Platform Linked Data Nederland

Inloop introductie

# LINKED DATA VOOR DE LIEFHEBBER

waterOnet


Linked
Data
Big
Data
Open
Data

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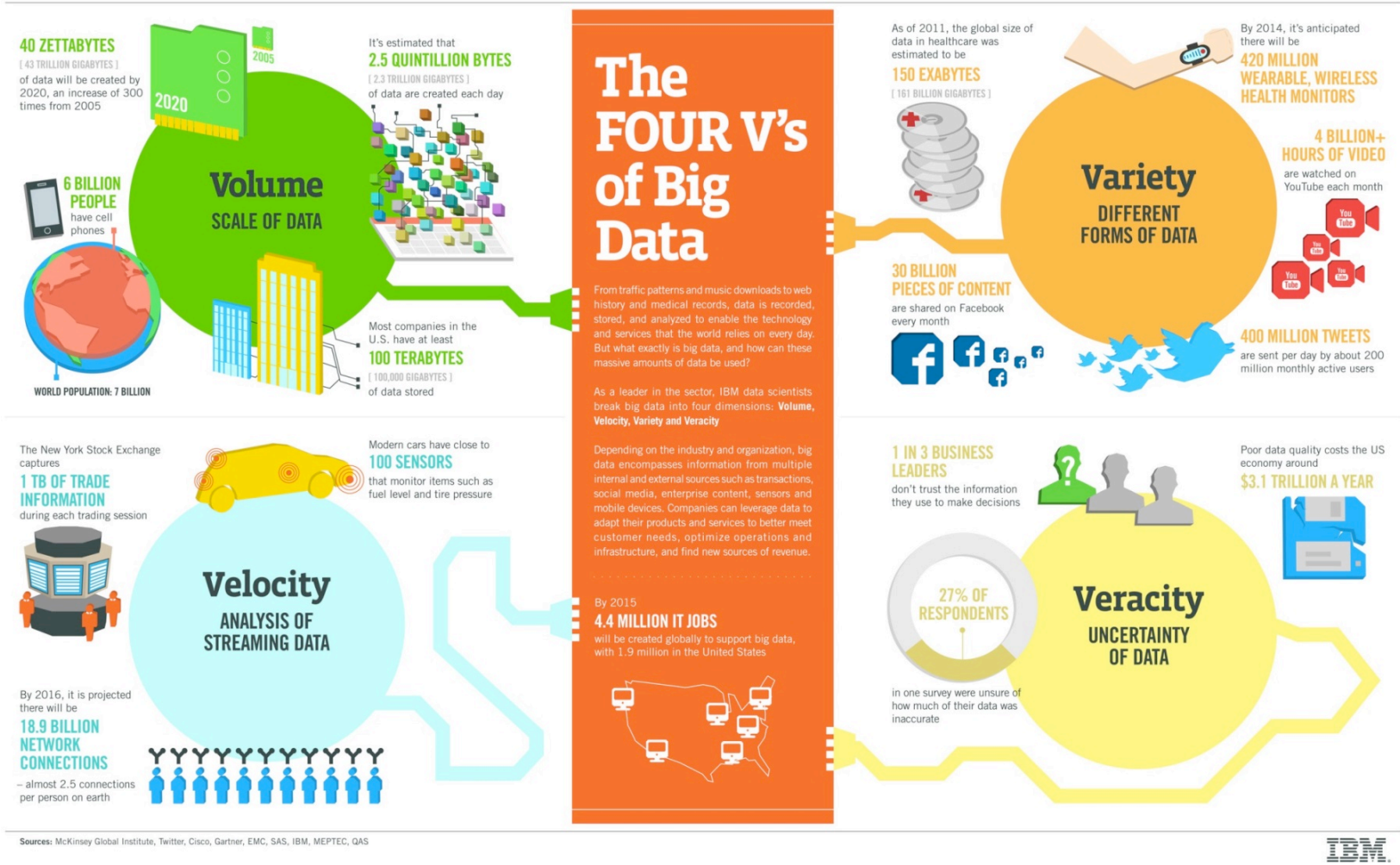
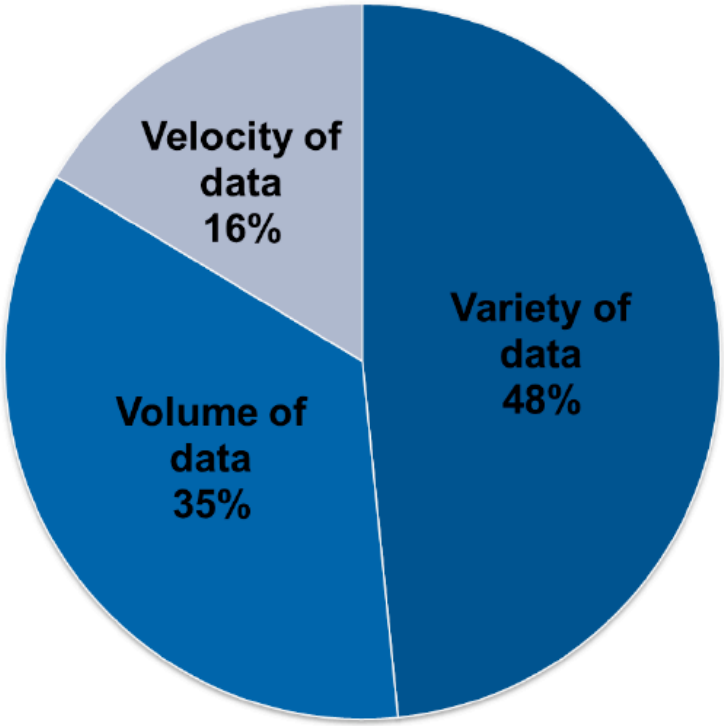
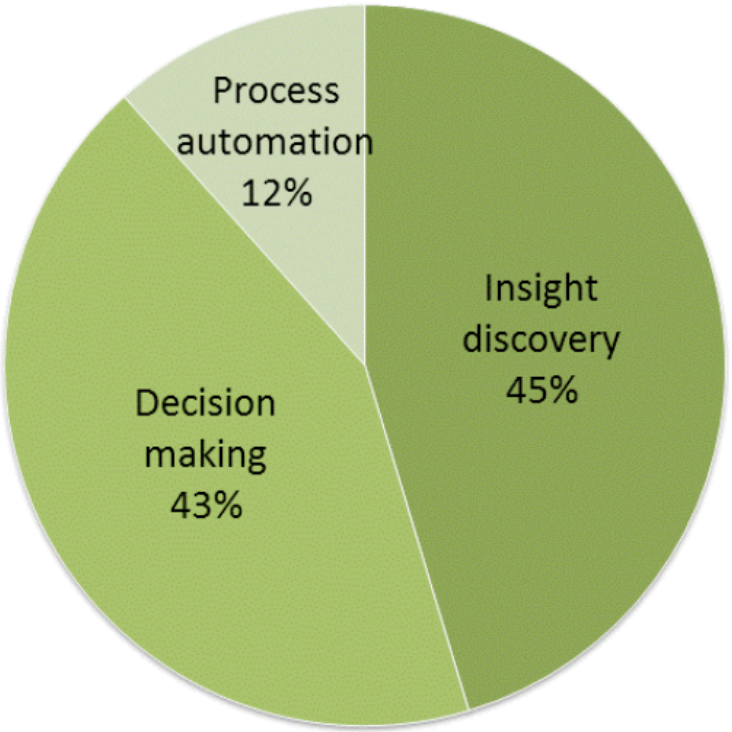


