

# Dynamic Semantic Publishing

## Four use case scenarios

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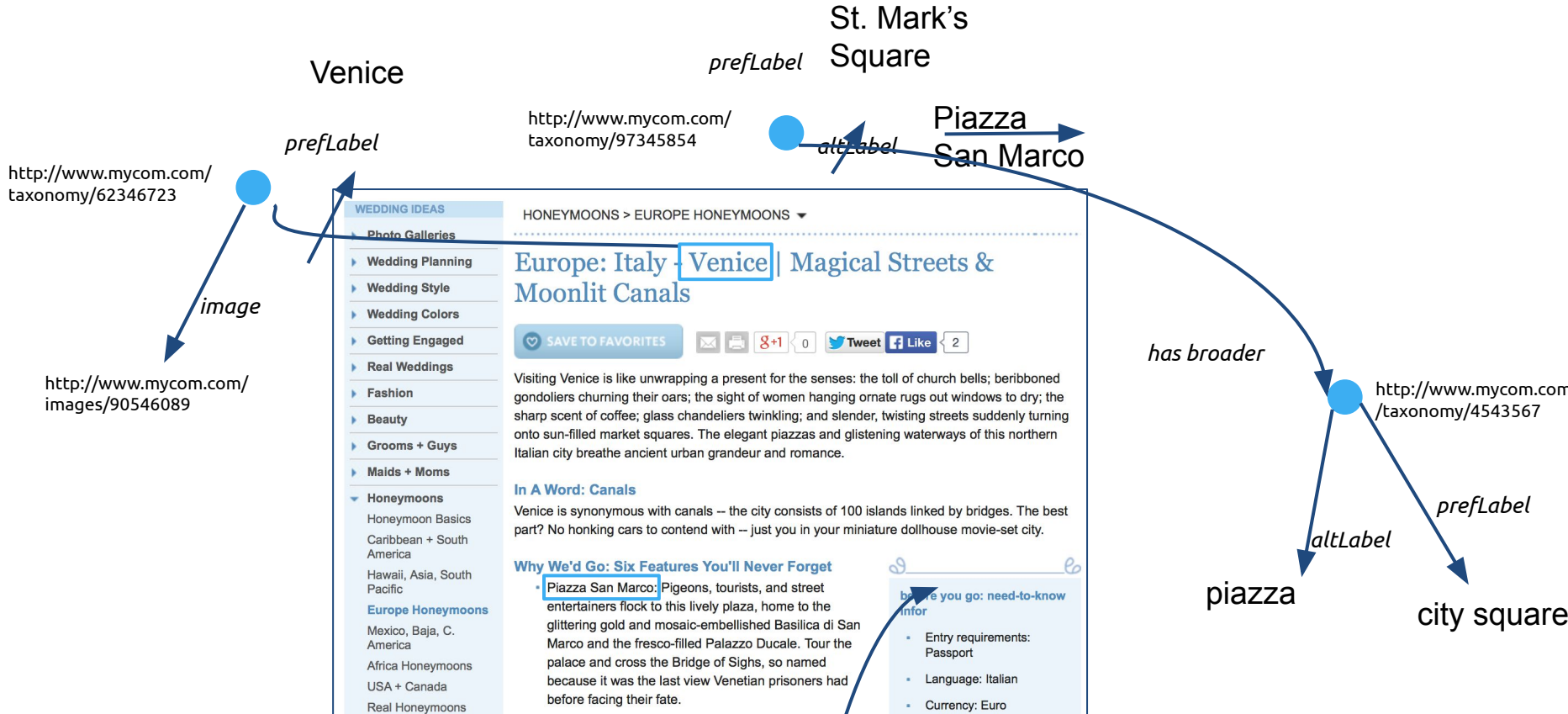
# Four generic application scenarios

- Autotagging based on controlled vocabularies
- Information integration based on semantic knowledge graphs
- Combining unstructured and structured information
- Uncovering the hidden links between business objects

# Topics

1. How to benefit from semantic technology along the content life cycle.
2. How to implement a learning system, in which knowledge graphs evolve over time.
3. How to integrate semantic technology in a CMS.
4. How taxonomies can build the backbone of a linked data infrastructure.

