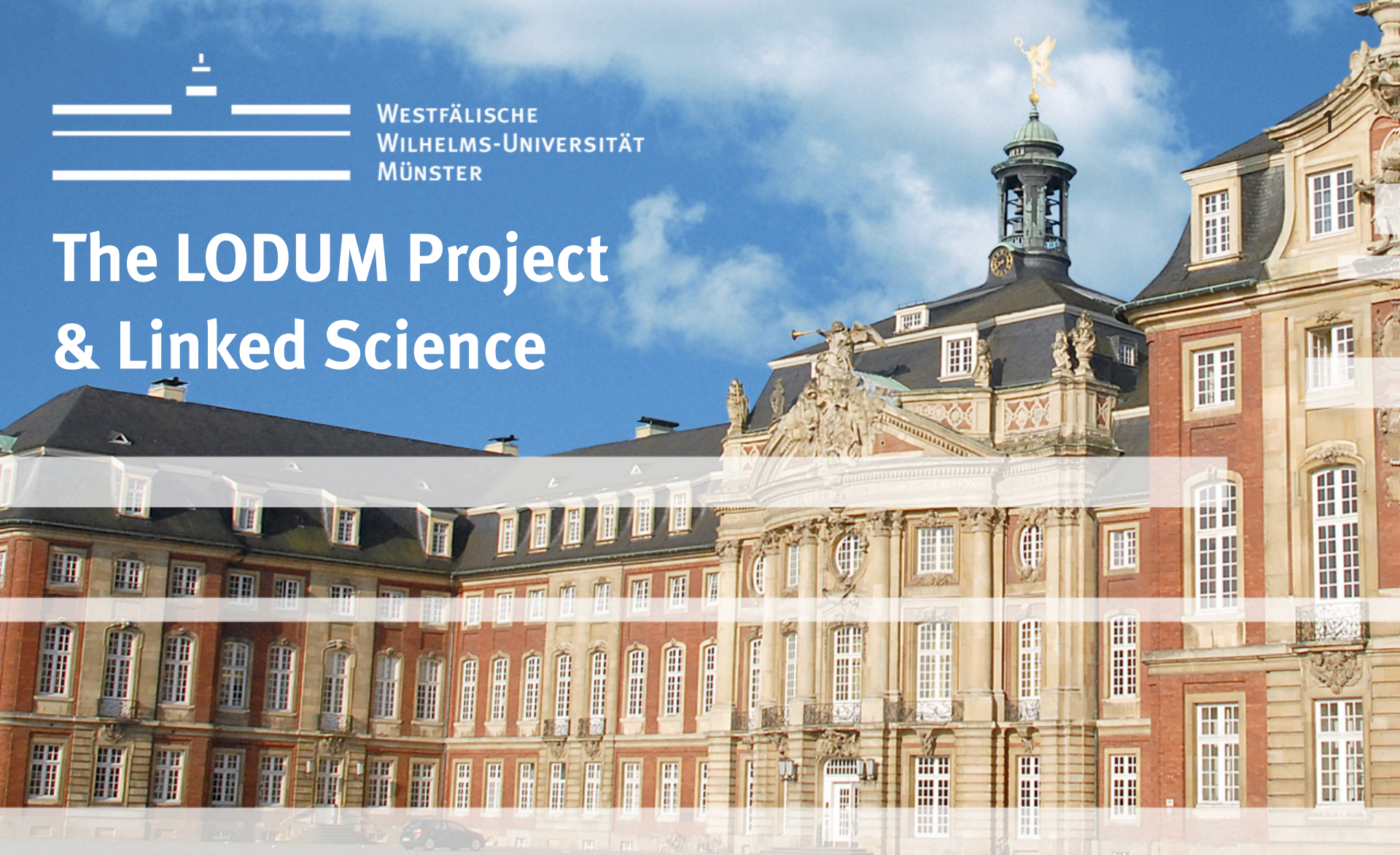




WESTFÄLISCHE
WILHELMS-UNIVERSITÄT
MÜNSTER

The LODUM Project & Linked Science



wissen.leben
WWU Münster

Carsten Keßler
carsten.kessler@uni-muenster.de | [@carstenkessler](https://twitter.com/carstenkessler)