# Acknowledge big data initiatives are unique

Biggest Big Data Challenge




Biggest Big Data Opportunity




Gartner: Big Data Makes Firms Smarter; Open Data Makes Them Richer

*Source: Getting Value from Big Data, Gartner Webinar Poll*

Gartner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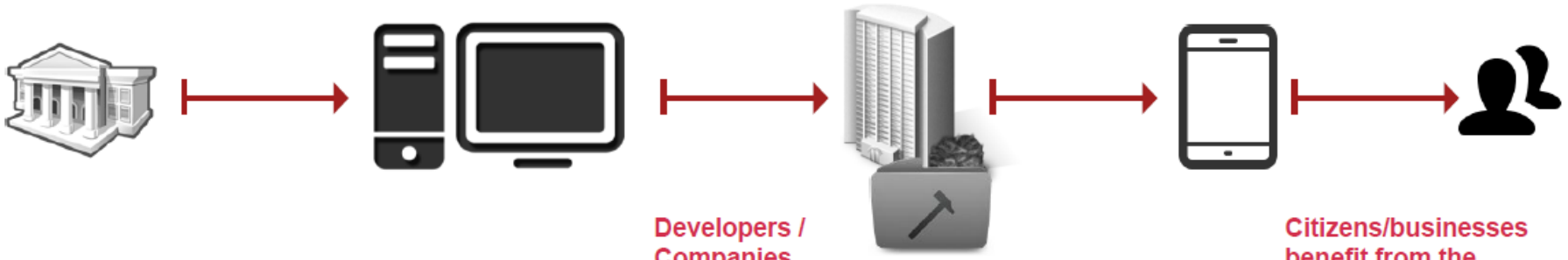
Data
Open
Data

# *Open Government Data has a great potential to create social and economic value*

Publishing data

Public administrations share data online



Developers / Companies integrate data into apps (services)

Developers / Companies search for data

Citizens/businesses benefit from the apps (services)

Reusing data

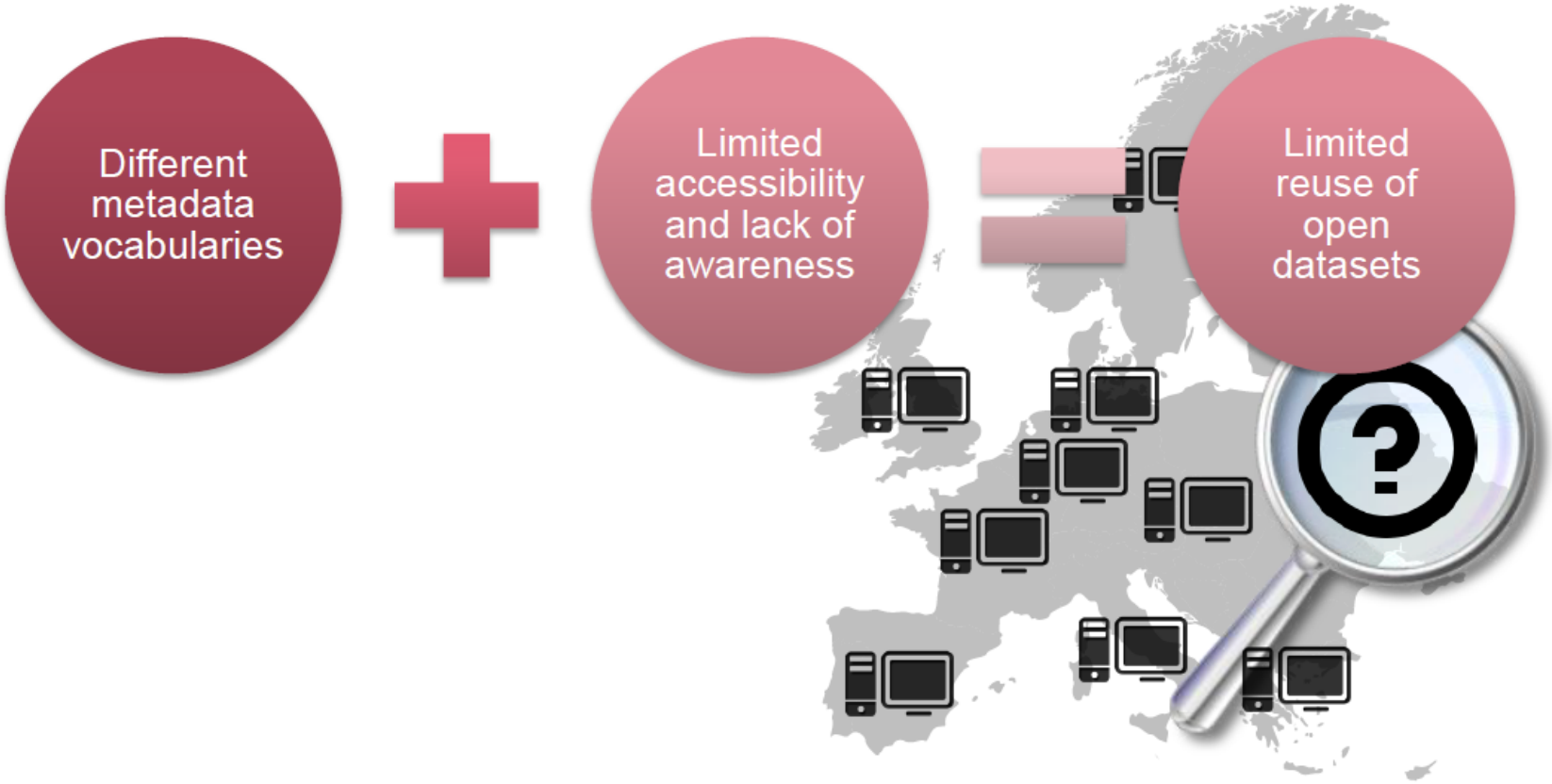
# *Barriers to Open Data publishing and reuse*

| Data publishers | Data reusers |
|---|---|
| No view on which data is more likely to be reused / has a higher ROI potential. | Lack of overview of existing/available datasets. |
| Unclear business model for publishing Open Data. | Unclear business model for reusing Open Data. |
| Limited tool support. | Data is often of low quality, outdated, unstructured and/or not machine-readable. |
| Competing licences for datasets. | Lack of licensing information or incompatible licences. |
| Competing vocabularies for describing datasets. | Different vocabularies when searching for datasets. |
| Domain-specific metadata needs. | Lack of (good quality) metadata. |
| Effort required for keeping the metadata up-to-date. | Lack of provenance information. |

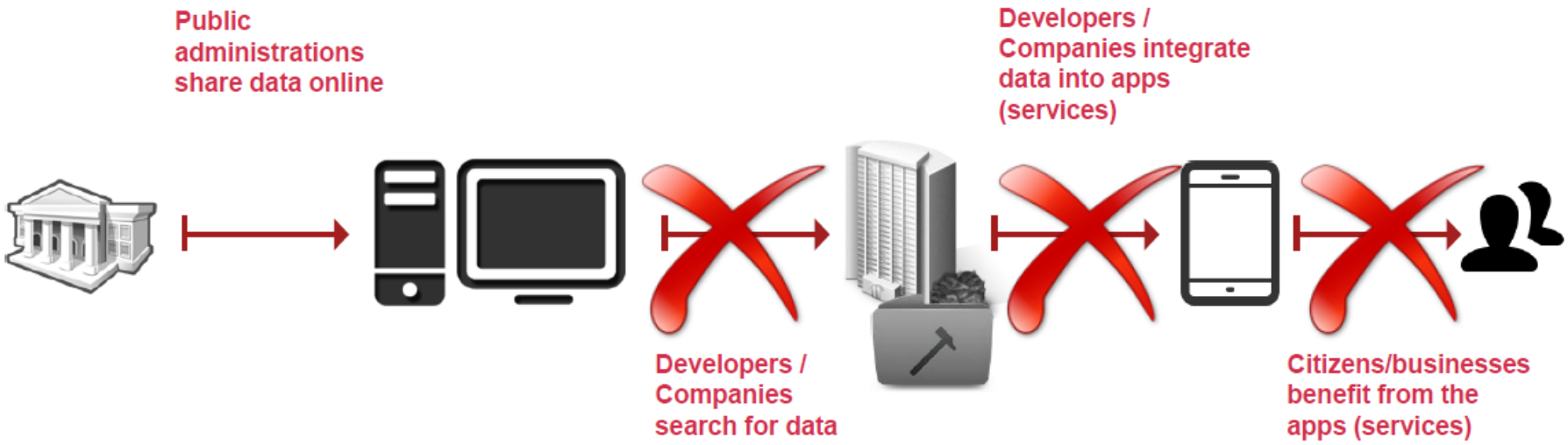
Metadata

Metadata

# *Limited accessibility and lack of (cross-border/sector) awareness of open datasets*



# *No reuse = No social and economic value*



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Kan open, kan big, kan smart…..maar belangrijkste is dat data herbruikbaar is!

