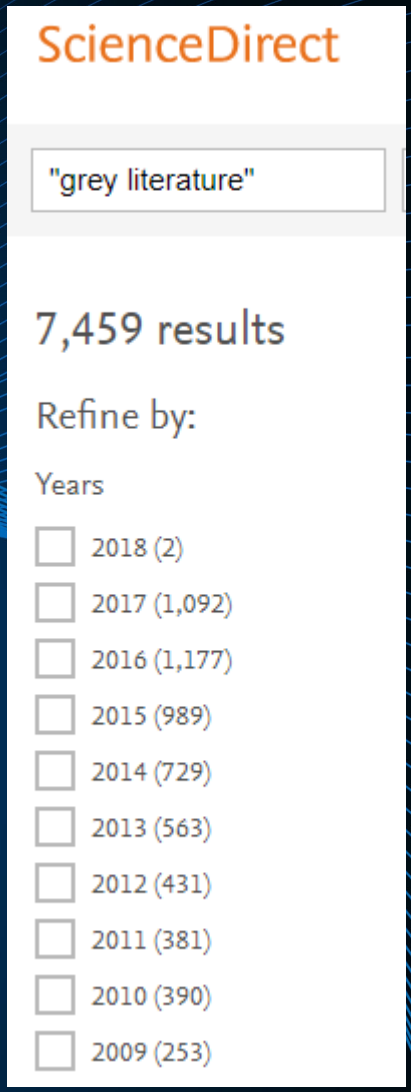
Grey literature definition

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!



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Grey literature definition

Multiple shades of grey

35

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Unpublished reports	Pre-prints	Company reports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.

Grey literature definition

Definition challenge

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

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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.

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Review of information technology trends

Gartner

1. AI and advanced machine learning
2. Intelligent apps
3. Intelligent things
4. Virtual and augmented reality
5. Digital twin
6. Blockchain and Distributed Ledgers
7. Conversational System
8. Mesh App and Service Architecture
9. Digital Technology Platforms
10. Adaptive Security Architecture

Gartner's Top 10 Strategic Technology Trends for 2017

Forbes

1. IoT and smart home tech
2. AR and VR

Forrester

Engagement technologies

1. IoT software and solutions
2. Intelligent agents

14. Cloud native application platforms
15. Hybrid wireless

The Top Technology Trends To Watch: 2017 To 2021

Deloitte

1. IT unbounded
2. Dark analytics
3. Machine intelligence

18. The future of work

Global Human Capital Trends 2017: Rewriting the rules for the digital age

Accenture

1. AI is the new UI
2. Ecosystems power play
3. Workforce marketplace
4. Design for humans
5. The uncharted

Technology Vision 2017 – Technology for People: The Era of the Intelligent Enterprise

Web presence

	google	LinkedIn	Facebook
Gartner	59300	1740	4080
Forbes	12800	144	4500
Forrester	9590	9	4
Accenture	4710	1980	305
Deloitte	2440	113	208

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Main information technology trends

- AI and machine learning
- Virtual and augmented reality
- Internet of things
- Digital platforms
- Big data
- Analytics

Artificial intelligence and machine learning

- AI – systems that can think and act rationally like humans
- Very complex for development, maintenance and deployment
- Combine many technologies and techniques (e.g., deep learning, neural networks, natural-language processing (NLP))
- Move beyond traditional rule-based algorithms to create systems that understand, learn, predict, adapt and potentially operate autonomously
- Built into physical devices (e.g., robots, cars, consumer electronics, security), apps and services (e.g., virtual personal assistants, smart advisors, voice recognition, computer vision, translation, finance)
- AI becomes new user interface

Virtual and augmented reality

- VR takes us out of our reality and brings us to some other place
- AR takes our current reality and adds something to it
- VR vs. AR; scuba diving vs. going to the aquarium

- Virtual reality can bring us to a construction site where we can walk in any direction and see every detail