# 'Things' but not strings: Building a 'semantic knowledge graph'



# The power of knowledge graphs: Agility, flexibility, complexity



Traditional approach

Show me all documents about European countries



Graph-based approach

Norway



France



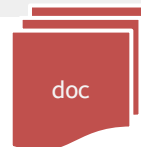
Austria



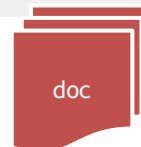
Canada



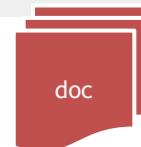
Norway



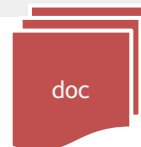
France



Austria



Canada



# The power of knowledge graphs: Agility, flexibility, complexity



## Traditional approach

Europe,  
Norway



Europe,  
France



Europe,  
Austria



America,  
Canada

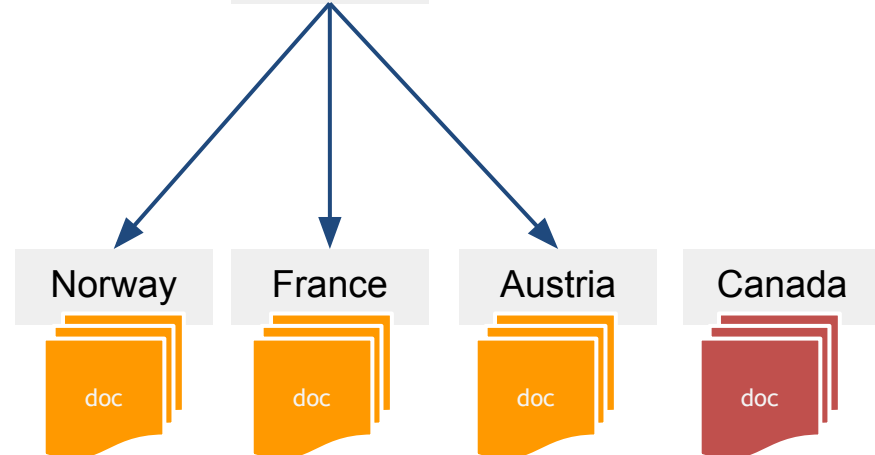


Show me all  
documents about  
European countries



## Graph-based approach

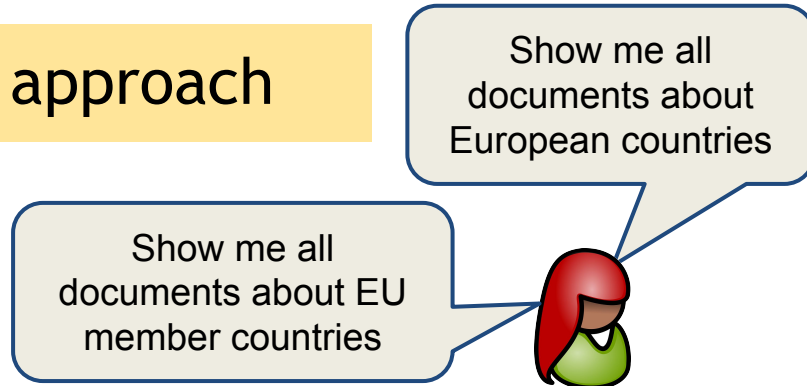
Europe



# The power of knowledge graphs: Agility, flexibility, complexity



## Traditional approach



Europe,  
Norway



Europe,  
France



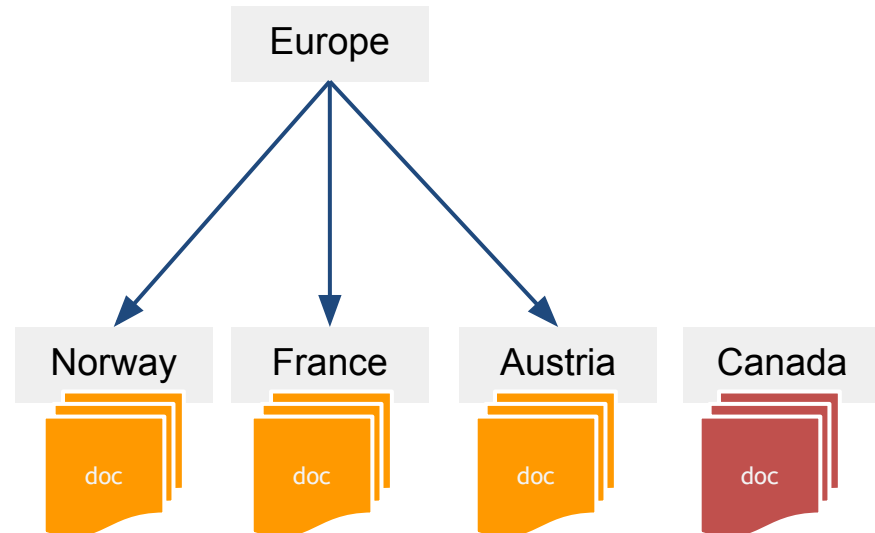
Europe,  