- 1. The LODUM Project**
- 2. Linked Science**



**MUenster Semantic
Interoperability Lab**

musil.uni-muenster.de



**Institute for
Geoinformatics**

ifgi.uni-muenster.de

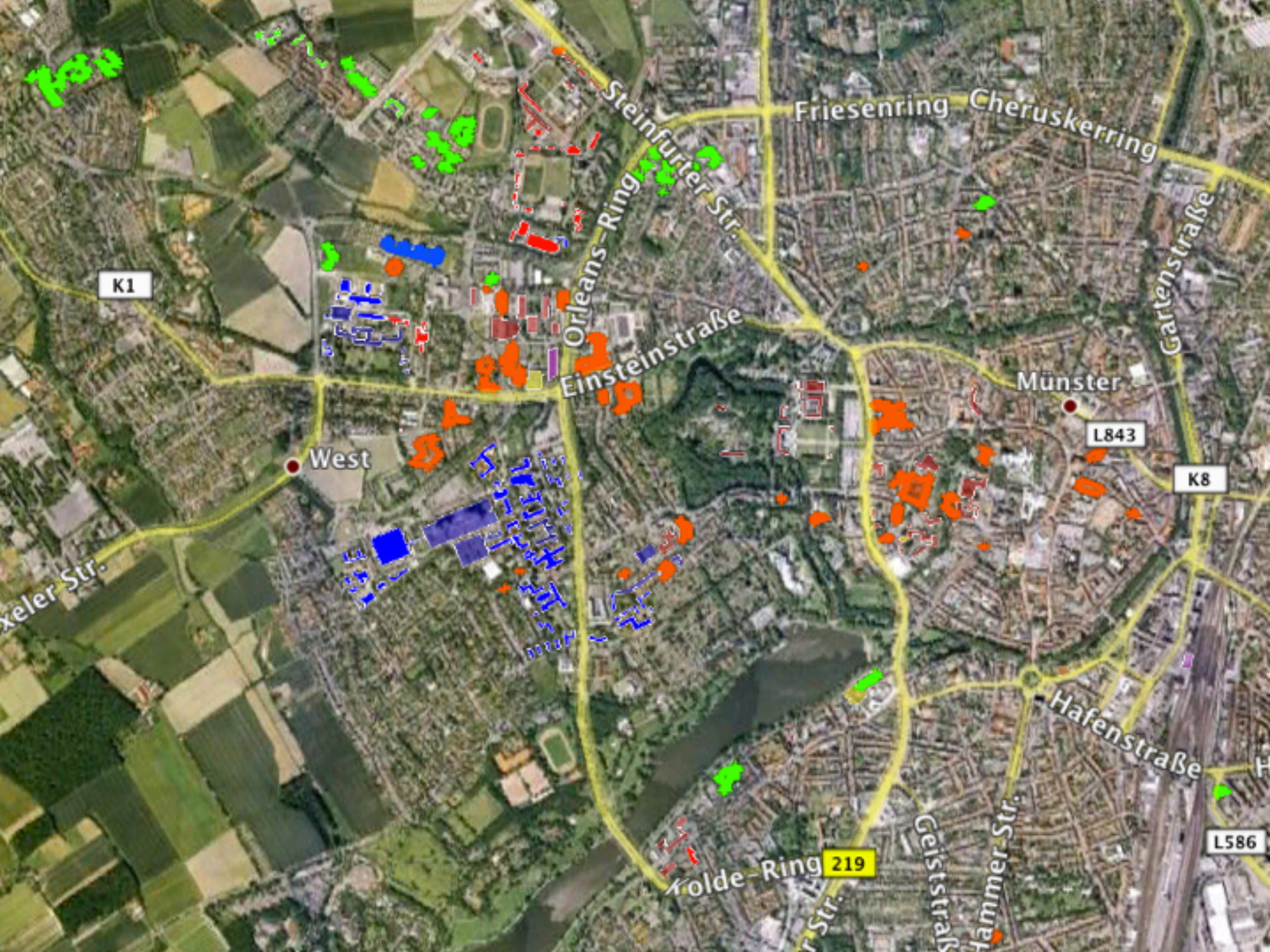


- 1. The LODUM Project**
2. Linked Science

LODUM

Linked Open Data
University of Münster

- Internally funded project at WWU
- Provide scientific and educational data as LOD
- Open up and interlink existing data
- Provide data through a standardized interface for application developers (so far: us ...)



130

K1

West

xeler Str.

Steinfurter Str.
Orleans-Ring
Einsteinstraße

Friesenring
Cheruskerring

Gartenstraße

Münster

L843

K8

Hafenstraße

Hammer-Str.
Geiststraße

Kolde-Ring 219

L586

Problem: WWU's knowledge is kept in silos



Problem: WWU's knowledge is kept in silos

LOD to the rescue!

- Open those silos
- Allow researchers to easily publish their data & models
- Allow them to easily find & reuse existing data & models
- Allow them to easily combine different data



