

Interopérabilité des systèmes d'information

3. Open data et standards

Mastère Management de la transition industrielle

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Open data

- Les données ouvertes (*open data*) sont des données mises à disposition de tous, via le Web, généralement gratuitement et pour leur libre utilisation
- Le développement des données ouvertes est un facteur important pour l'amélioration de l'interopérabilité des données

Open Data in the US

data.gov



Type of site	Government Web site
Available in	English
Owner	Government of the United States
URL	data.gov
Commercial	No
Registration	Optional
Launched	May 30, 2009; 13 years ago
Current status	Active

- Data.gov 2009
- Legal framework:
 - The U.S. Open Government Directive of December 8, 2009, required that all agencies post **at least three high-value data sets online** and register them on Data.gov **within 45 days**
 - OPEN Government Data Act, as part of the Foundations for Evidence Based Policymaking Act (2019)

Open Data in France



The image shows the header and metadata of the data.gouv.fr website. The header includes the logo 'data.gouv.fr' with a signal icon, the French flag, and the text 'Liberté • Égalité • Fraternité RÉPUBLIQUE FRANÇAISE'. Below the header is a table of metadata:

Adresse	data.gouv.fr
Description	Plateforme ouverte des données publiques françaises
Commercial	✗ Non
Publicité	✗ Non
Type de site	Données ouvertes gouvernementales
Langue	Français
Inscription	Facultative
Propriétaire	Etalab (mission placée sous l'autorité du Premier ministre français)
Créé par	Etalab
Lancement	5 décembre 2011
État actuel	✓ En activité

At the bottom left of the metadata section is a 'modifier' link, and at the bottom right is an information icon.

- France at the forefront of Open Data in Europe:
 - Légifrance 1999
- Legal framework:
 - "The society has the right of requesting account from any public agent of its administration." (Declaration of rights of man and of the citizen of 1789)
 - Law on the liberty of access to administrative documents (1978)
 - European directive 2003 + French Law 2005 + Decree 2011
 - Bill on a Digital Republic (2016)
 - The law on Energy Transition (2015)
- 2014: Chief Data Officer in the French public administration

Open Data in Europe



The European Data Portal:
Opening up Europe's public data

data.europa.eu/europeandataportal



Open Data, Open Content, and Open Knowledge

The Open Definition

The **Open Definition** sets out principles that define “openness” in relation to **data and content**.

It makes **precise** the meaning of “open” in the terms “**open data**” and “**open content**” and thereby ensures **quality** and encourages **compatibility** between different pools of open material.

It can be summed up in the statement that:

“Open means **anyone** can **freely access, use, modify, and share** for **any purpose** (subject, at most, to requirements that preserve provenance and openness).”

Put most succinctly:

“Open data and content can be **freely used, modified, and shared** by **anyone** for **any purpose**”

Open Work

1. Open License or Status

The **work** *must* be in the **public domain** or provided under an open **license**

2. Access

The **work** *must* be provided as a whole and at no more than a reasonable one-time reproduction cost, and *should* be downloadable via the Internet without charge.

3. Machine Readability

The **work** *must* be provided in a form readily processable by a computer and where the individual elements of the work can be easily accessed and modified.

4. Open Format

The **work** *must* be provided in an open format.

Creating value through Open Data



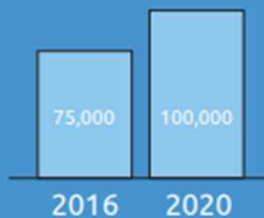
€ 325 billion
direct market size
EU28+ for 2016-2020



25,000
jobs created



Open Data jobs



€ 1.7 bn
government
cost savings



more Open Data can help make
better decisions



7,000 lives
saved due to
quicker response



5.5% less
road fatalities



Congestion
costs are
1% of GDP



Open data market size



- €184.45 billion open data market size in 2019
- €199.51 - €334.20 billion open data market size forecast for 2025

Open data employment

- 1.09 million open data employees in 2019
- 1.12 – 1.97 million open data employees forecast for 2025



Open data potential per sector



- 15.7% growth expected from high impact and high potential sectors

• High impact:

• High potential:

For details on calculations and assumptions see corresponding sections.



