Building an Enterprise Metadata Strategy

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Presentation to the International Society for Knowledge Organization, Singapore Chapter

Michael Andrews | StoryNeedle.com | 5 April 2019

What we will cover in this session

1. How metadata and content structuring can help overcome knowledge silos
2. The value of graphs or knowledge graphs
3. How to build a shared model of knowledge
4. Strategic benefits of better metadata
5. Reusing information in different contexts

Overcoming silos

Silos are a byproduct of specialisation

Knowledge becomes proprietary

Compartmentalisation doesn't lead to a common language (shared vocabularies)

Expertise and accountability drive formation of specialized groups that create boundaries around knowledge.

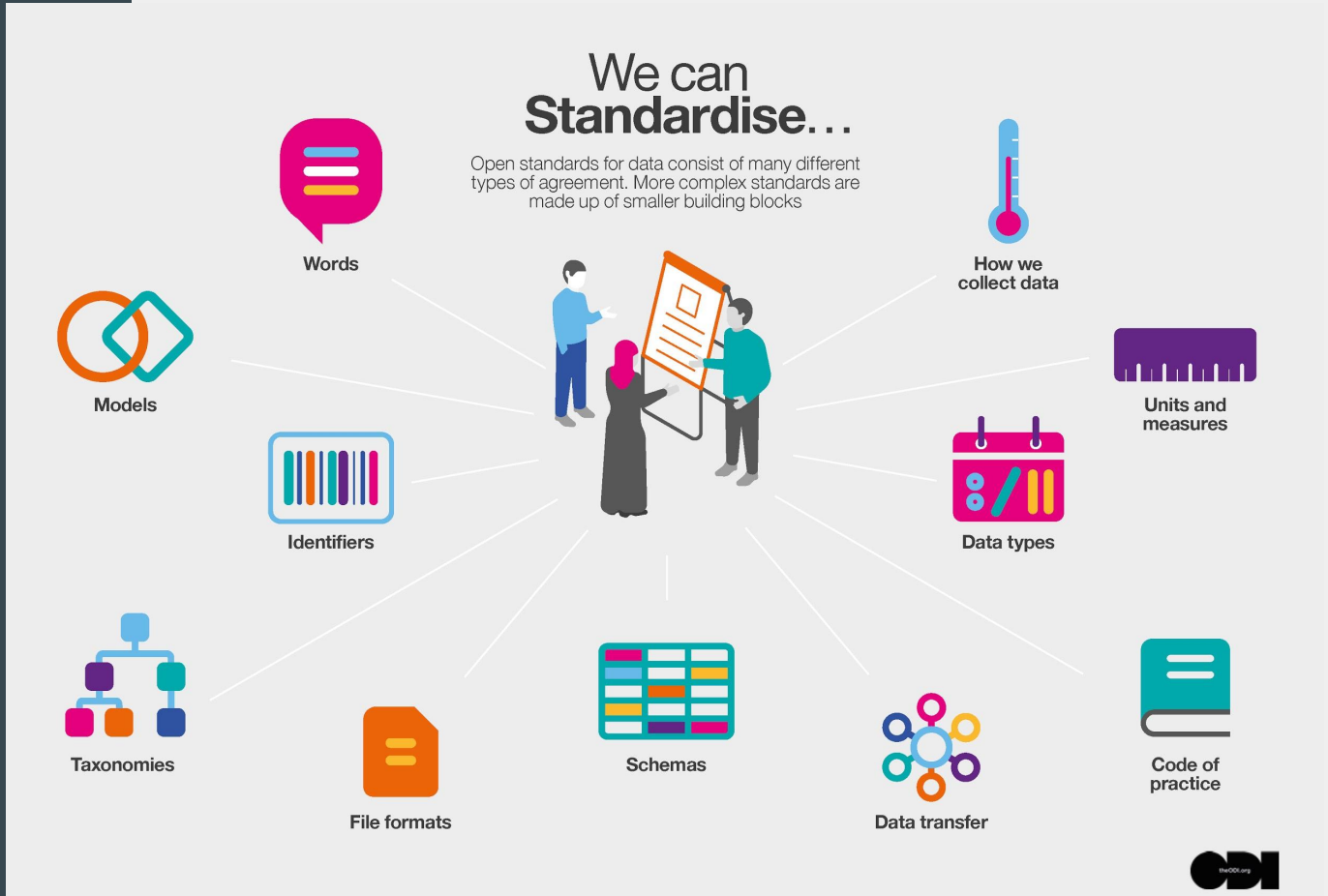
Each group has it own mental models for thinking about things.

Transcend Single-Purpose Learning and Knowledge

Images: https://www.news.ucsb.edu/2015/015831/something-crow-about

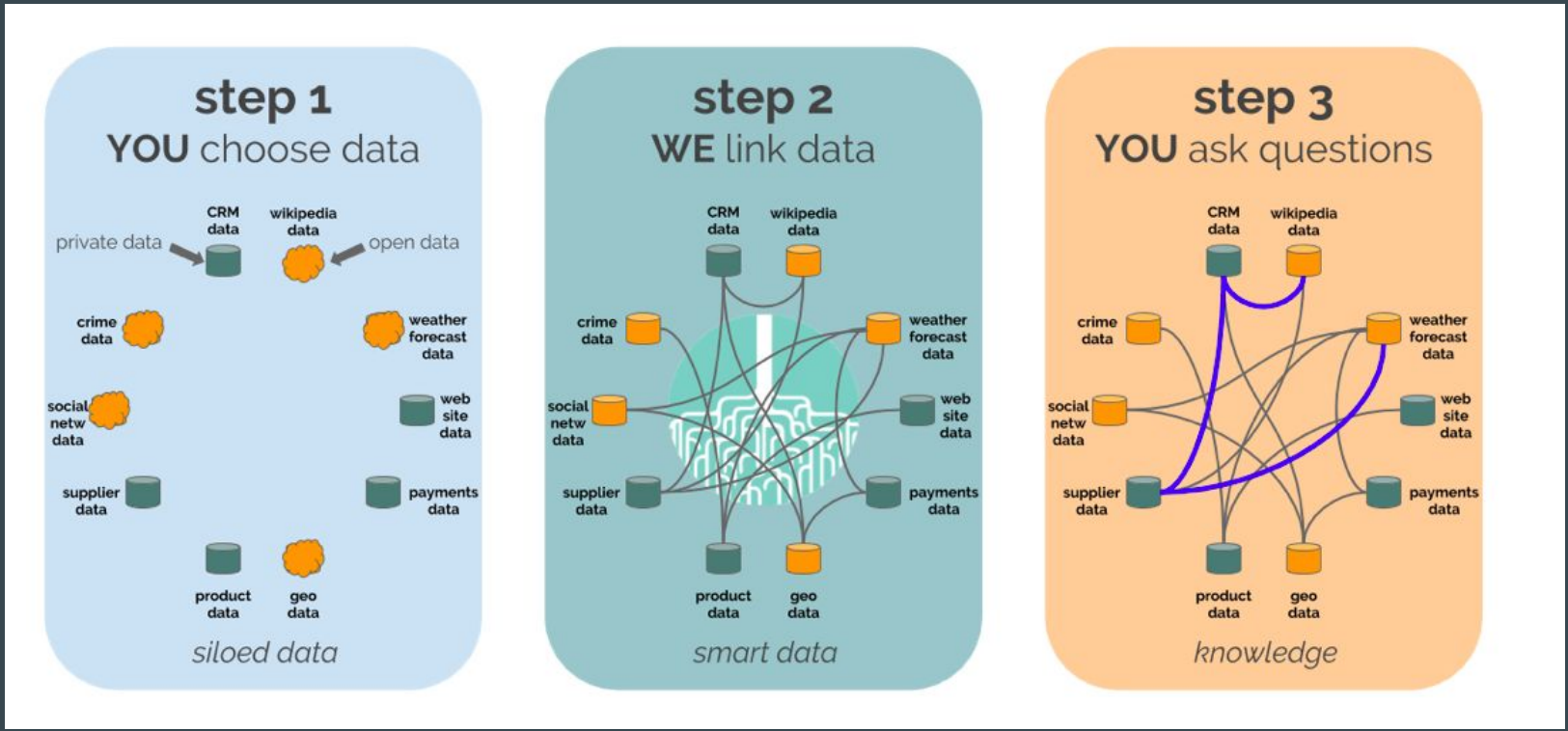
Do you have the ability to connect different information created by different parties?