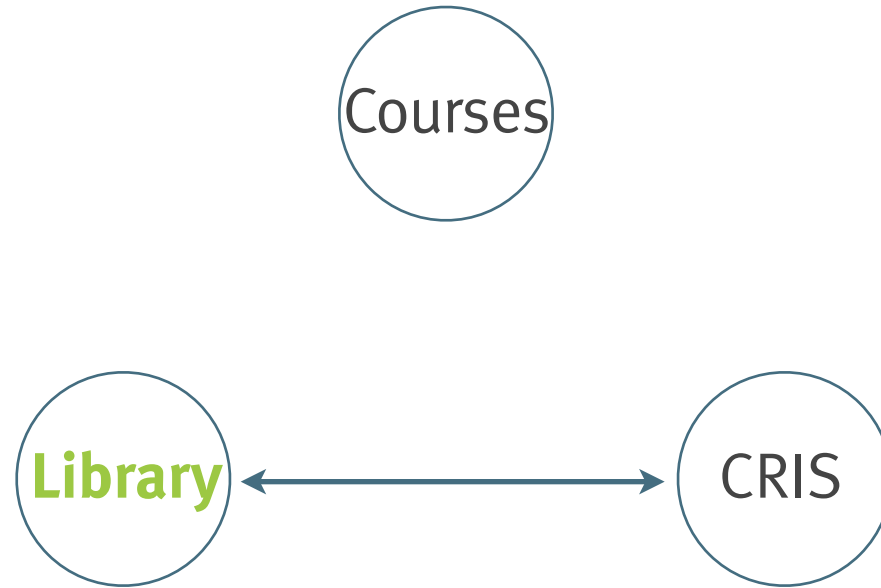
Goals

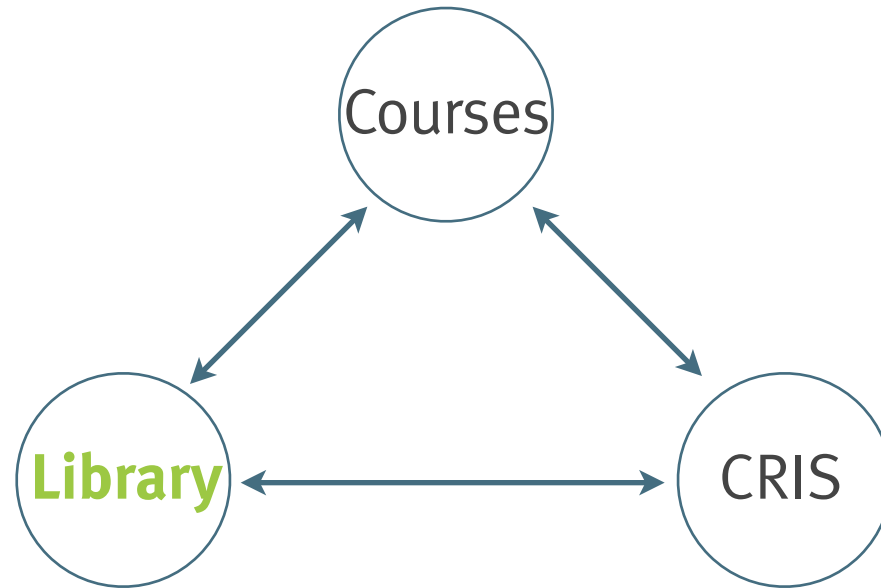
- Increase WWU's visibility
- Foster transdisciplinary research
- Improve access to and management of existing data