Efficiency gains

- Saving lives, e.g. 54 - 202 thousand lives saved by faster emergency response
- Saving time, e.g. 27 million hours saved in public transport
- Saving the environment, e.g. 5.8 Mtoe* saved by reducing household energy consumption
- Improving language services with open data, e.g. by increasing machine translation



Cost savings



- Saving healthcare costs, e.g. €312 - €400 thousand due to faster first aid by bystanders
- Saving labour costs, e.g. €13.7 - €20 billion by reducing time spent in traffic
- Saving costs on energy bills, e.g. €79.6 billion due to more solar energy production
- Saving public sector costs, e.g. €1.1 billion by lower translation costs

Open data in organisations

- 49% of data used by surveyed organisations is open data and 77% of organisations plan to use more data
- 46% of organisations' revenues are impacted by open data and 73% of organisations expect the impact to increase
- 70% of surveyed organisations create data internally, of which 58% publish some of it as open data



* Million tonnes of oil equivalent

For details on calculations and assumptions see corresponding sections.



Re-using Open Data

A study on companies transforming Open Data into economic & societal value

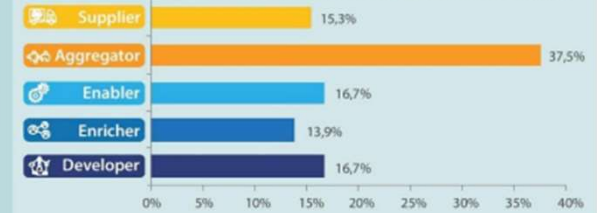


TOP 3 SOURCES OF REVENUE OF OPEN DATA COMPANIES



OPEN DATA ARCHETYPES

Survey respondents according to the Open Data Value Chain Archetypes



TOP 3 PROFILES OPEN DATA COMPANIES ARE LOOKING FOR



ESSENTIAL CONDITIONS FOR RE-USING OPEN DATA

- High quality Open Data
- Systematic and continued publication of Open Data

76% OF THE ORGANISATIONS USING OPEN DATA FORESEE TO RECRUIT NEW EMPLOYEES

TAKING OPEN DATA TO THE NEXT LEVEL

- Design your Open Data provision strategy based on user demands
- Standardise and harmonise your Open Data
- Share your story on the use of Open Data

Re-using Open Data

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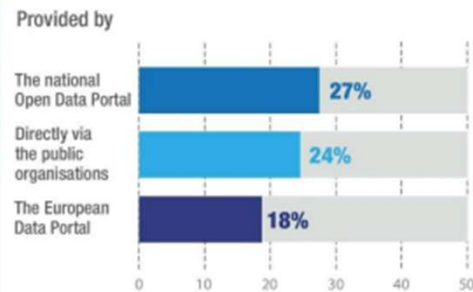
Top 3 most used Open Data domains



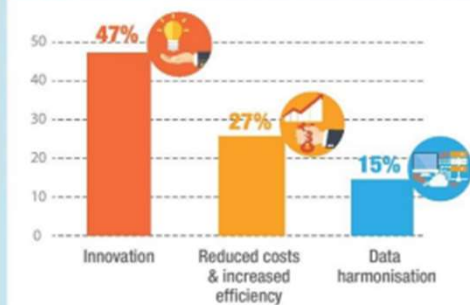
Most often combined Open Data categories