# WE WILLEN BRILJANTE DINGEN MET DATA KUNNEN DOEN!


Linked
Data
Big
Data
Open
Data

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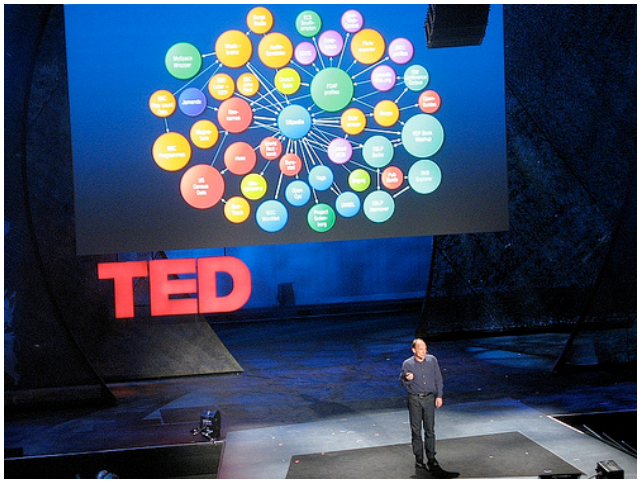
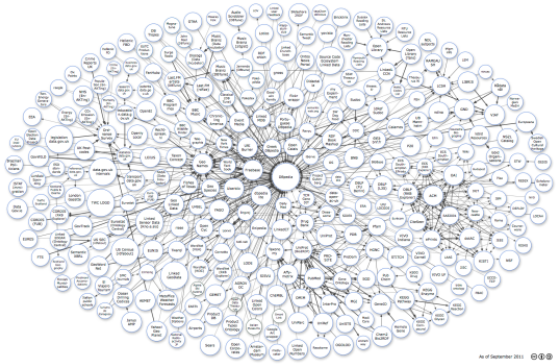
# Waar komt het vandaan?


W3C®
Semantic Web







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# Maar wat is het?

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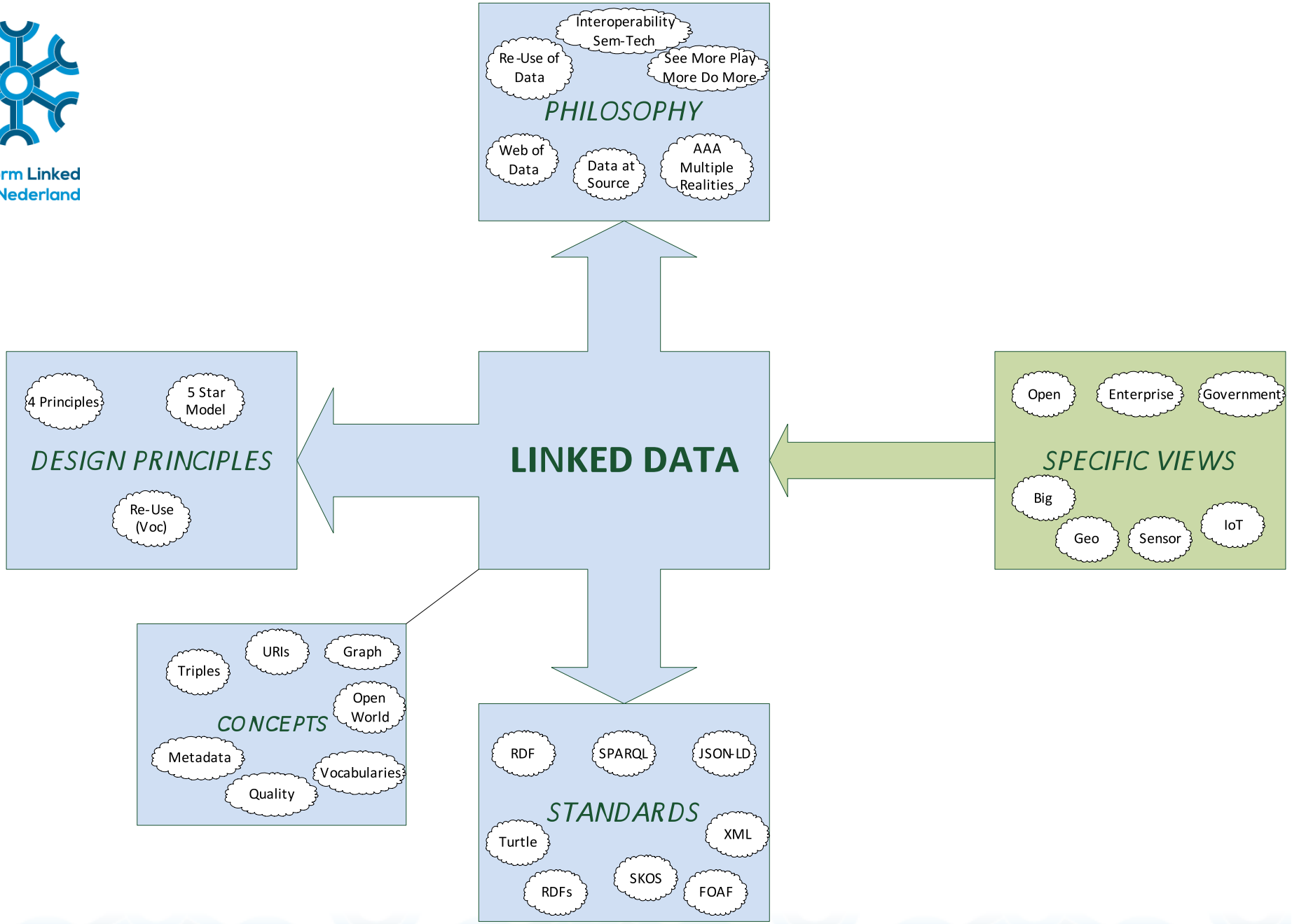

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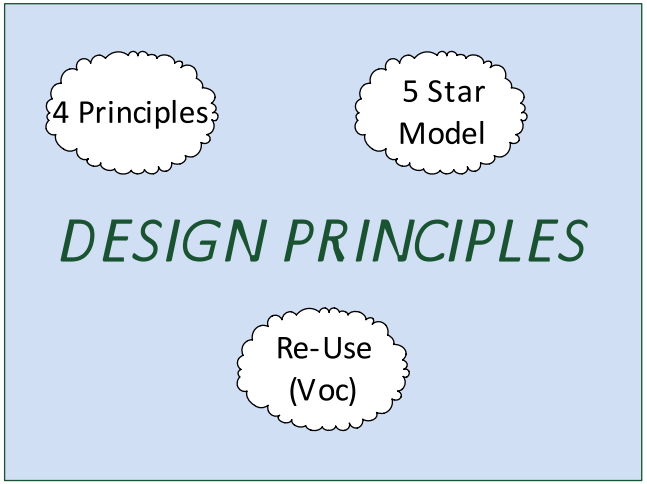
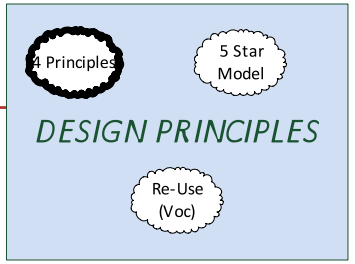
# Linked Open Data: Design Principles



# *Defining linked data…*




*"Linked data is a set of design principles for sharing machine-readable data on the Web for use by public administrations, business and citizens."*

*EC ISA Case Study: How Linked Data is transforming eGovernment*

The **four design principles** of Linked Data *(by Tim Berners Lee)*:

Use Uniform Resource Identifiers (URIs) as names for things.