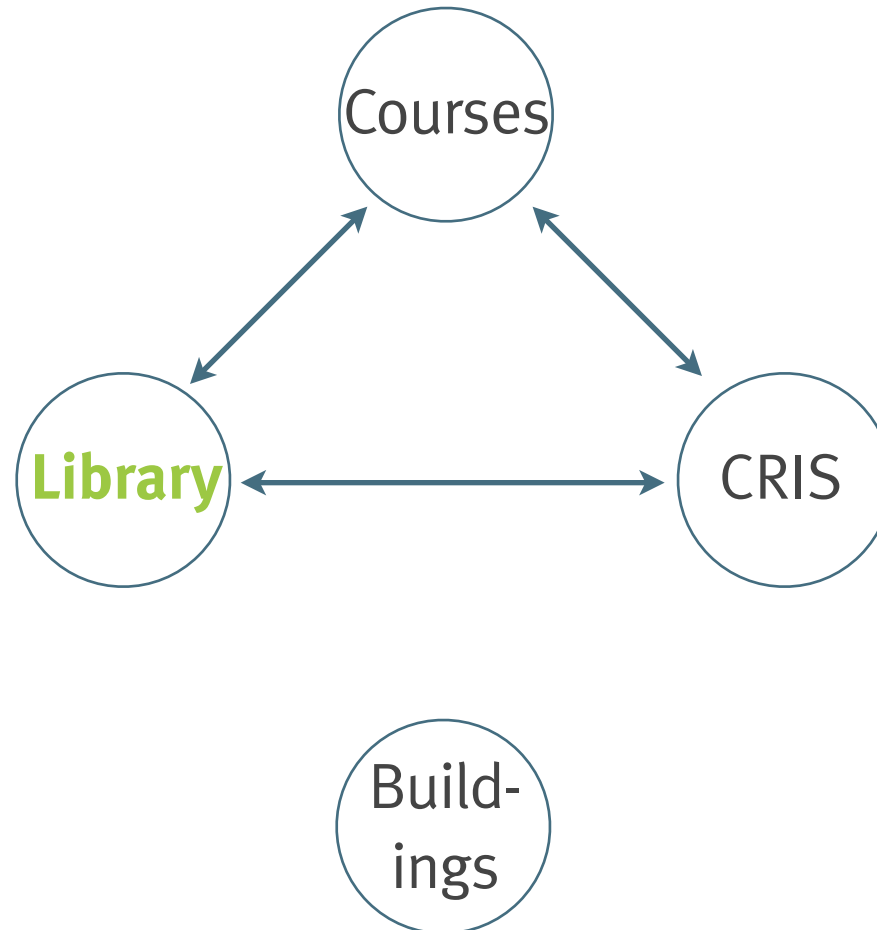