Standards make information easier to share, because there's a common language



Source: Open Data Institute

Data integration promises a lot...



“Computers do not automatically remove silos from our lives. Far from it.”

“Data does not reorganise itself, or break down silos by itself.”

Gillian Tett of the *Financial Times*, in *The Silo Effect*

“Data ages like wine.
Software ages like fish.”

Transcending silos is not entirely a technical issue

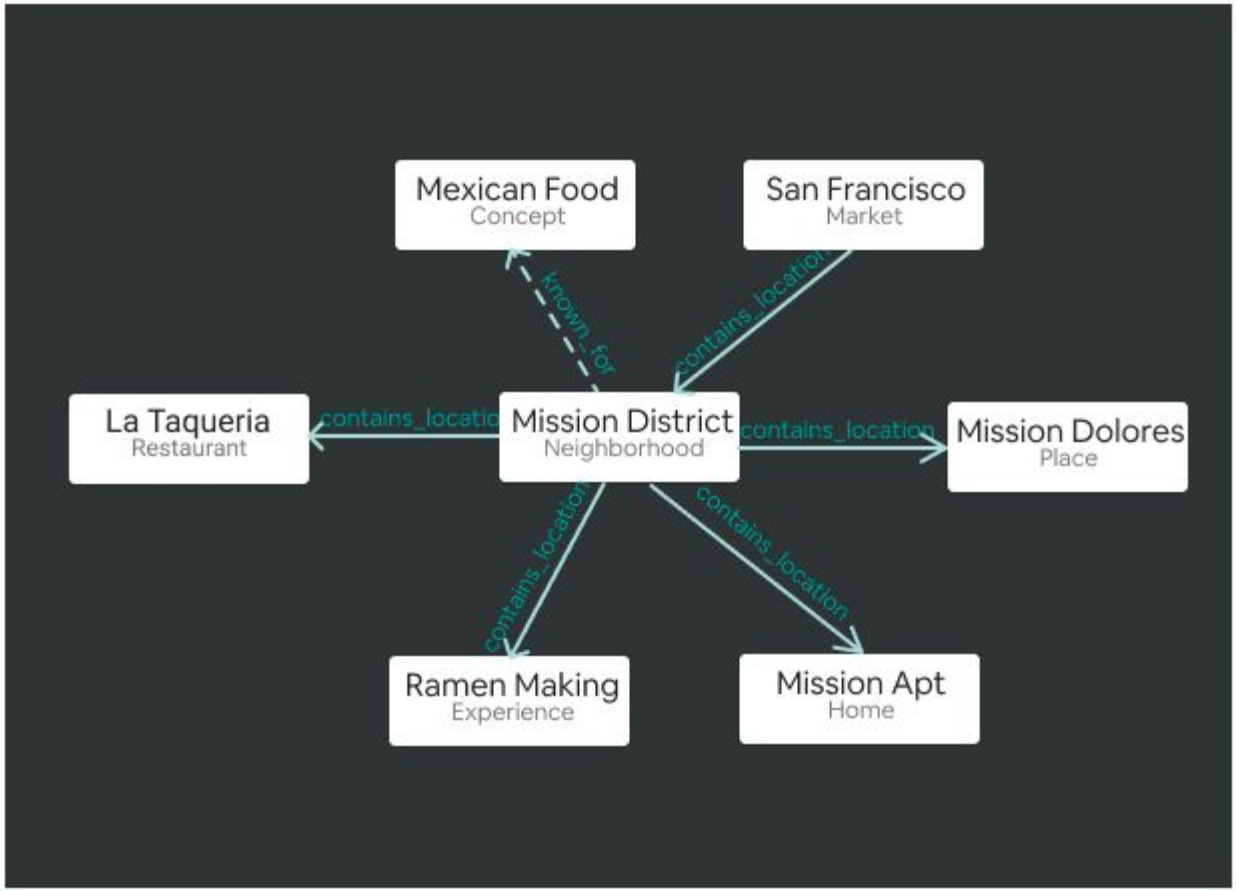
New approaches to managing information, especially graphs, are promising

But first need to get alignment within the organisation about goals

All kinds of stakeholders need to know what available, see what's available, and use what's available

What's important to know about a neighbourhood?