Austria



America,  
Canada



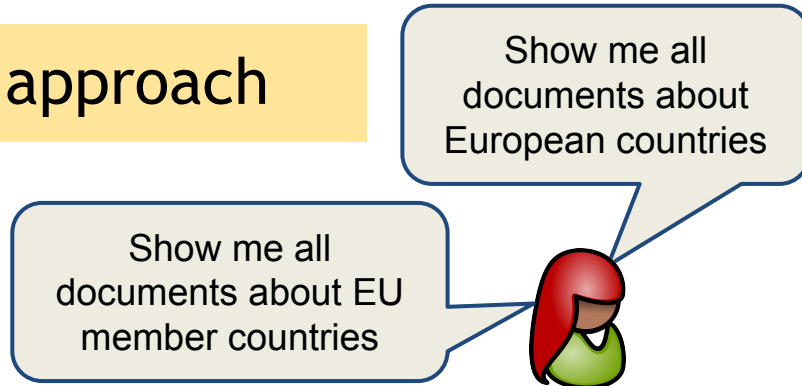
## Graph-based approach



# The power of knowledge graphs: Agility, flexibility, complexity



## Traditional approach



Europe,  
Norway



EU,  
Europe,  
France



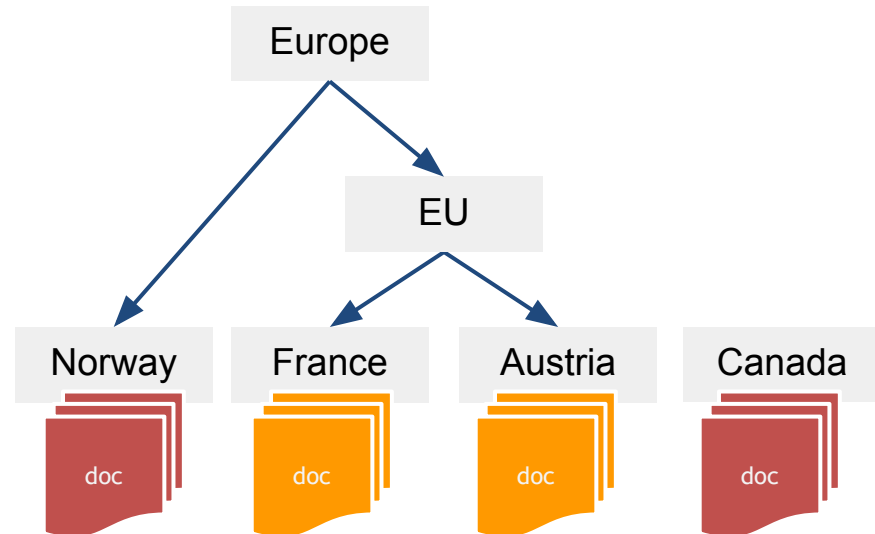
EU,  
Europe,  
Austria



America,  
Canada



## Graph-based approach

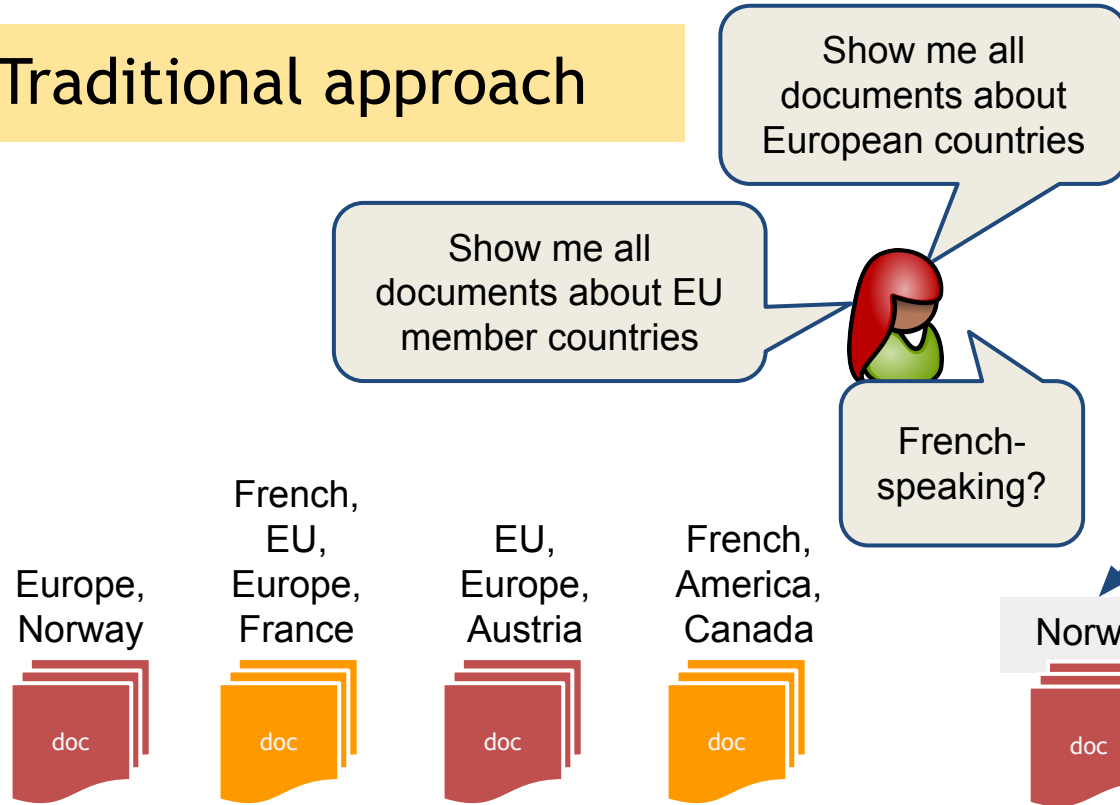




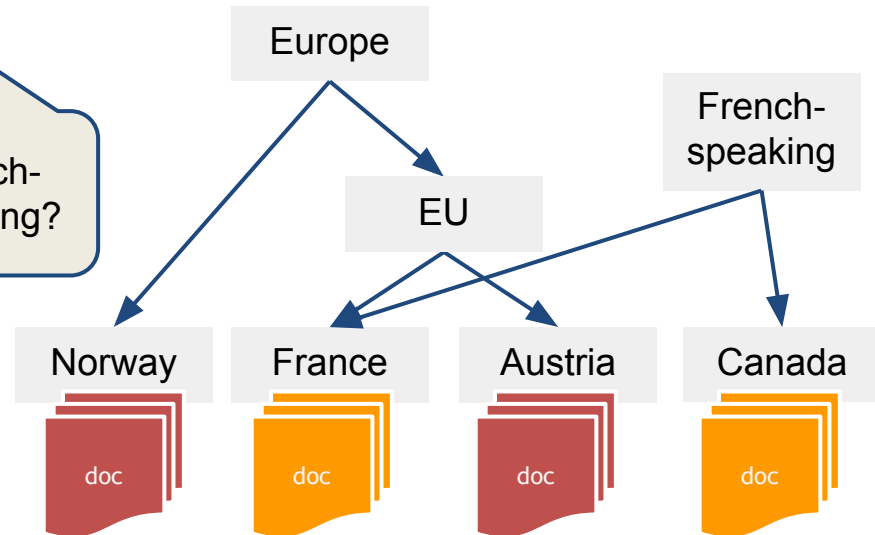
# The power of knowledge graphs: Agility, flexibility, complexity