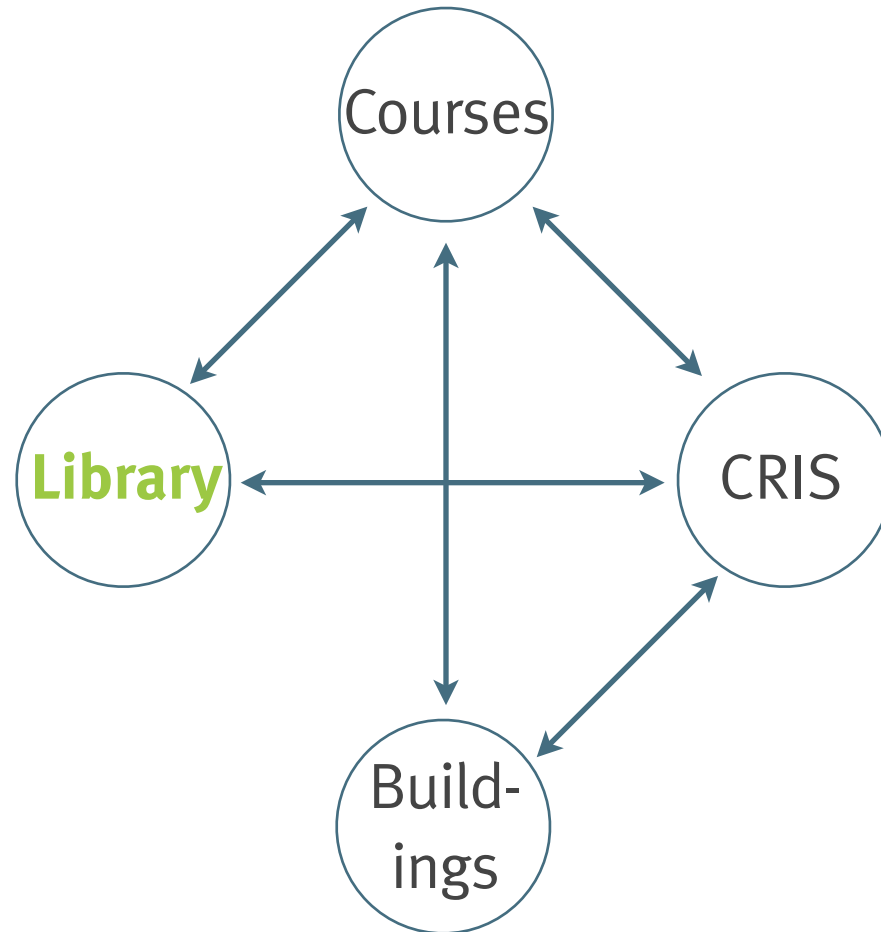