Use HTTP URIs so that people can look up those names.

When someone looks up a URI, provide useful information, using the standards (RDF*, SPARQL).

Include links to other URIs so that they can discover more things.

**See also:**
http://www.youtube.com/watch?v=4x_xzT5eF5Q
http://www.w3.org/DesignIssues/LinkedData.html
http://www.youtube.com/watch?v=uju4wT9uBIA

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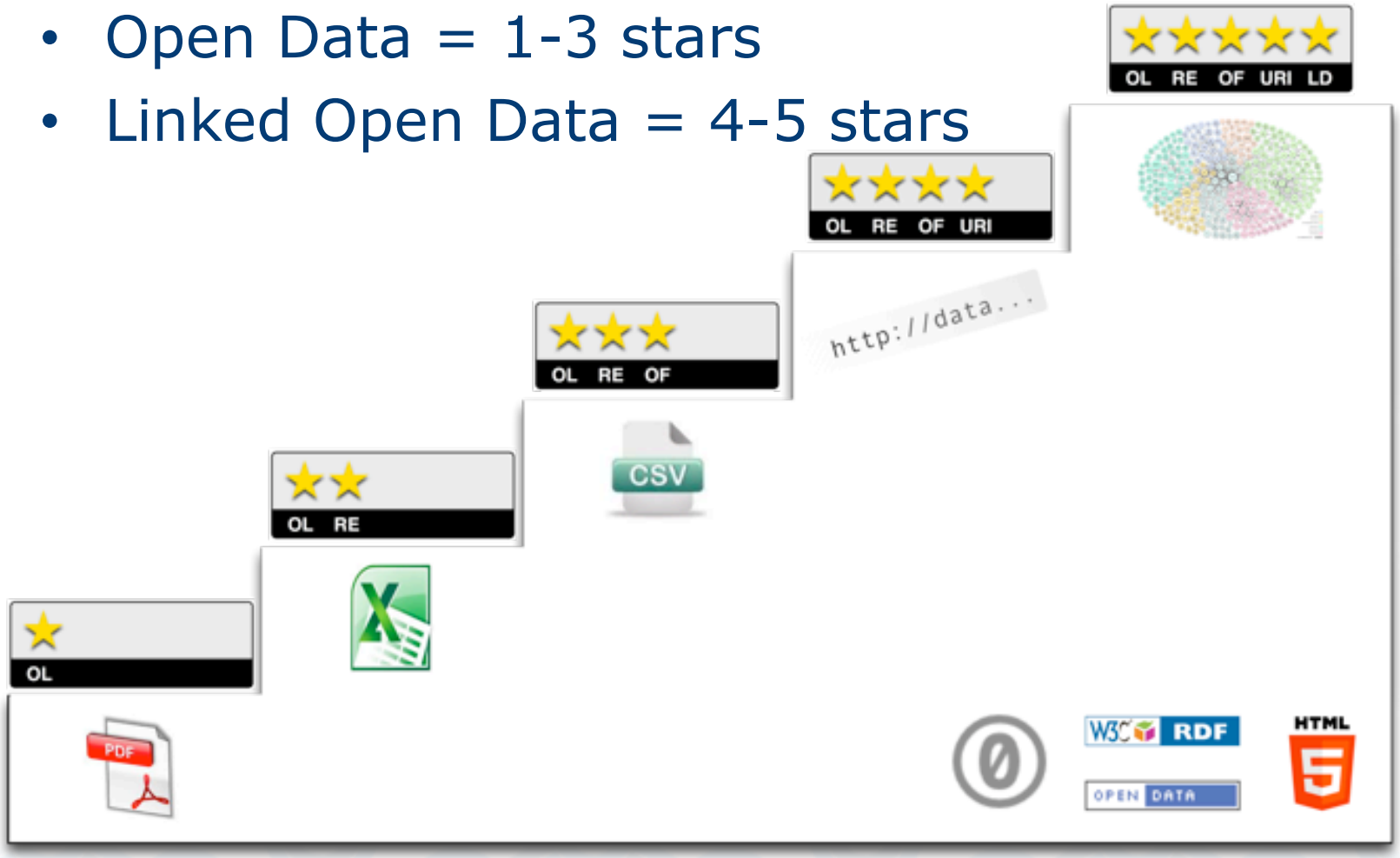
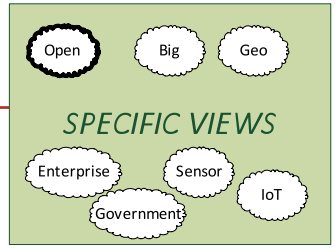
# 5 star model based on “W3C standards”

- Open Data = 1-3 stars
- Linked Open Data = 4-5 stars

# *Linked data vs. open data*




*"Open data is data that can be freely used, reused and redistributed by anyone – subject only, at most, to the requirement to attribute and sharealike."*
*- OpenDefinition.org*

## Open data

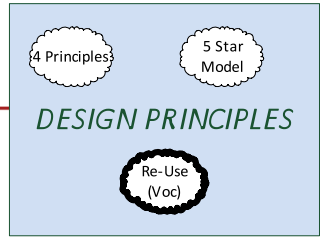
Data can be published and be publicly available under an open licence without linking to other data sources.

≠

## Linked data

Data can be linked to URIs from other data sources, using open standards such as RDF without being publicly available under an open licence.