Airbnb example of a knowledge graph



visualization of what the hierarchy for location relationships looks like

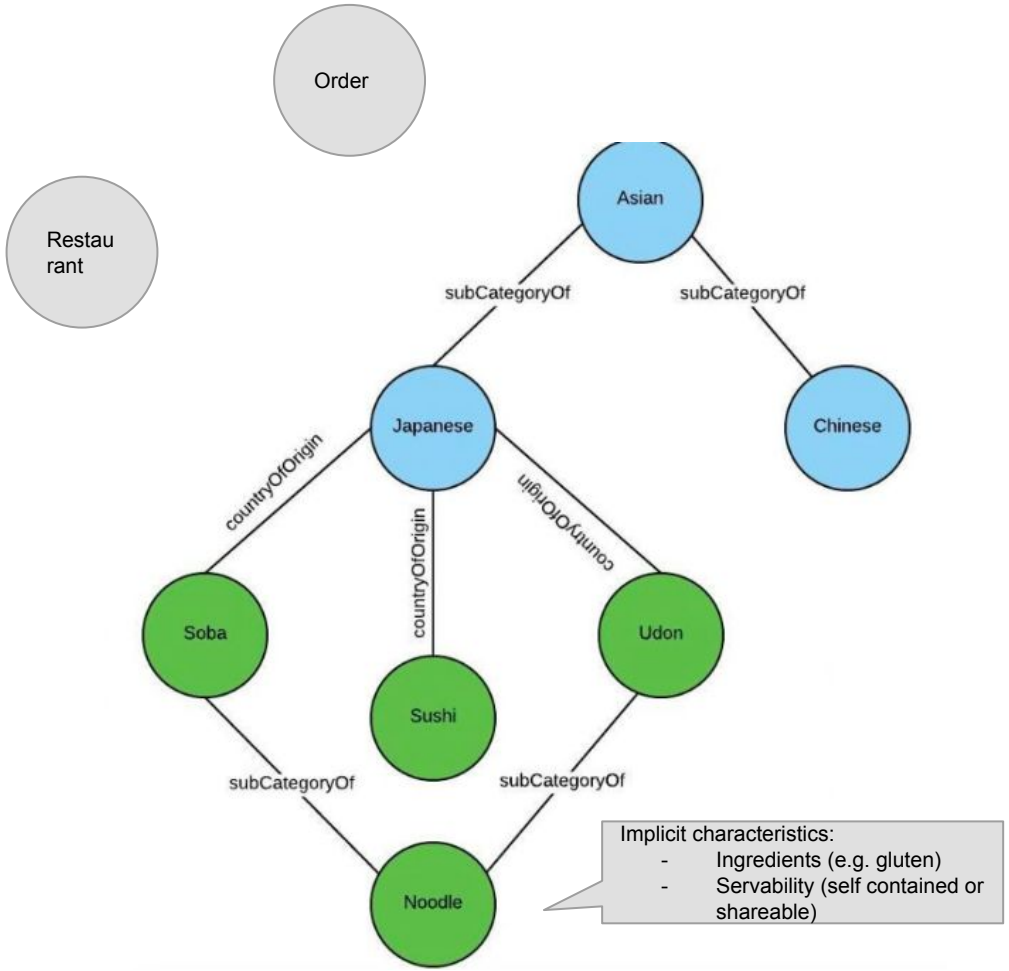
Graphs express relationships

How important are noodles?

How are they connected to other food concepts?

How are they connected to restaurants and orders?

Source: Uber/UberEats



Knowledge management is facilitated when considered in terms of entities

Resources, Physical items, Capital

People, Organisations, IT systems

Buildings, Cities, Rivers

Durations, Dates

Eras, Stages, Significant Transitions

Eligibility, Standards, Processes

Entities as an anchor for knowledge management

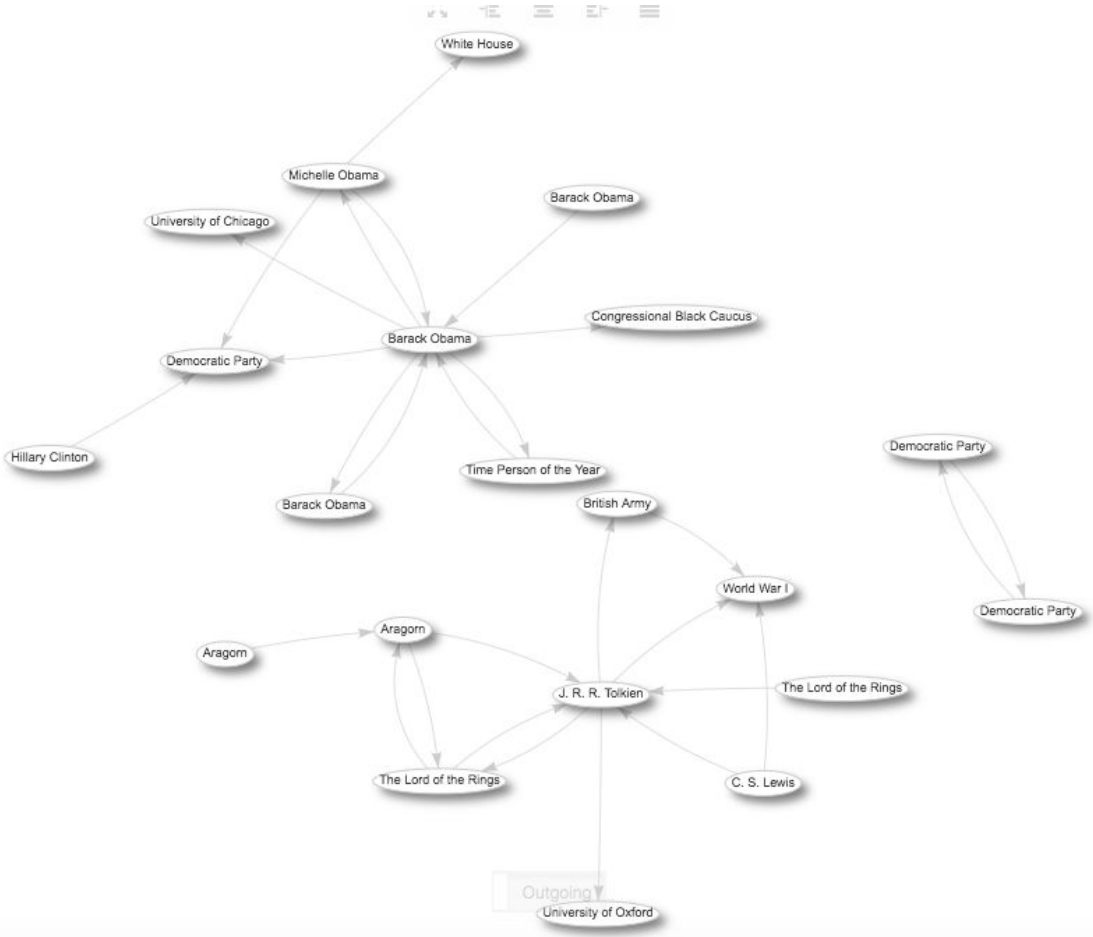
How are these topics on Quora related to one another?

https://blogs.bodleian.ox.ac.uk/digital/2018/02/14/some-ways-wikidata-can-improve-search-and-discovery/