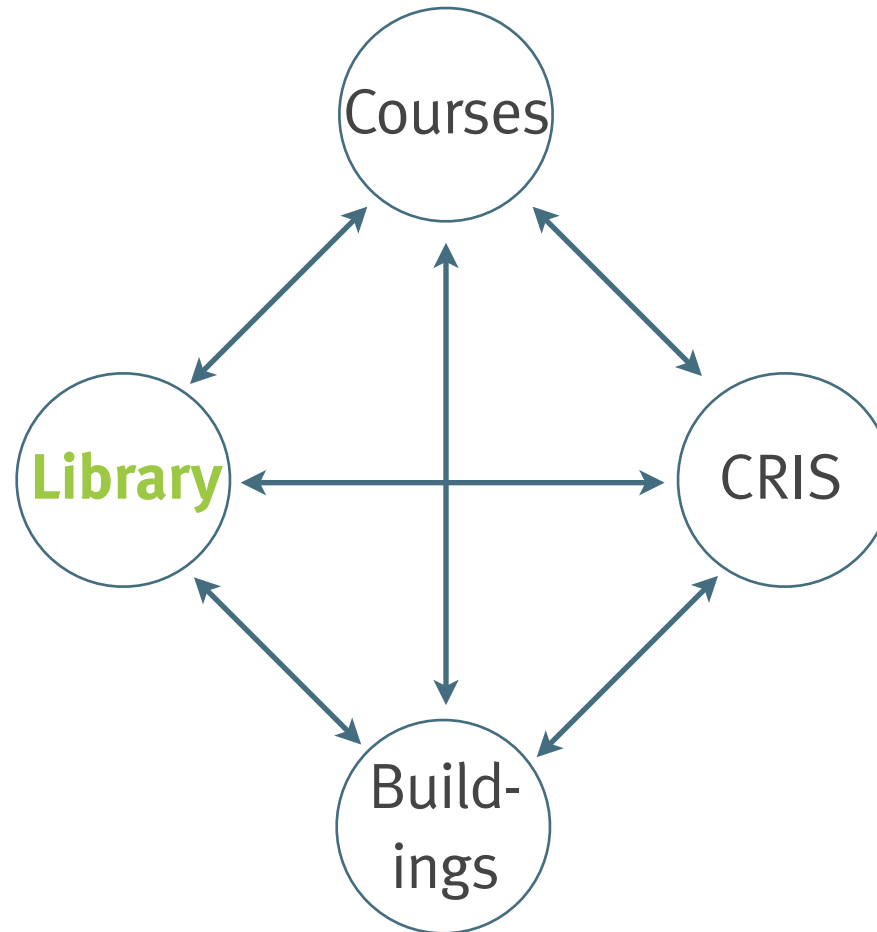


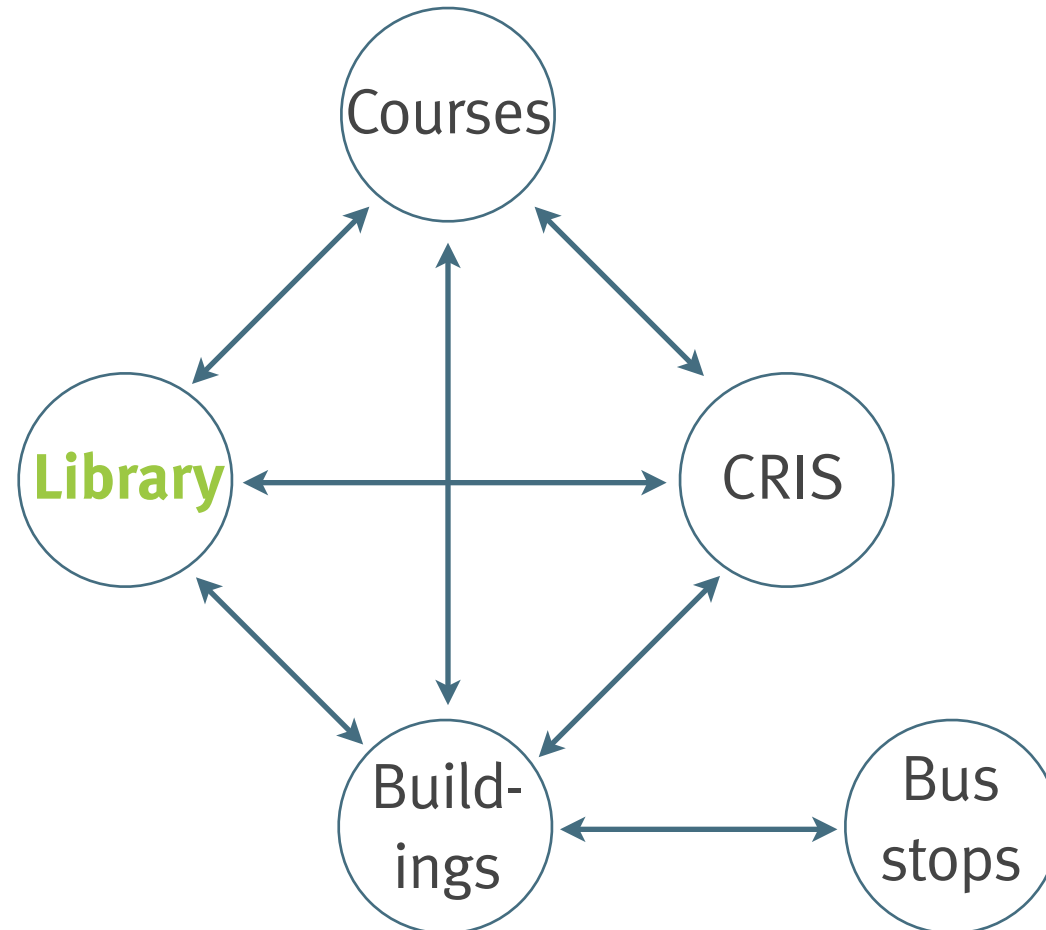