## Traditional approach



## Graph-based approach



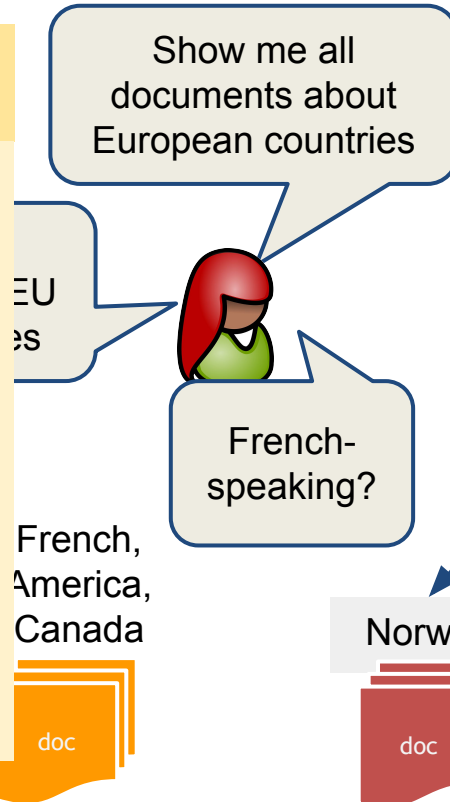
# The power of knowledge graphs: Agility, flexibility, complexity