**See also:**
Cobden et al., A research agenda for Linked Closed Data
http://ceur-ws.org/Vol-782/CobdenEtAl_COLD2011.pdf

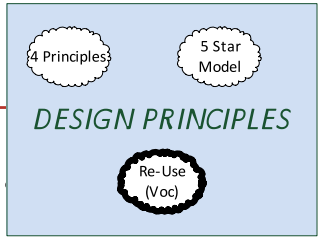


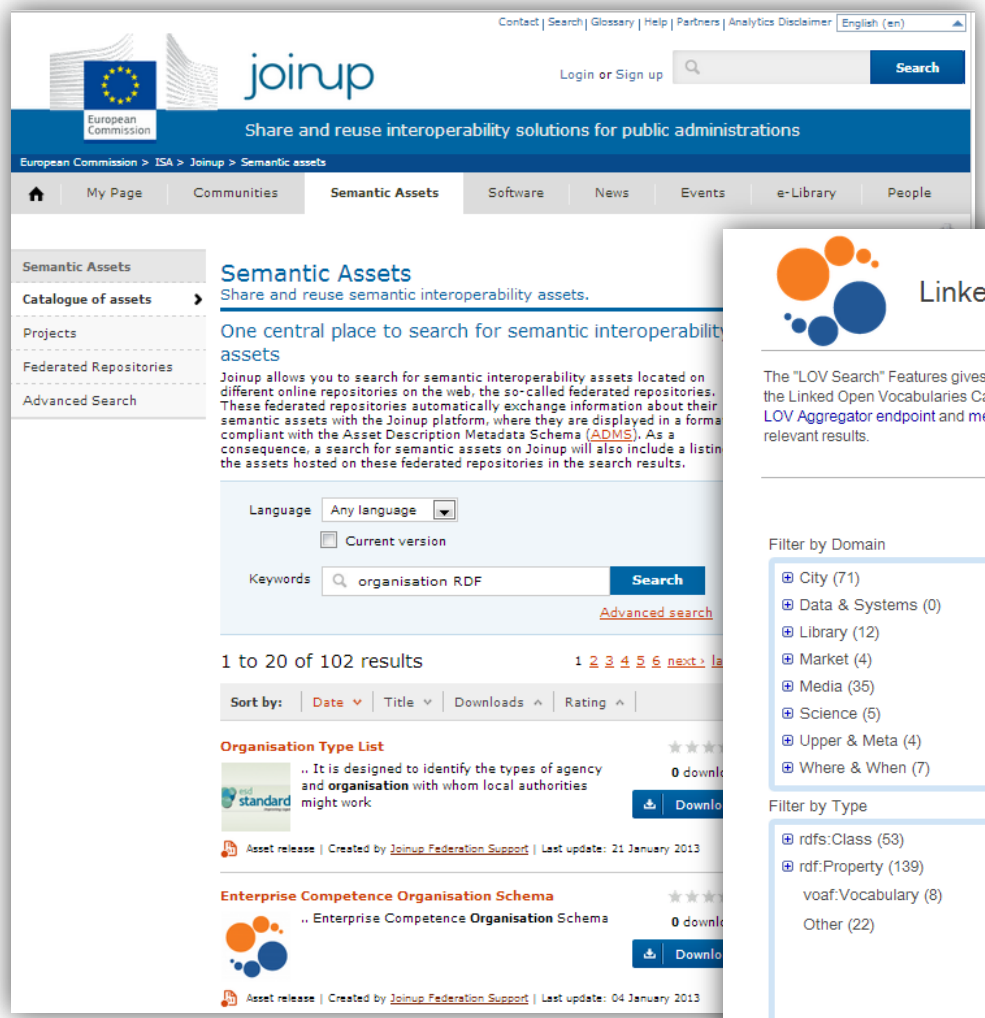

# *Model your data – reuse if possible, mint if necessary*

- **Reuse** existing vocabularies **as much as possible**.
  - If you determine there is no reusable, authoritative source for the specific domain, **create your own using**:
    - RDF Schema (RDFS): Basic RDF vocabulary to describe the classes and properties of classes.
    - Web Ontology Language (OWL): knowledge representation language for describing ontologies.

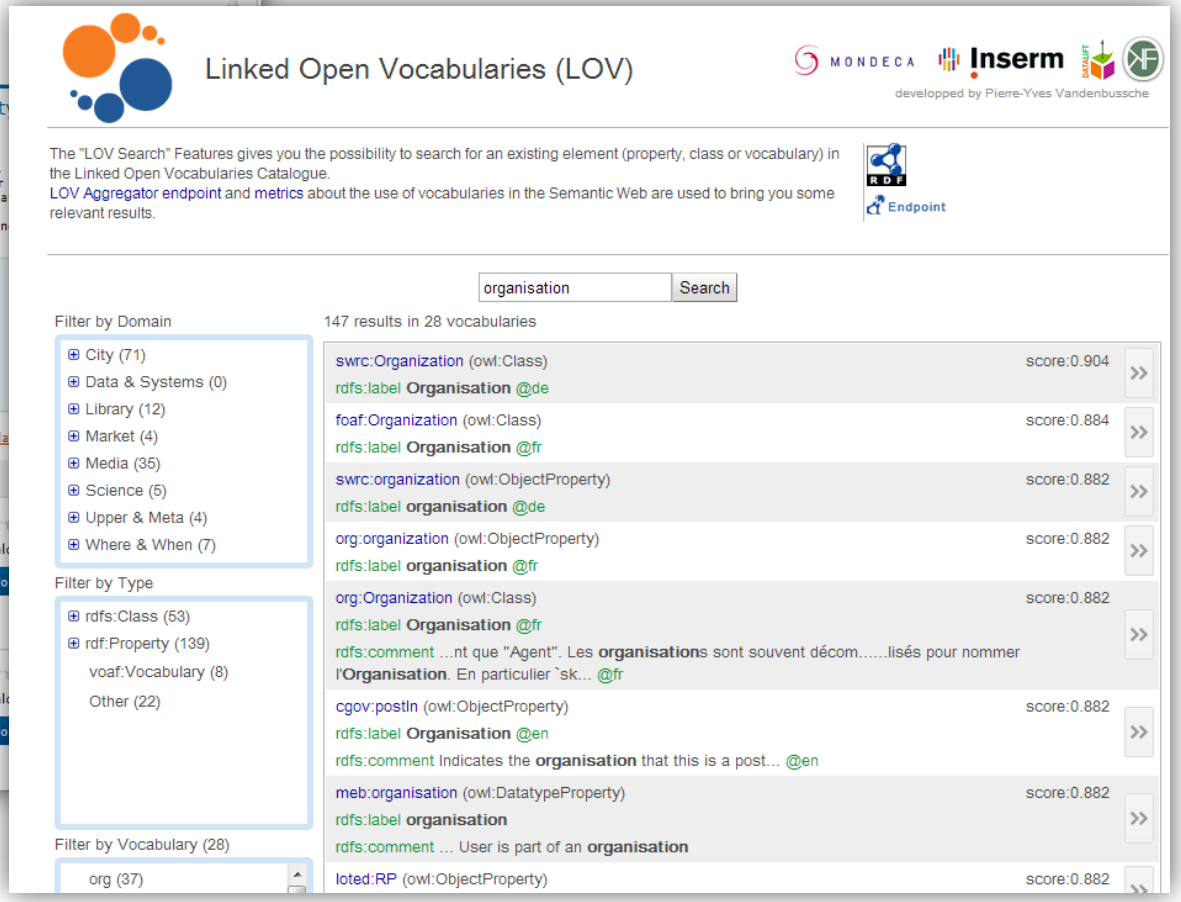
**See also:**
http://www.slideshare.net/OpenDataSupport/model-your-data-metadata
http//www.w3.org/TR/owl-features/
http://www.w3.org/TR/rdf-schema/

# You can find reusable RDF vocabularies on..




http://joinup.ec.europa.eu/




http://lov.okfn.org/

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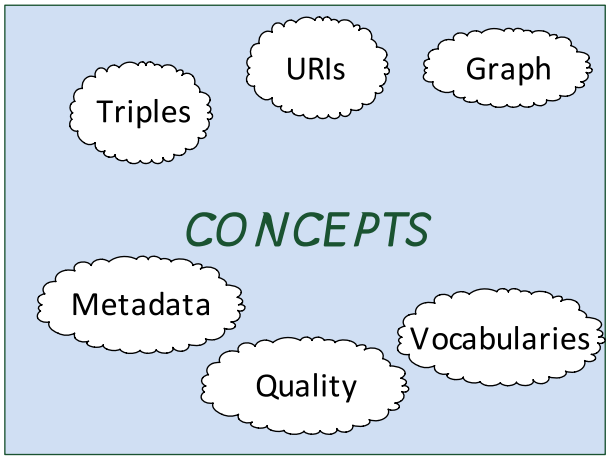
# Linked Open Data: Concepts