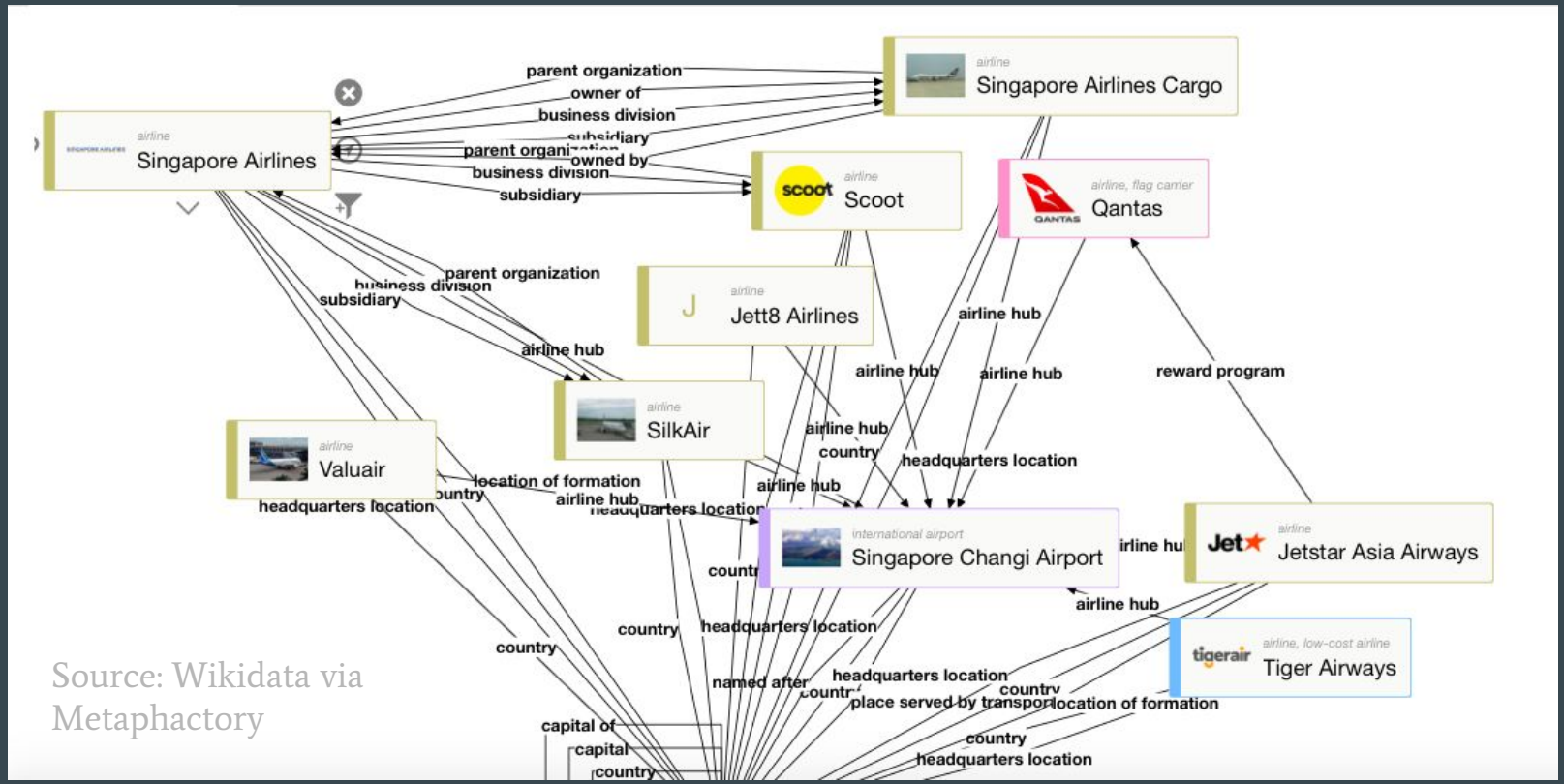
- Barack Obama
- Congressional Black Caucus
- Michelle Obama
- University of Chicago
- Time Person of the Year
- Democratic Party
- White House
- Hillary Clinton
- J. R. R. Tolkien
- Aragorn
- The Lord of the Rings
- C. S. Lewis
- University of Oxford
- World War I
- Battle of the Somme
- British Army

Connections in Wikidata show relationships

“Pinterest and Quora are examples of sites in which content is organised by topic. To use topics for discovery, it helps if we can distinguish topics that are closely related, somewhat related and unrelated.”



Knowledge Graph: Airlines with hub at Changi

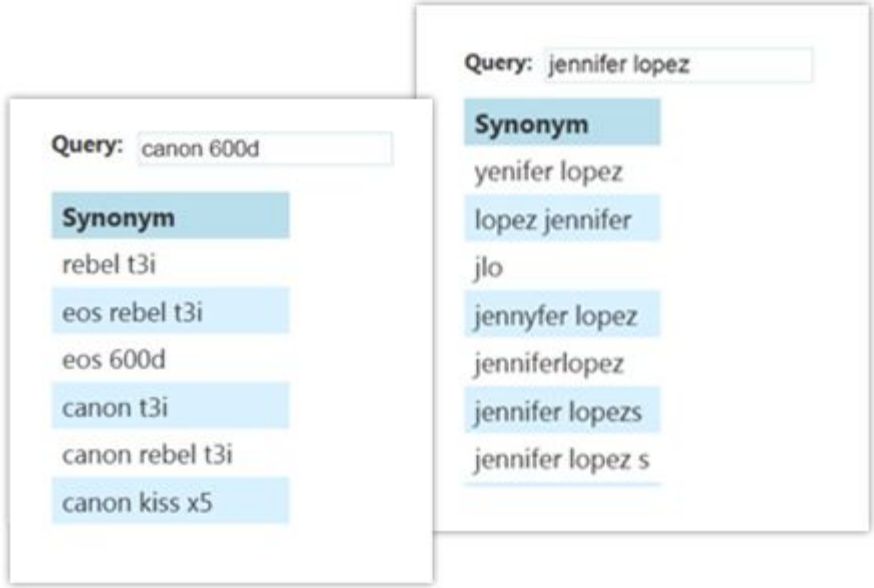


Source: Wikidata via Metaphactory

Free tagging often results in problems later

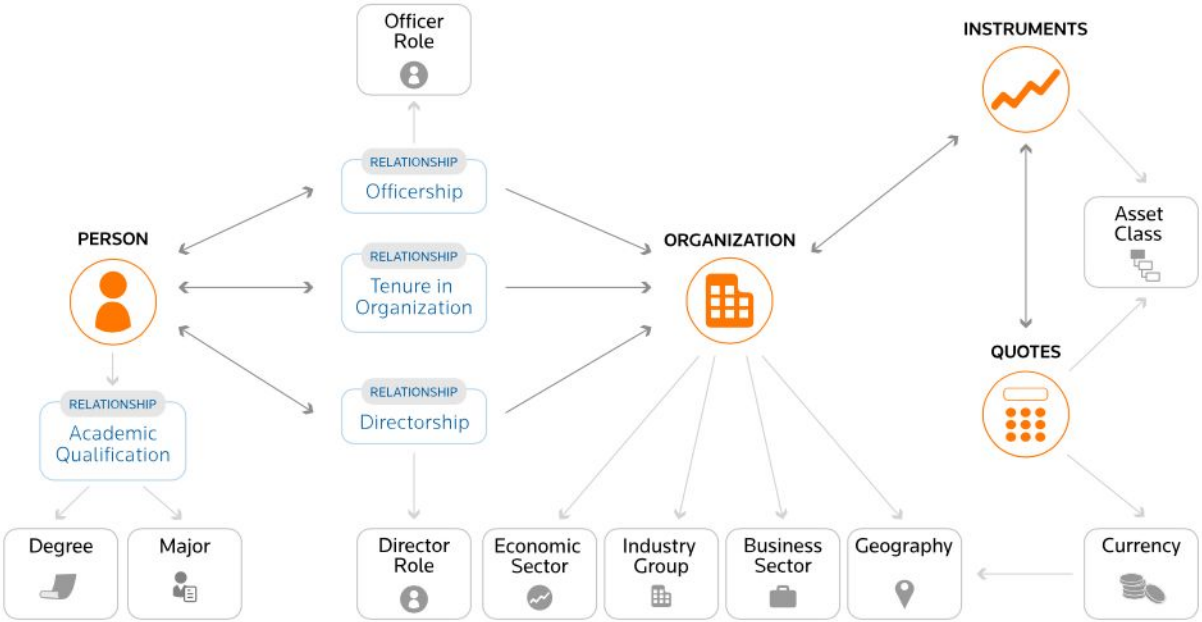
Need to reconcile different labels to determine what's equivalent.