## Traditional approach

### Metadata per document

1. No or little network effects
2. No reuse of metadata
3. Metadata resides in silos
4. Data quality hard to measure



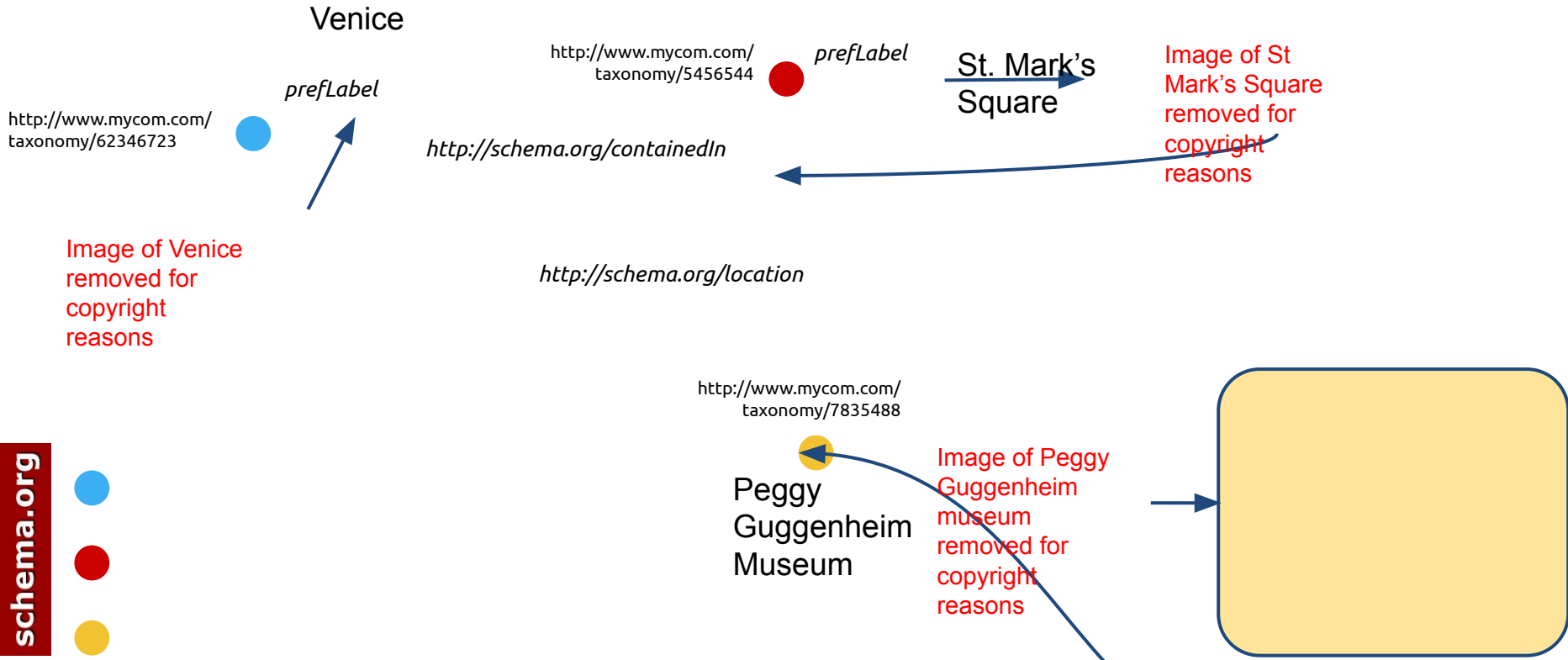
## Graph-based approach

### Knowledge about metadata

1. Explicit knowledge models
2. Reusable and measurable
3. Metadata is machine-processable
4. Standards-based metadata
5. Linkable metadata opens silos



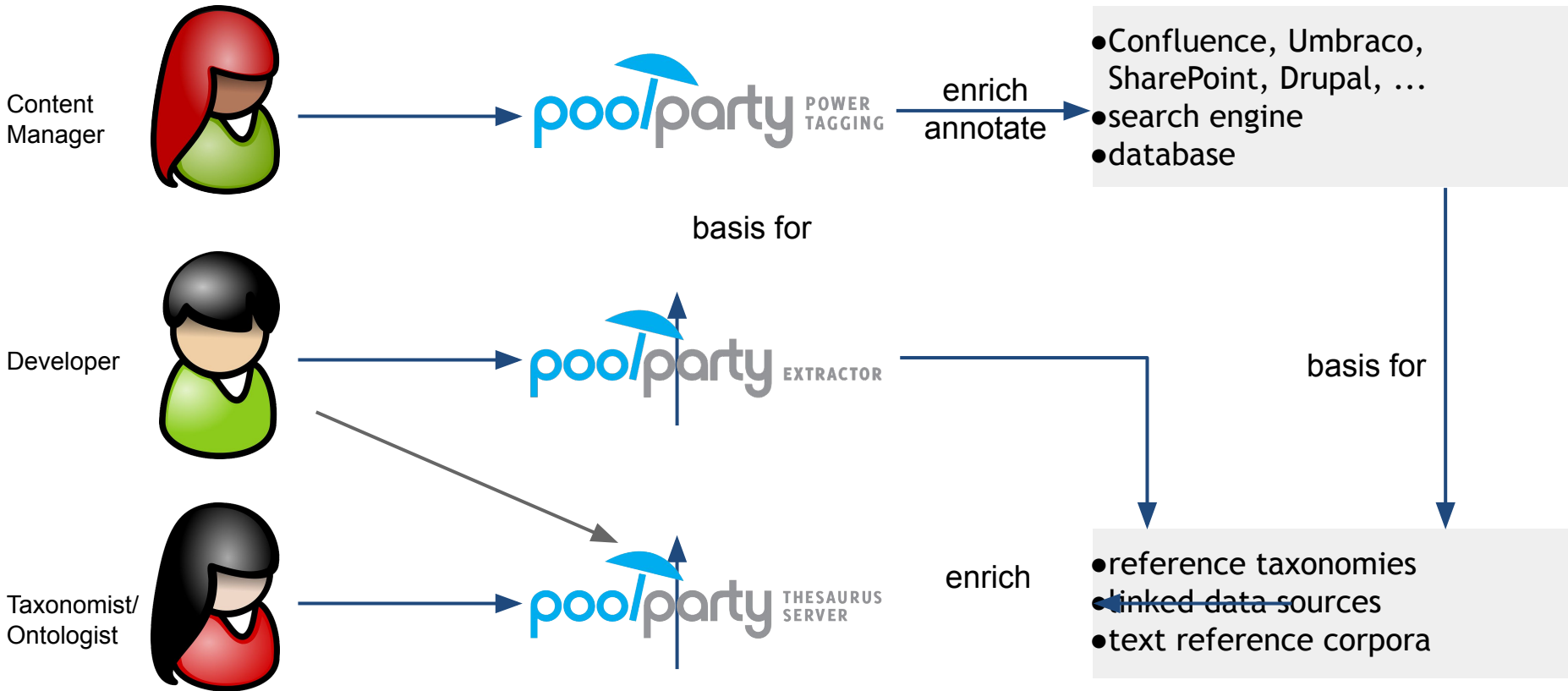
# Use Schema.org or other ontologies to extend your knowledge graph