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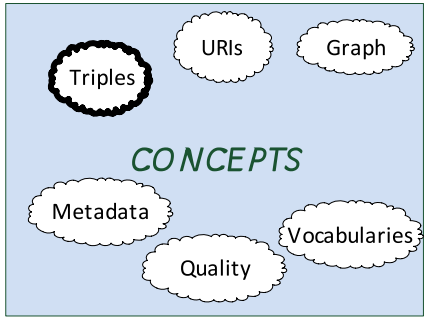
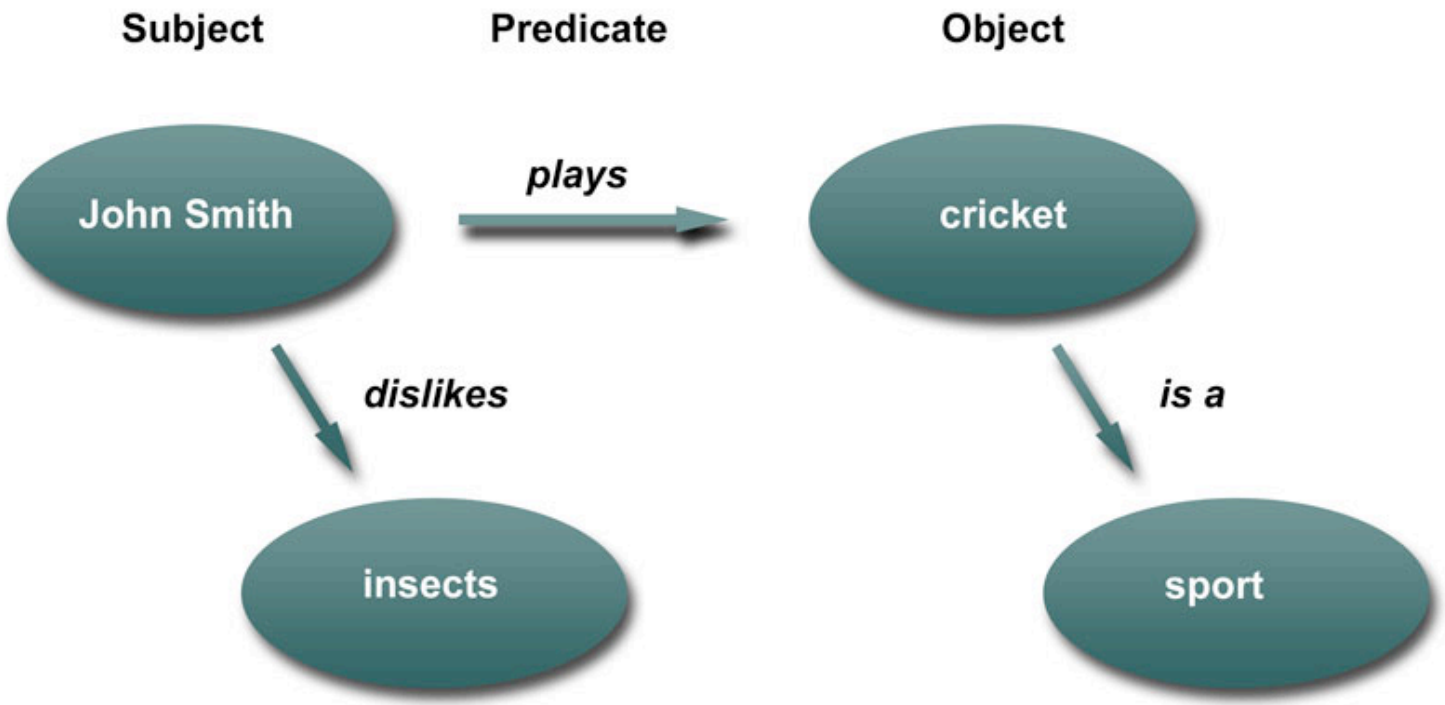
# TRIPLES




- RDF – AAA principle



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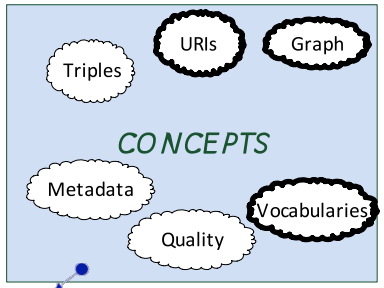
# Linked (Open) Data Concepts

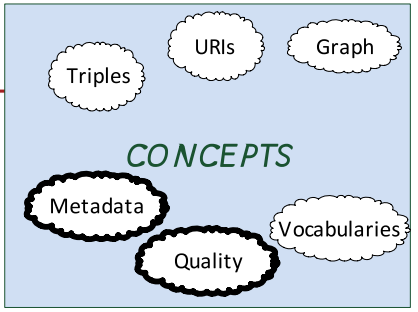
- URIs: National Strategy
- Vocabularies
- Graphs






*Persistent URIs sets the foundations for Linked Data.*

# *Cleansing your data & metadata*




*To ensure data and metadata can be published with an appropriate level of quality and minimum errors.*

This means:

- Fixing errors.
- Transforming/homogenising formats.
- Aligning inconsistencies in data and metadata.
- Removing duplicate/redundant information.
- Adding lacking information.
- Making sure the information is up-to-date.

**See also:**
http://www.slideshare.net/OpenDataSupport/introduction-to-rdf-sparql
Cleanse your data with Open Refine (Google Refine) - https://code.google.com/p/google-refine/

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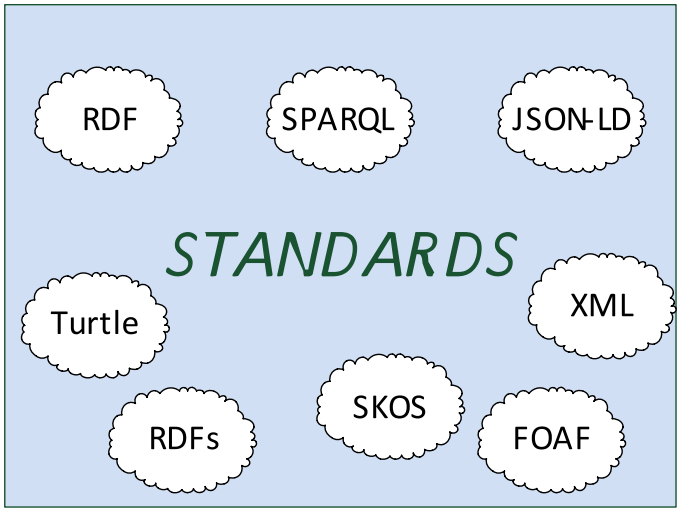
# Linked Open Data: Standards



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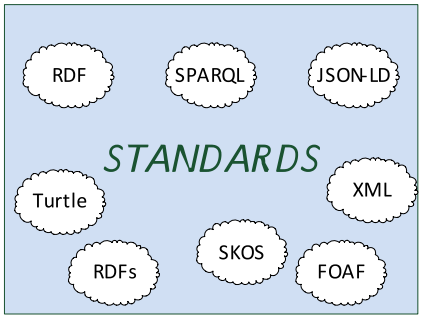
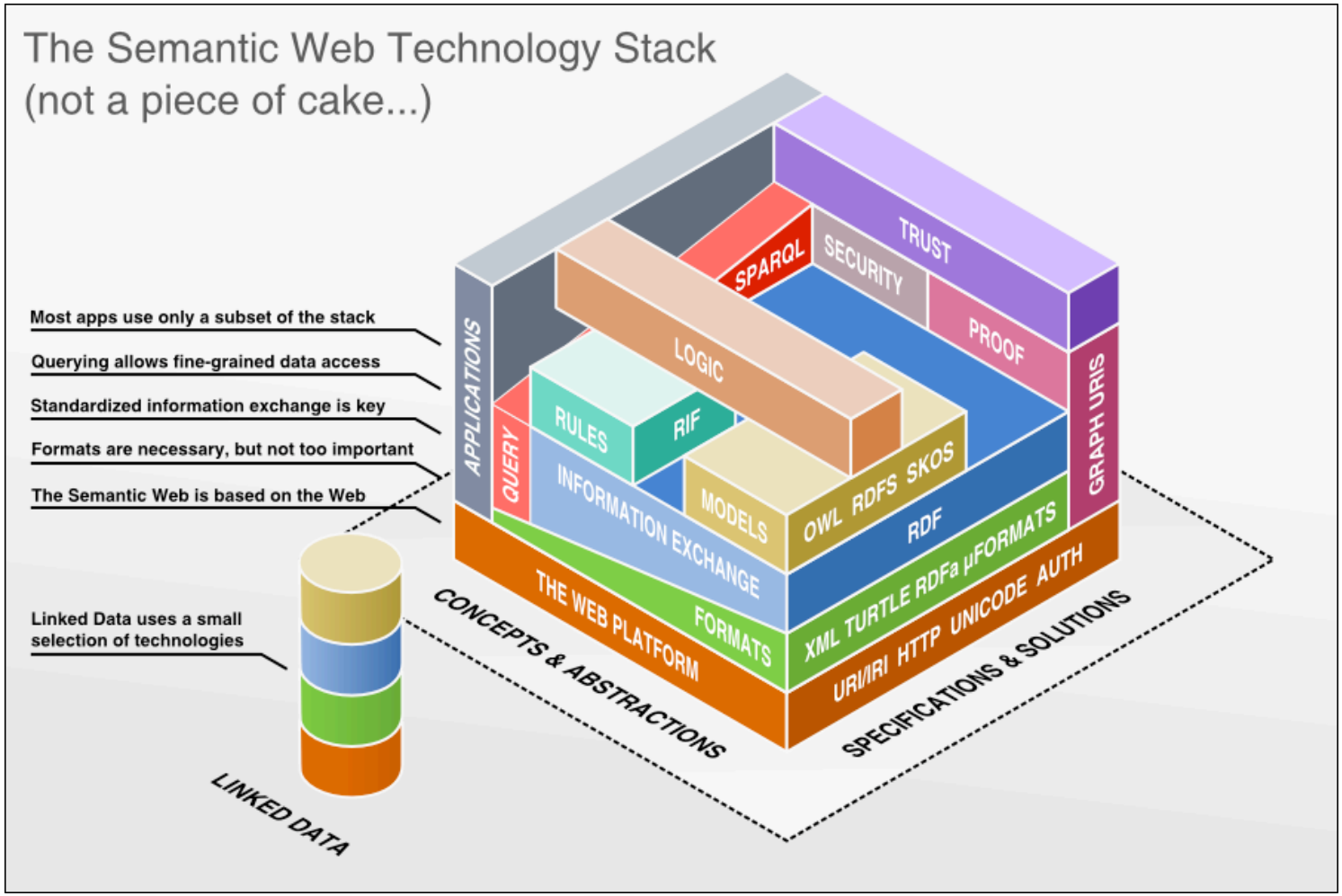
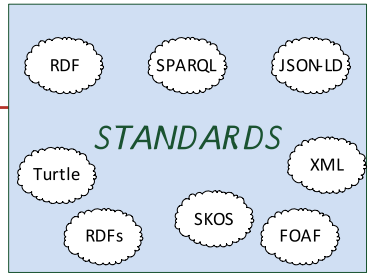
# Standaarden