Top 3 platforms to access Open Data



Main benefits of working with Open Data



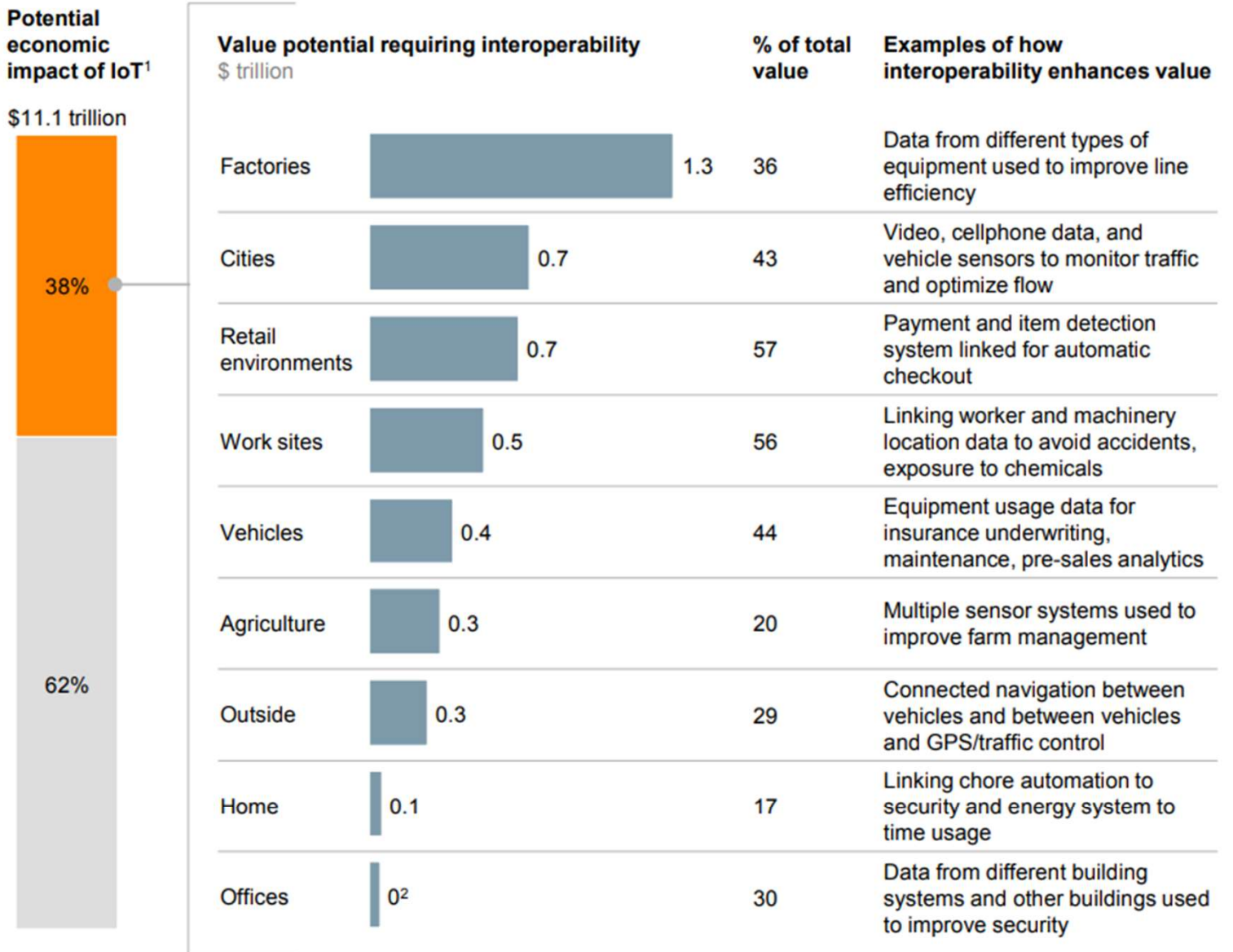
Standards et normes

- La normalisation (en anglais *standardisation*) est une des principales manières d'assurer l'interopérabilité des systèmes
- Il existe de nombreux moyens de normaliser une technologie, un format, un modèle, un protocole, un processus

Interoperability as an enabler for the potential value of data

ex:
Internet of Things

Nearly 40 percent of economic impact requires interoperability between IoT systems



¹ Includes sized applications only; includes consumer surplus.