# See how it works:

## PoolParty components & workflows



Type to search...

European Fuel Prices

Actions

CONTENT

- Home
- Resources
  - Auto Tags
  - Nintendo
  - Texts
  - Documents
    - European Fuel Prices**
    - Get Tags (TXT)
    - Get Tags (PDF)
- Recycle Bin

Document Extraction Properties

Document Extraction

Extract Document's Concept(s)

Thesaurus Extracted Concepts

Search thesaurus to add con

You can remove concepts that don't apply to this document

- biofuels
- international development
- crude oil extractions policies
- greenhouse gas emissions
- fossil energy
- industry
- forestry
- energy security
- bioethanol
- biodiesel
- sustainability

Document Extracted Concepts

Add all items

You can propose new concepts to the thesaurus from the terms below

- oil
- european
- fuel
- prices
- development of european fuel
- fuel prices is similar
- route map up mount
- similar to a route
- map up mount everest
- climbed for a long
- struggle with the emerging
- giants china and india
- india over the finite
- emerging economic giants china
- resources of the world
- never-ending hunger for energy
- fuel prices
- transport sector is responsible
- responsible for a large
- european greenhouse gas emissions
- part of european greenhouse
- large part of european
- biofuels such as pure
- alternative offering the possibility
- oil are a commercial

Save and publish

## 1. Content Creation

- semi-automatic enrichment with metadata
- amending proposals (e.g. prefLabel instead of altLabel)
- approval processes based on users' knowledge profiles
- automatic summarization based on content analytics

## 2. Content Linking

- semi-automatic content linking
- integration of external sources (incl. web content and open data)
- media recommender

## 3. Content Publishing

- semantic annotation for SEO
- dynamic widgets / mash-ups
- tooltips to increase readability
- visualization of complex correlations