# *RDF & SPARQL*




The **Resource Description Framework** (RDF ) is a syntax for representing data and resources in the Web

RDF breaks every piece of information down in **triples**:

- Subject – a resource, which may be identified with a URI.
- Predicate – a URI-identified reused specification of the relationship.
- Object – a resource or literal to which the subject is related.

http://dbpedia.org/resource/Brussels is the capital of "Belgium".

OR

http://dbpedia.org/resource/Brussels is the capital of http://dbpedia.org/resource/Belgium.

Subject | Predicate | Object

**SPARQL** is a standardised language for querying RDF data.

**See also:**
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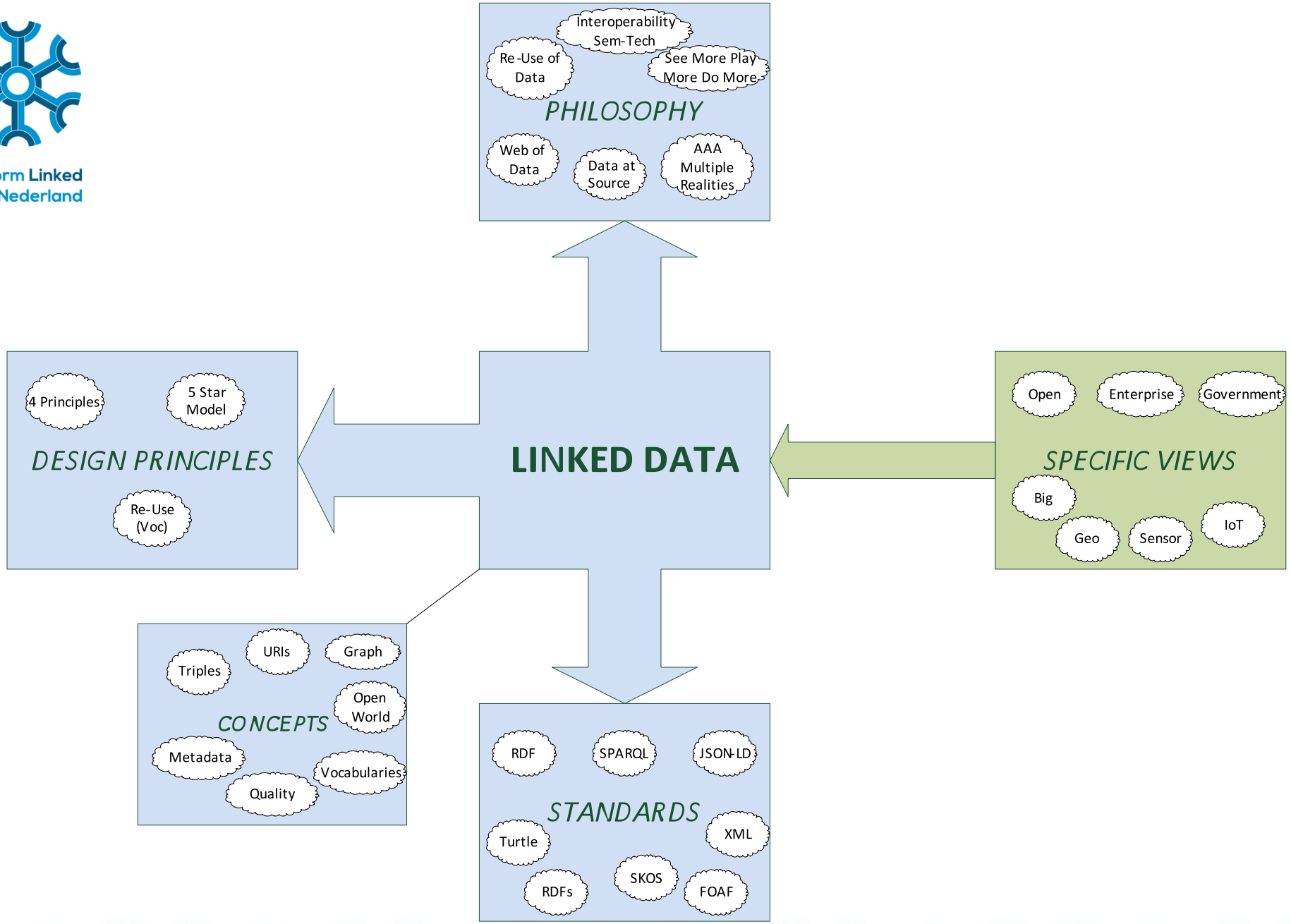

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# Linked (Open) Data – The approach

- Making your data available in a **structured**, **comprehensible** and **machine-readable** way.
- **Reusing** what already exists in terms of vocabularies and reference data.
- Reaching the right quality level by **cleansing** your data.
- Providing **licensing information** so that data consumers know what the conditions of reuse are.
- Providing a rich description (**metadata**).
- Using **semantic technologies** (RDF, HTTP URIs...) for describing your data.

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# LOD in practice

- Pharma (e.g. OpenPhacts)
- Health Care
- Libraries, Museums, Archiving
- Education, Universities
- Geo (Smart Cities)
- Media, Publishing (e.g. BBC, Wolters Kluwer)
- High Tech: (e.g. NXP)
- Logistics
- Government (Stelsel van Basisregistraties)

- Join the Platform Linked Data NL meetings…

Test your knowledge: https://testmoz.com/185946

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# Linked (Open) Data The Summary

***Breaking down the walls of the silos in order to create more value.***

- Allows for flexible integration of datasets from different sources, without needing the data to be moved.
- Fosters the reuse of information from reference/authoritative sources.
- Caters for assigning common identifiers in the form of HTTP URIs to things (e.g. people, products, business, locations...).
- Provides context to data – richer and more expressive data.
- The use of standard Web interfaces (such as HTTP and SPARQL) can simplify the use of data for machines.

**"De echte waarde ligt in het combineren van data, bijvoorbeeld statistische data met tweets over een wijk."**
*Constantijn van Oranje, Kabinetschef van EU-commissaris Kroes*

*Needed for societal and economic impact with (open) data*

But not that easy....
- Limited Knowledge & Tools
- Triple Explosion
- Precision (same as)
- B2B transaction world
- ...