Image: Microsoft



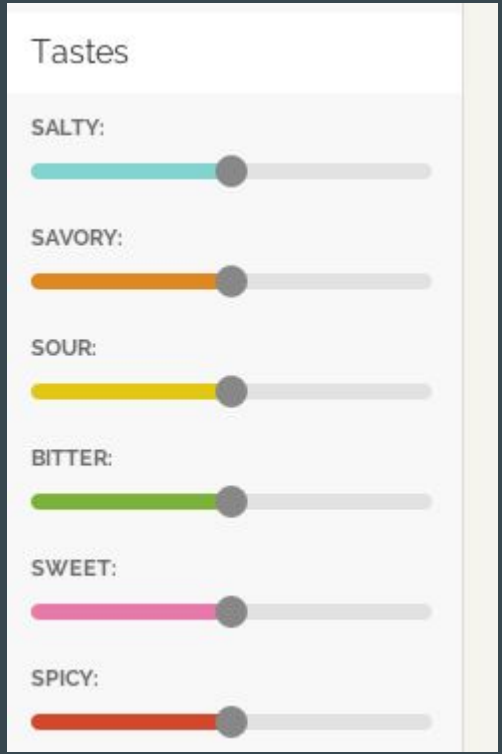
Standardised identifiers are very helpful

PermID from Thomson Reuters

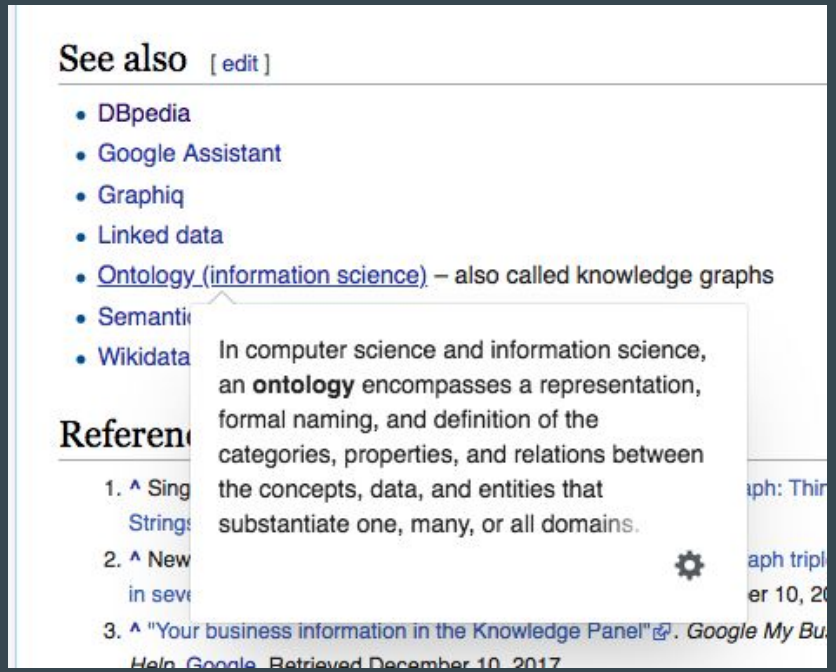


Improving the customer experience

Customers want their content just right



Contextual information on demand



Increasing the reach of the information

How easily can information be consumed by machines and by people?

Reach depends on the interoperability of data

Audiences must be able to access information using their devices and platforms

How to enable information to be available where it is needed?

- Metadata standards
- Modularised information can be repurposed if planned appropriately

The smartphone is the gateway to the Cloud

People have many roles.

They often use one device.

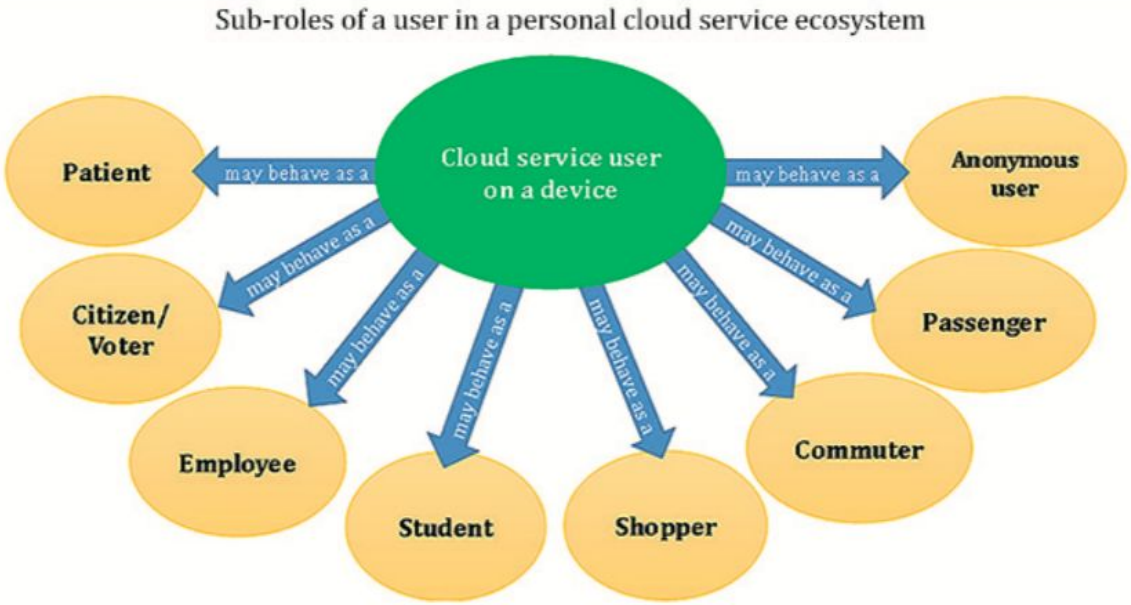


Figure 2 — Example of roles a user can assume in device use scenarios

Source: International Standards Organisation

Delivering information to new channels

Mobile (*mission not yet accomplished*)

- Still difficult to deliver certain information (tables, long docs) to small screens
- Requires ‘refactoring’ content (e.g., cards)