How to apply *semantics* along the

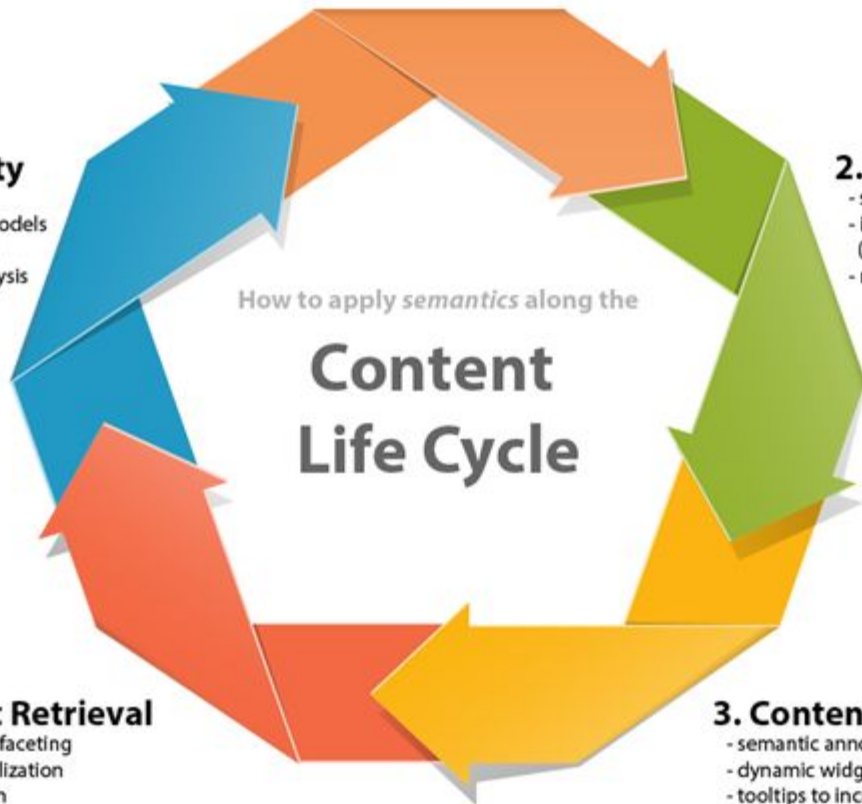
# Content Life Cycle

## 4. Content Retrieval

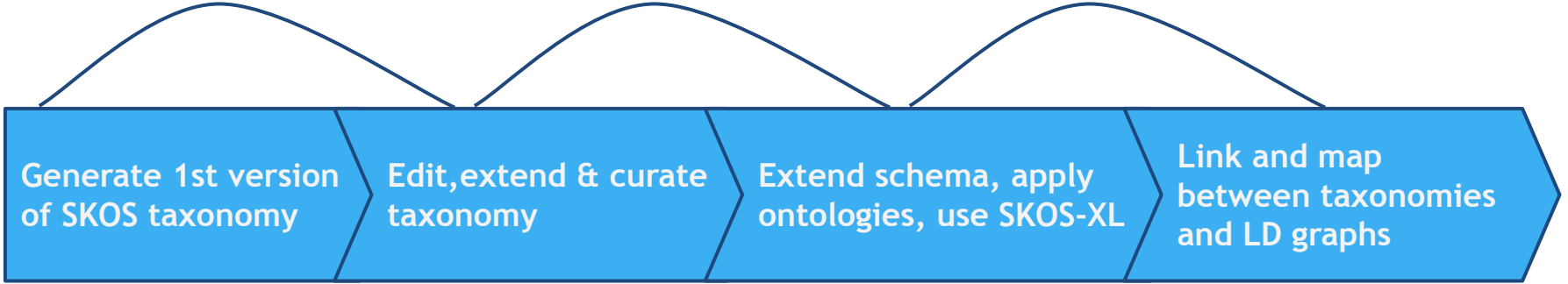
- classification & faceting
- search personalization
- similarity search
- push-services & alerts

## 5. Content Quality

- prevent of duplicates
- extension of knowledge models based on content analytics
- readability/sentiment analysis



# From Simple SKOS to large knowledge graphs



- Reuse of existing vocabularies
- Corpus Analysis
- Excel import
- XML import
- Linked data harvester



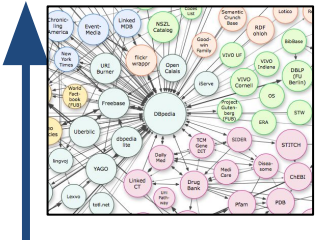
- Taxonomy Editing
- Collaborative workflows
- Free term extraction
- Tag recommender
- Quality Checker



- Reuse existing ontologies
- Create custom schemes
- Apply SKOS-XL
- Apply ontologies on your SKOS taxonomy



- Automatic mapping between taxonomies
- Linked Data frontend
- Link to other LD graphs, e.g. DBpedia or Geonames



# Benefits

- Efficient & Agile Data Model
- Higher Information Quality
- Improved Information Retrieval






# Benefit arguments

<i>Basic argument</i>	IT-Management / Software Architect	Information & Knowledge Management	Business Process Management
<i>Efficient and agile data model</i>	Better reuse of existing information resources helps to save costs	Better understanding of relations between things increases communication skills	Unified views on business objects lead to better decisions
<i>Higher information quality</i>	Efficient handling of metadata	Increased transparency on inconsistencies and contradictions	Information flows adapt to the needs of the user
<i>Improved information retrieval</i>	Automatic structuring of unstructured data help to save costs	Consistent use of controlled vocabularies triggers additional network effects	BI-like, complex queries become possible

# Information integration: Healthdirect Australia



Single point of access incl. harmonized search facets:

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One central vocabulary hub:  
Australian Health Thesaurus (AHT)

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Great variety of category and metadata systems

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Over 120 information partners and sources





Learn more:

# Semantic as a Service