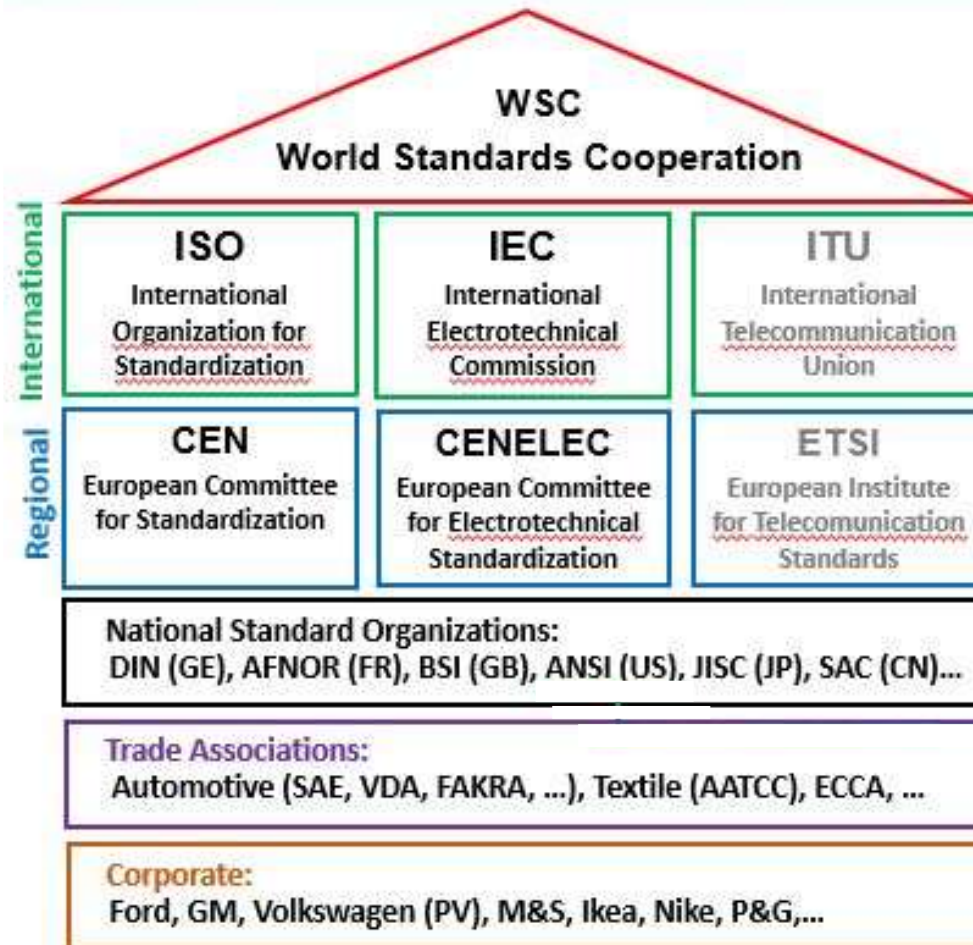
² Less than \$100 billion.

NOTE: Numbers may not sum due to rounding.