Augmented reality

- Overlaying information on real world entities

Bots

- Entity based interactions

Internet of Things

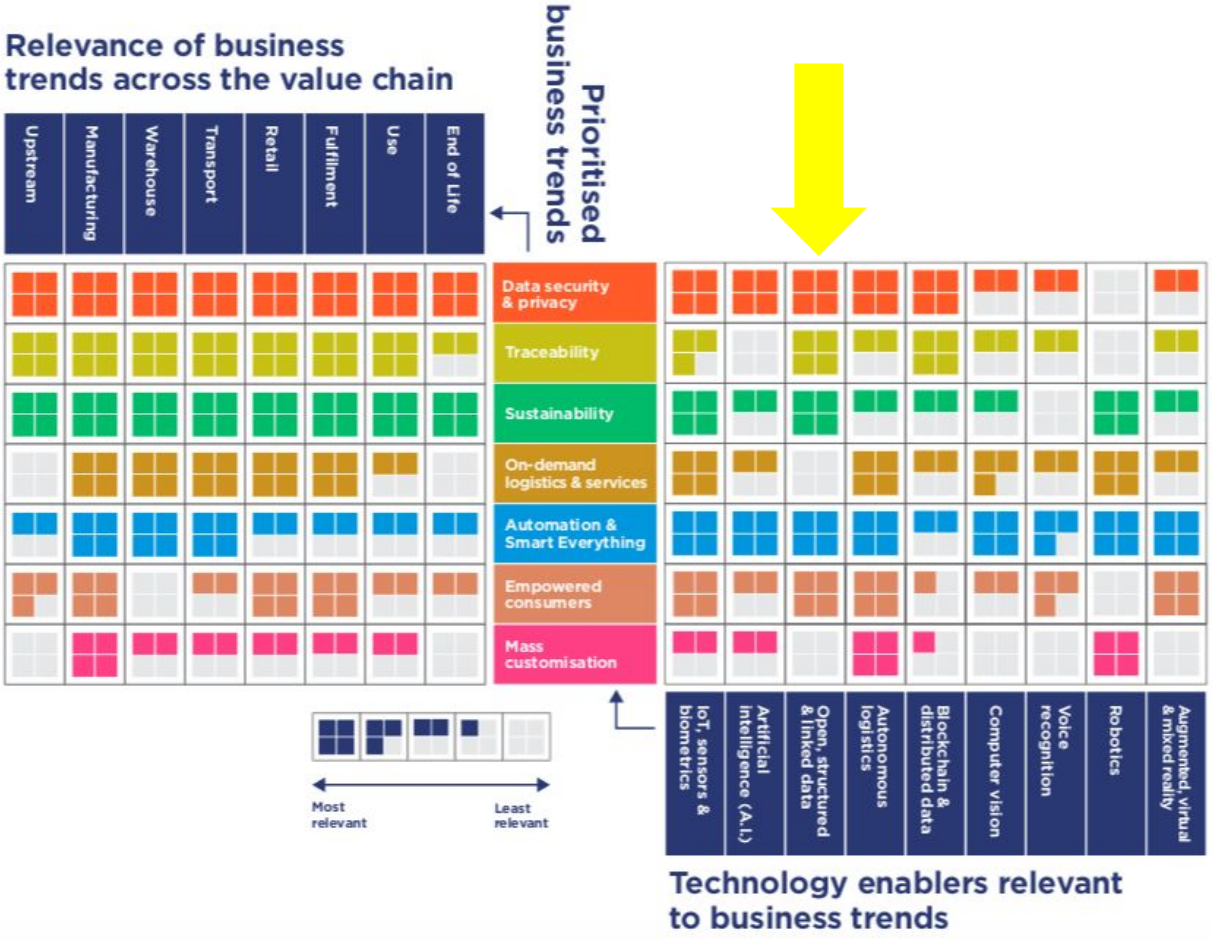
- Information from entities in the physical world

Needs go beyond delivering articles as webpages.

GS1:
Metadata as enabler

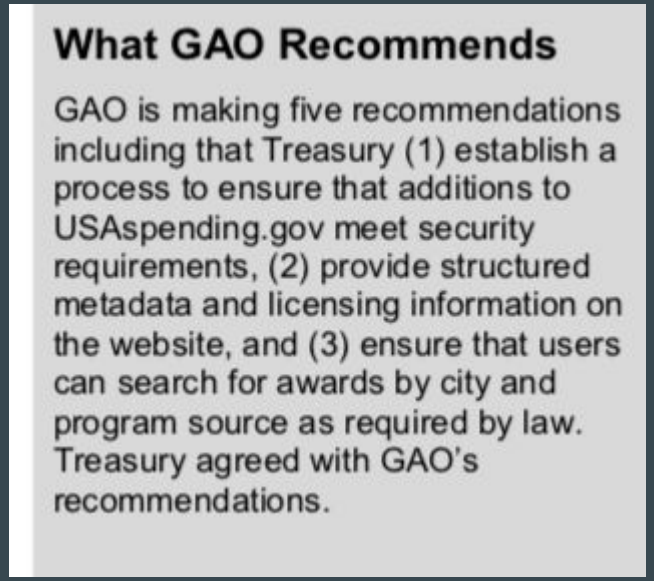
- Traceability
- Sustainability
- Automation
- Empowerment

https://www.gs1.org/docs/inn
ovation/GS1-Trend-Researc
-Paper-070219.pdf



Transparency

“Provide structured metadata”



What GAO Recommends

GAO is making five recommendations including that Treasury (1) establish a process to ensure that additions to USAspending.gov meet security requirements, (2) provide structured metadata and licensing information on the website, and (3) ensure that users can search for awards by city and program source as required by law. Treasury agreed with GAO's recommendations.

Source: US General Accountability Office

Just because information is online doesn’t mean it is accessible

Better analytics

How often is information being used?

In what context is it being used?

As information gets more widely connected, our assumptions about who is using the information and why it is being used may be wrong.

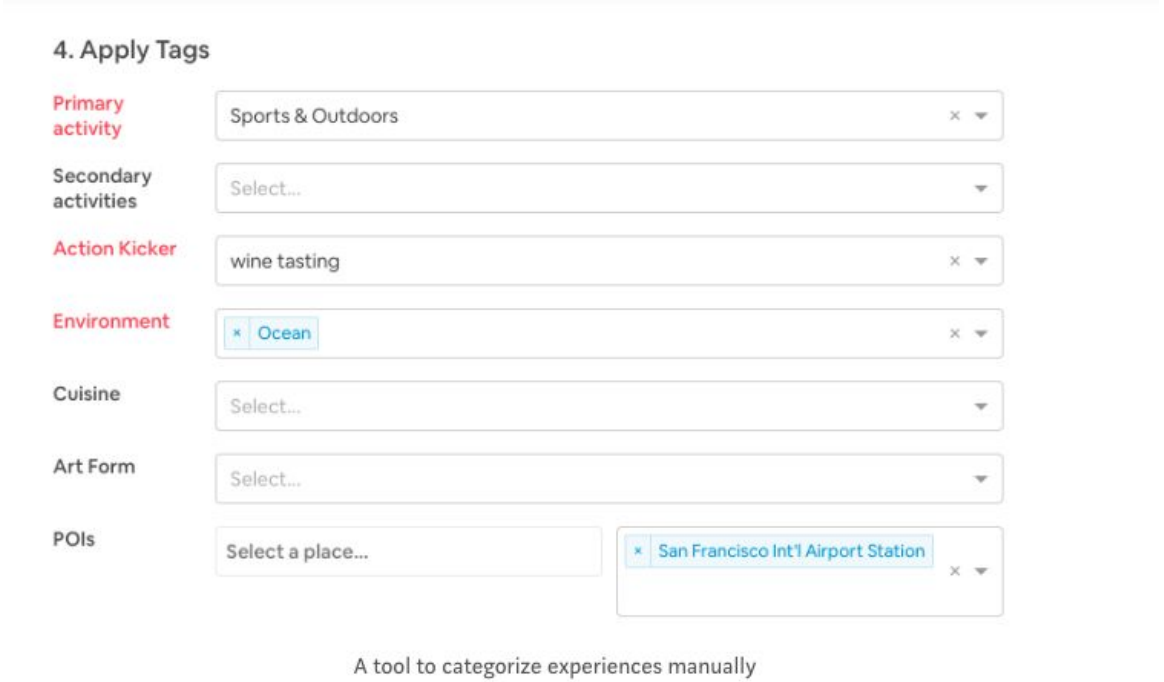
Can now track content according to topic and actions associated with it.