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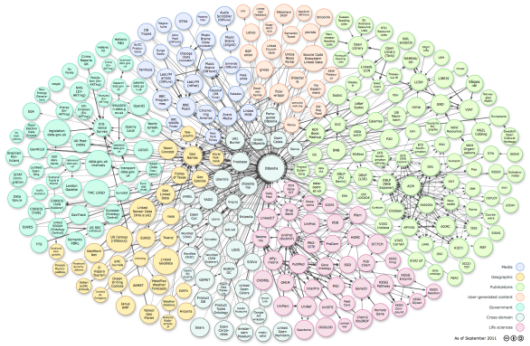
# What is Linked Data?



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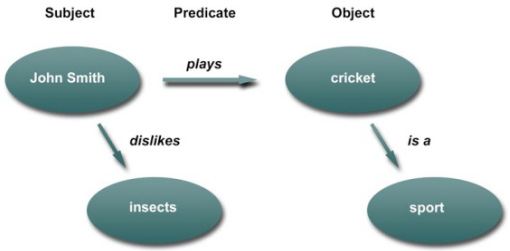
Model your data – Reuse - Vocabularies

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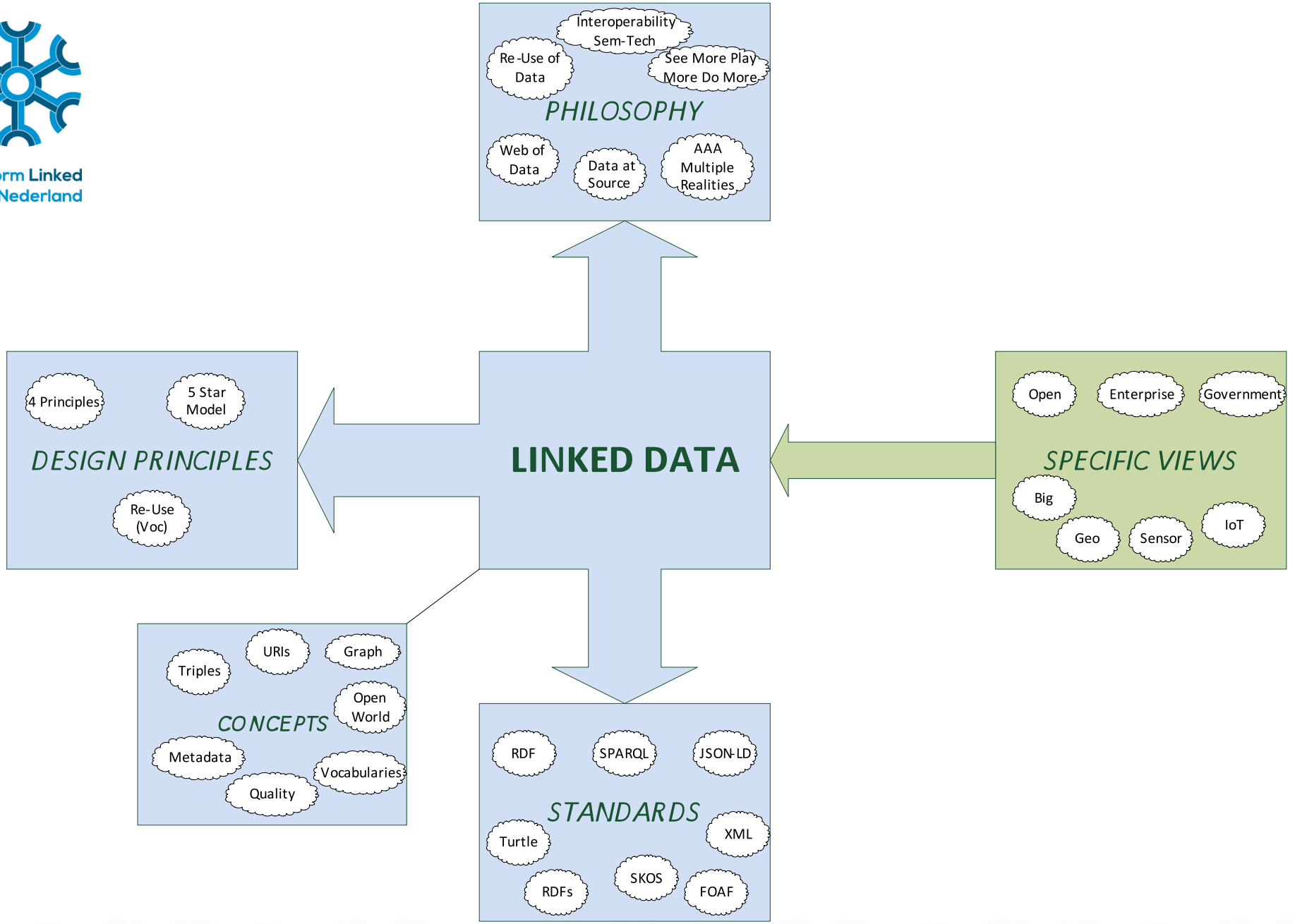

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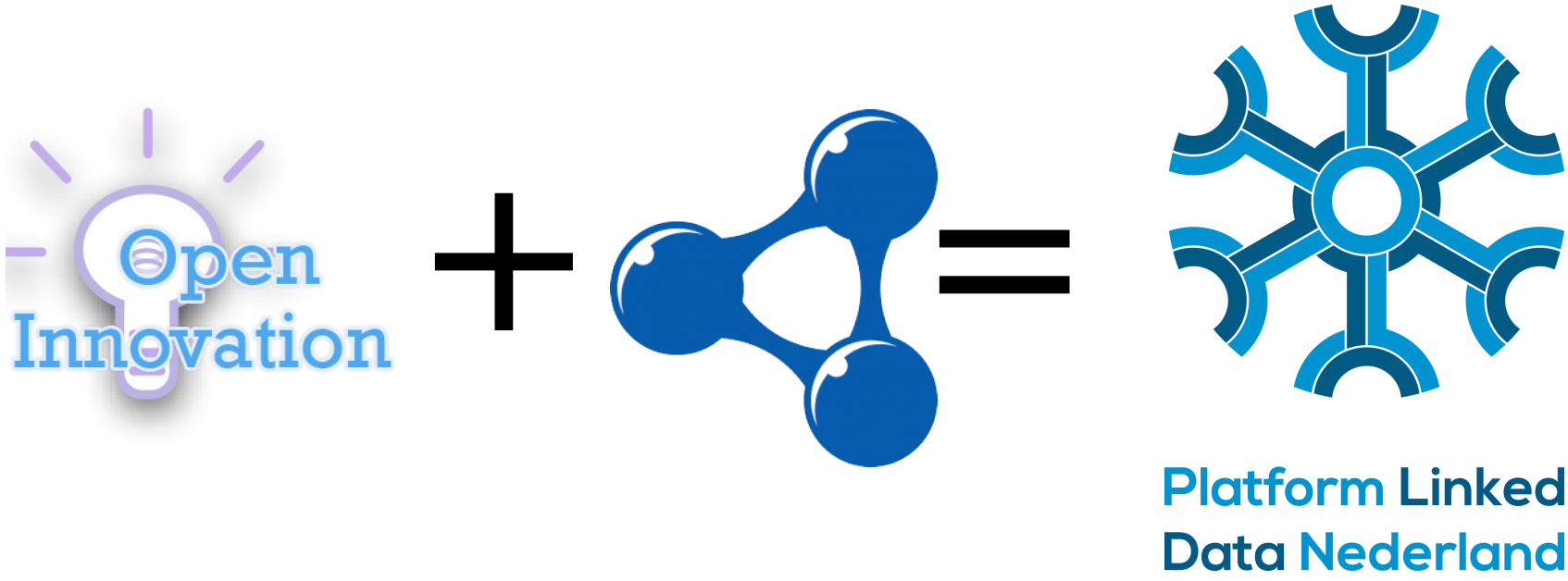
# Open Innovation + Linked Data = Platform Linked Data Netherlands




Open Community for Linked Data knowledge exchange


2014-2017

# PLATFORM LINKED DATA NEDERLAND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