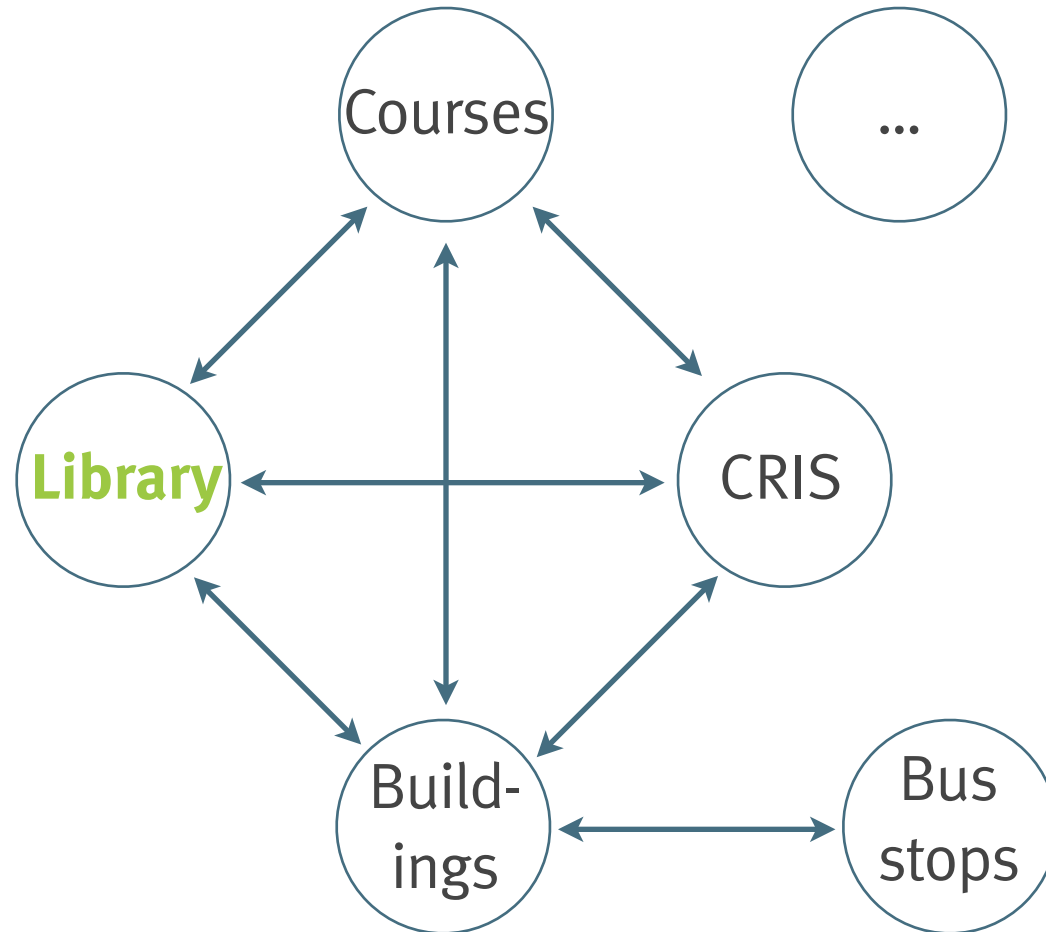