Improving publishing operations

Everyone is a stakeholder

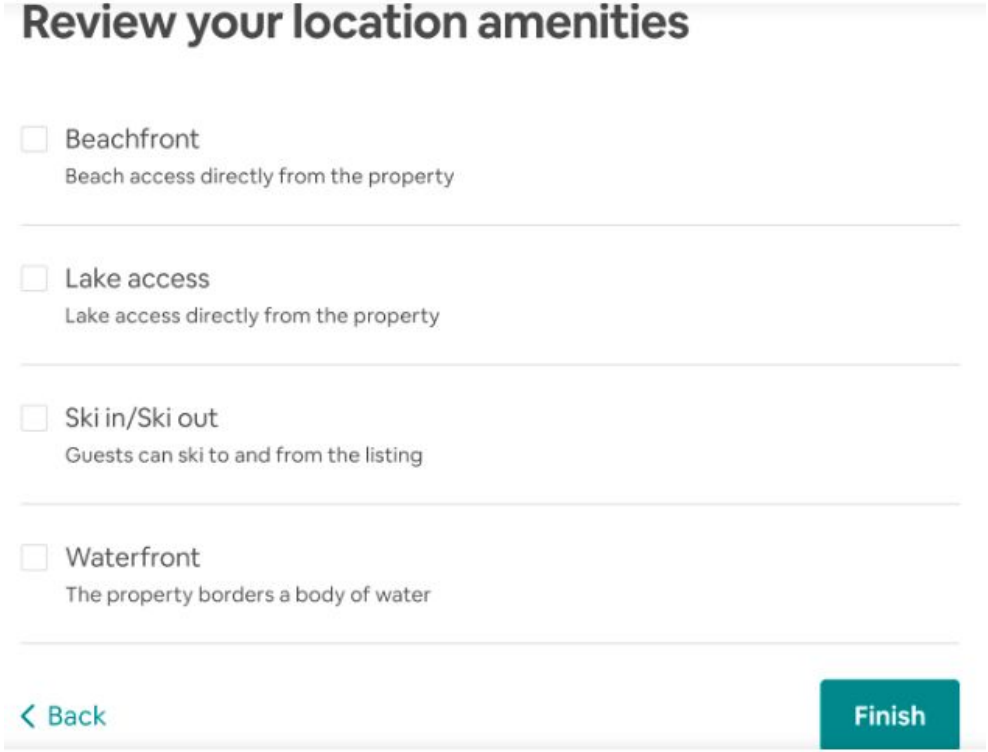
Make it easy for colleagues or partners to add info to the graph

Soure: Airbnb



When everyone contributes, everyone is responsible for quality

Source: Airbnb



Develop a shared schema to organise relationships

ESCO: European Skills, Competencies and Occupations

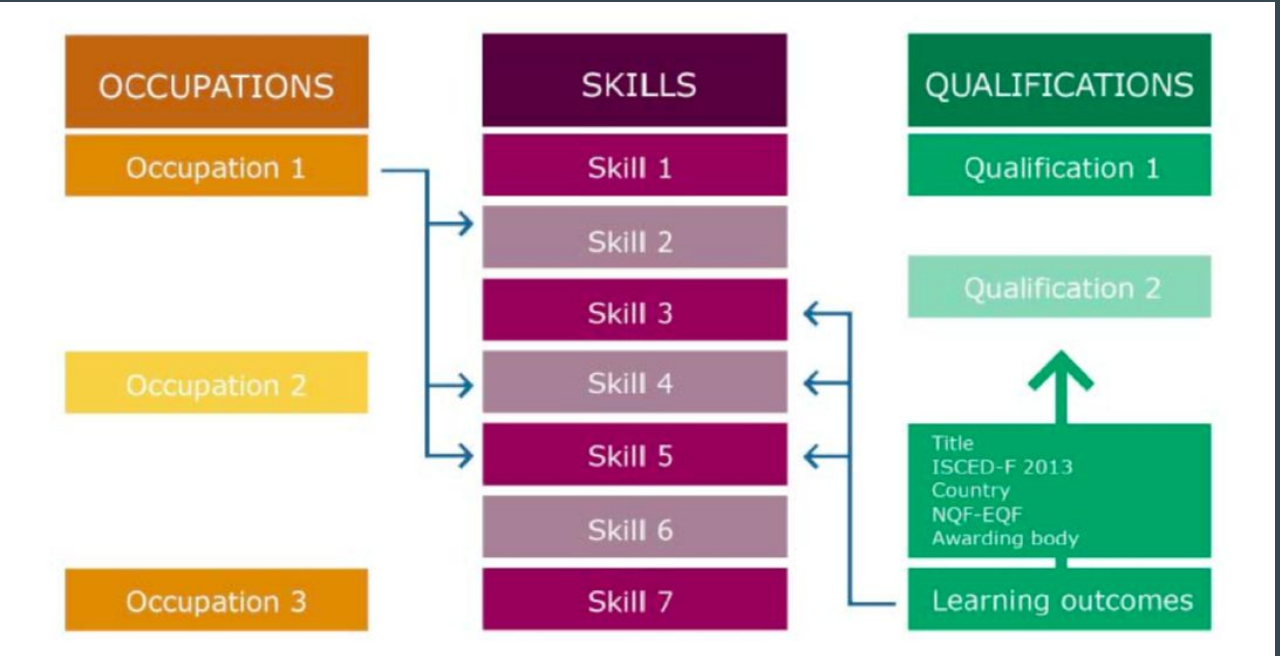


Figure 4: The link between the three pillar

ESCO Example

English (en)

manage content metadata

Description

Apply content management methods and procedures to define and use metadata concepts, such as the data of creation, in order to describe, organise and archive content such as documents, video and audio files, applications and images.