- Augmented reality is helpful for a client who can't visualize something. The idea is that a designer, an architect and a homeowner could sit around a table and look at the same 3D model on the table instead of a 2D plan. Human mind not able to tell the difference between computer-generated images and the real world

- Applications: military, medical, science, manufacturing, real estate, fashion, navigation, sightseeing, advertising and promotion, games like Pokémon Go

Internet of things

- The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction
- Requirements: things, unique identifier (IP), Wi-Fi, sensors, electronic circuits for control
- A ‘thing’ can be goods, objects, machines, appliances, buildings, vehicles, animals, people, plants, soil. E.g.:
  - a person with a heart monitor implant
  - a farm animal with a biochip transponder
  - an automobile with built-in sensors to alert the driver when tire pressure is low
  - connect with and learn about food, monitor supplies, search/locate, manage cities, control use of electricity, game immersion
- A move from people to computer-based data creation and capture
- Unimaginable complexity
- Privacy non existent
- Weapon of mass disruption

Digital platforms

A

exchanges between two or more interdependent groups.

The value increase as more members participate

b e n e f I t s

Revenue - brings together end users and producers to transact with each other

Reduce cost - enables companies to share information in order to enhance collaboration or the innovation of new products and services

Collaboration – development, accelerated by third party application programming interfaces (APIs) enable participants to share data and create new services

Portability - cloud and other technologies provide resources on an as-a-service basis

Protection - intellectual property and data ownership protected to foster trust among participants

Advertising	Google, Baidu, Tencent, Redirect
Social	Facebook Twitter, Instagram, LinkedIn
Commerce	Amazon, Alibaba
Application stores	Apple App Store, Google Play
Crowd-sourcing	Uber, BlablaCar, AirBnB
Enterprise resource planning (ERP)	SAP, Oracle, Infor

Market size value $4.3 trillion (Accenture)

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How big is BIG DATA?

Byte : one grain of rice

Kilobyte : one cup of rice

Hobbyist

Megabyte : 8 bags of rice

Gigabyte : 3 semi-trucks

Desktop

Terabyte : 2 container ships

Petabyte : Blankets Manhattan

Internet

Exabyte : Blankets west coast states

Zettabyte : Fills the Pacific Ocean

Big Data

Yottabyte : AN EARTH SIZED RICE BALL!

The Future?

Analytics

Analytics is the scientific process of transforming data into insight for making better decisions.

The Institute for Operations Research and the Management Science (INFORMS)

Business analytics explores past performance to gain insight and drive business planning.

The types include:

- **Descriptive** - provides simple summaries about the sample audience and about the observations made. Tell how thigs are going
- **Predictive** - anticipates what will happen, when and why it will happen. It uses statistical methods, but also machine learning algorithms, and heuristics, to extract information from data and predict trends and behavior patterns

Applications of predictive analytics

- Analytical customer relationship management (CRM)
- Clinical decision support systems
- Collection analytics
- Cross-sell
- Customer retention
- Direct marketing
- Fraud detection
- Portfolio, product or economy-level prediction
- Risk management
- Underwriting

Conclusions

Emerging environment

- Production moves to Industry 4.0
- Emerging new technologies
- Machines are learning to think
- Machines 'talk' to each other
- VR and AR experience
- Automatic creation and processing of massive data
- High level work specialization
- Extreme complexity
- Constant learning and development
- Liquid structure of info. & docs.
- Commercialization of information assets

Concept

- Make Distinction from other forms
- Cover new electronic forms

Processing

- Provide systematic collection
- Improve source reliability
- Quality bibliographic control
- Create standard key metadata

Sustainability

- Assure long-term preservation
- Persuade financial sustainability

Usability

- Protect intellectual property
- Provide open access
- Secure privacy

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Once a new technology rolls over you, if you're not part of the steamroller, you're part of the road.

Stewart Brand

Thank you!

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