SOURCE: Expert interviews; McKinsey Global Institute analysis

Standard development organizations

The International Standardization Landscape

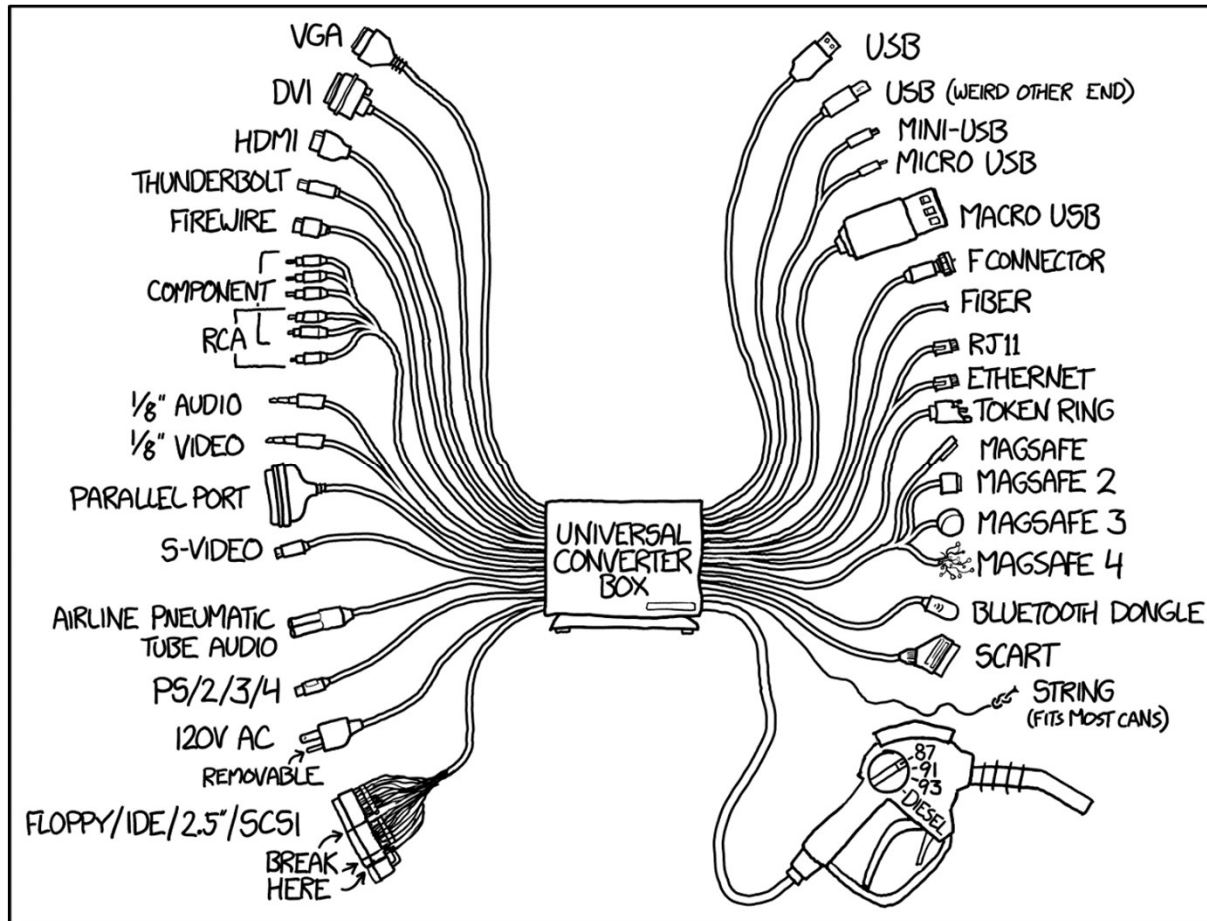


The XKCD 927 effect

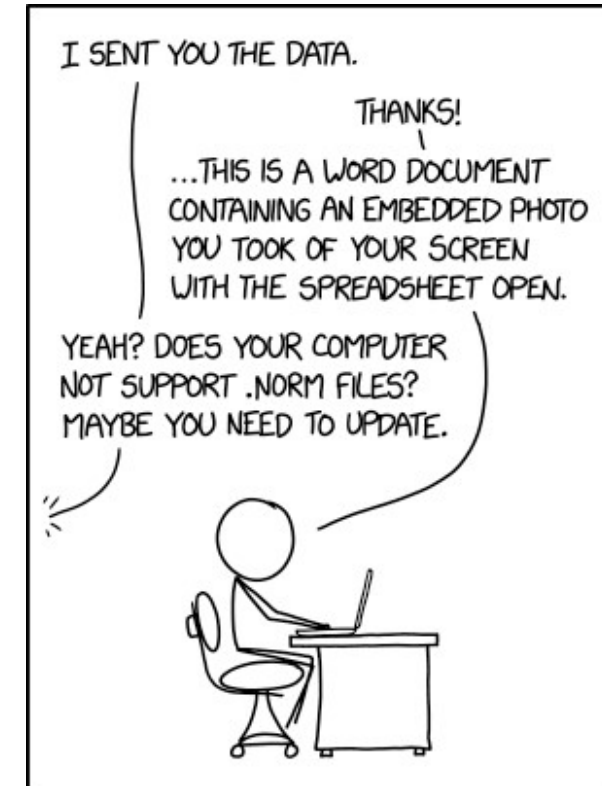
HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)



The XKCD 927 effect - variants



<https://xkcd.com/1406/>



SINCE EVERYONE SENDS STUFF THIS WAY ANYWAY, WE SHOULD JUST FORMALIZE IT AS A STANDARD.

<https://xkcd.com/2116/>