Alternative label

manage metadata

manage content

Skill type

skill

Skill reusability level

cross-sector skills and competences

Essential skill/competence of

technical communicator
e-learning developer
big data archive librarian
instructional designer
web content manager
ICT documentation manager

Optional skill/competence of

marketing manager
online community manager

Status

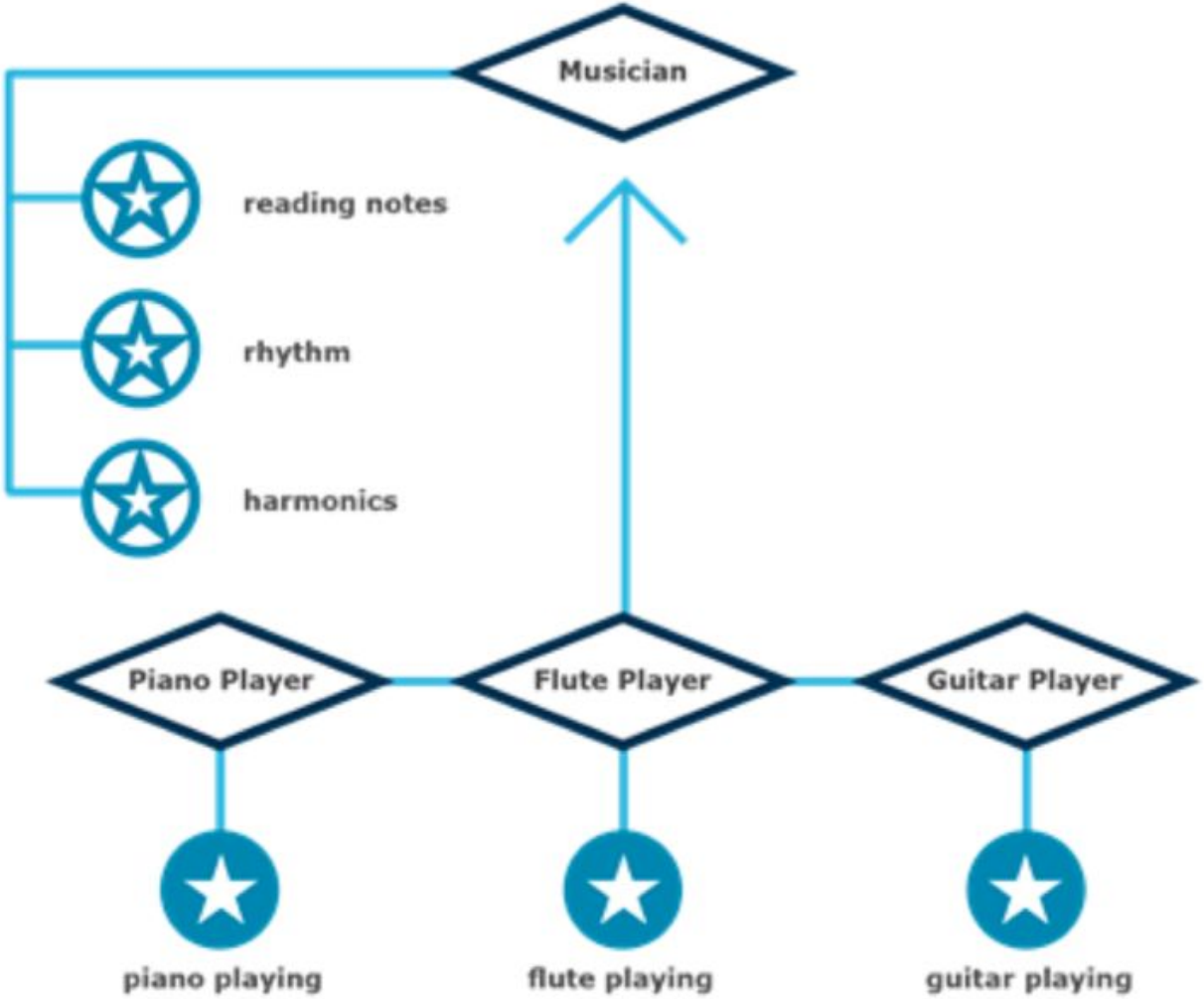
released

Concept URI

http://data.europa.eu/esco/skill/9710092c-f174-4e84-95bf-2064d39ad7a0

What's common? Inheritance

Source: ESCO



Once you know what you have, you can reuse the information more easily

DRY

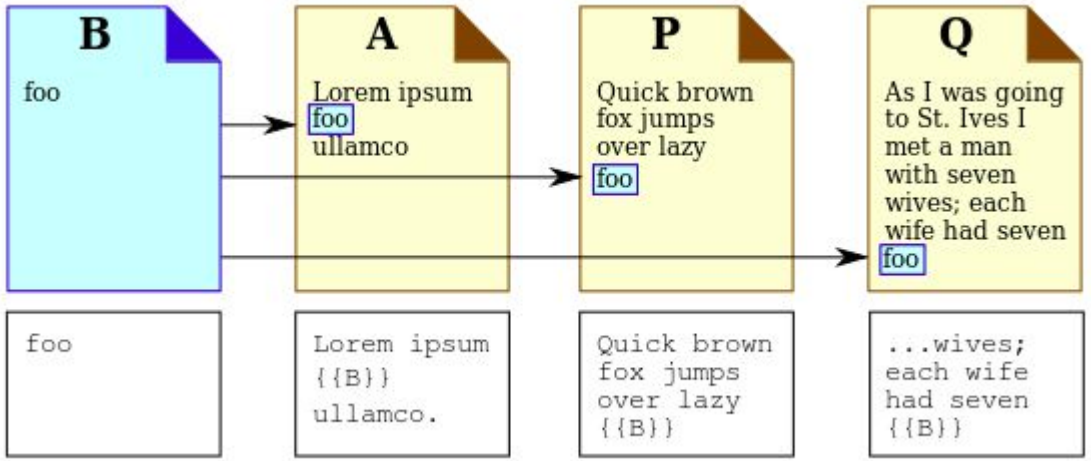
Don’t Repeat Yourself

Wikipedia: One of the most successful examples of large scale content reuse

The concept of 'transclusion' allows the same instance of content to appear in many places at the same time.

There is one master copy.

https://en.wikipedia.org/wiki/Wikipedia:Transclusion



Semantic MediaWiki is used by corporate and government users as a knowledge platform

Semantic MediaWiki (SMW) is a free, open-source extension to MediaWiki – the wiki software that powers Wikipedia – that lets you store and query data within the wiki's pages.

Semantic MediaWiki is also a full-fledged framework, in conjunction with many spinoff extensions, that can turn a wiki into a powerful and flexible knowledge management system. All data created within Semantic MediaWiki can easily be exported or published via the Semantic Web, allowing other systems to use this data seamlessly.

SMW 3.0.1

To reuse information, must decide basic procedures

Who gets to re-use the information (role-based reuse)

- Creator or republisher rights

Where can the information be re-used? (context-based reuse)

- Deciding and designing opportunities to re-use information

Information reuse is only partly a technical issue

Need to determine where content can be reused

```
<noinclude>  This section is visible here; but this section is not visible there. Sections outside of these tags will be visible both here and there. </noinclude>

<onlyinclude> This section is visible here; this section is also visible there. Sections outside of these tags will be visible here, but will not be visible there. </onlyinclude>

<includeonly> This section is not visible here; but it is visible there. Sections outside of these tags will be visible both here and there. </includeonly>
```

https://en.wikipedia.org/wiki/Wikipedia:Transclusion

Reuse can be valuable, but on occasion can be excessive

Spamming: promoting the same information too frequently

- Marketers often guilty of this

Pushed information may not be aligned with user needs

- Reused information can be too generic or broad to answer questions

The process starts with shared goals within the enterprise

- ➔ Highlight current pain points to build awareness of missed opportunities
- ➔ Adopt external terminology when categorising your knowledge
- ➔ Use open standards when implementing technical solutions
- ➔ Connect to external resources (data and code libraries) to bootstrap

Questions