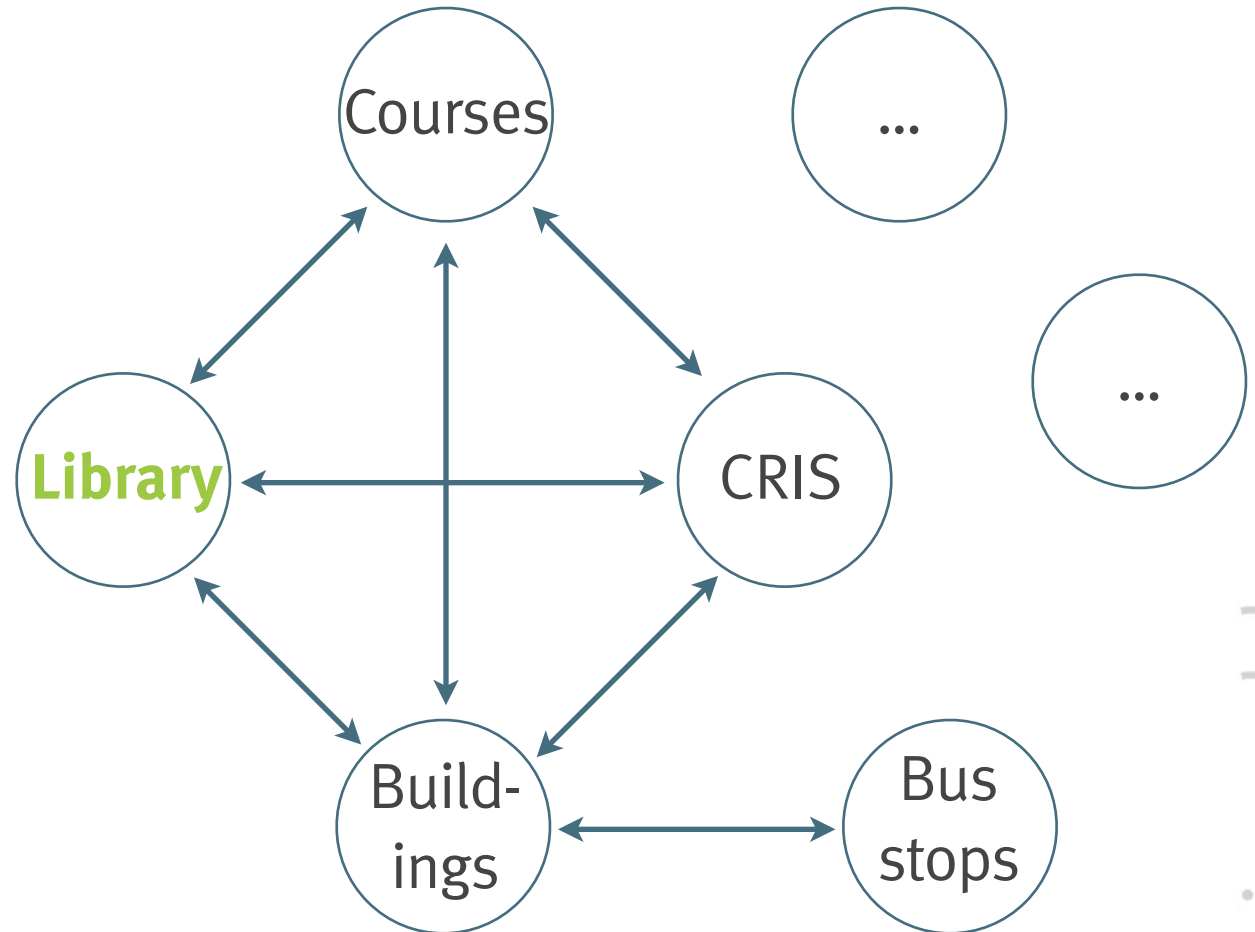


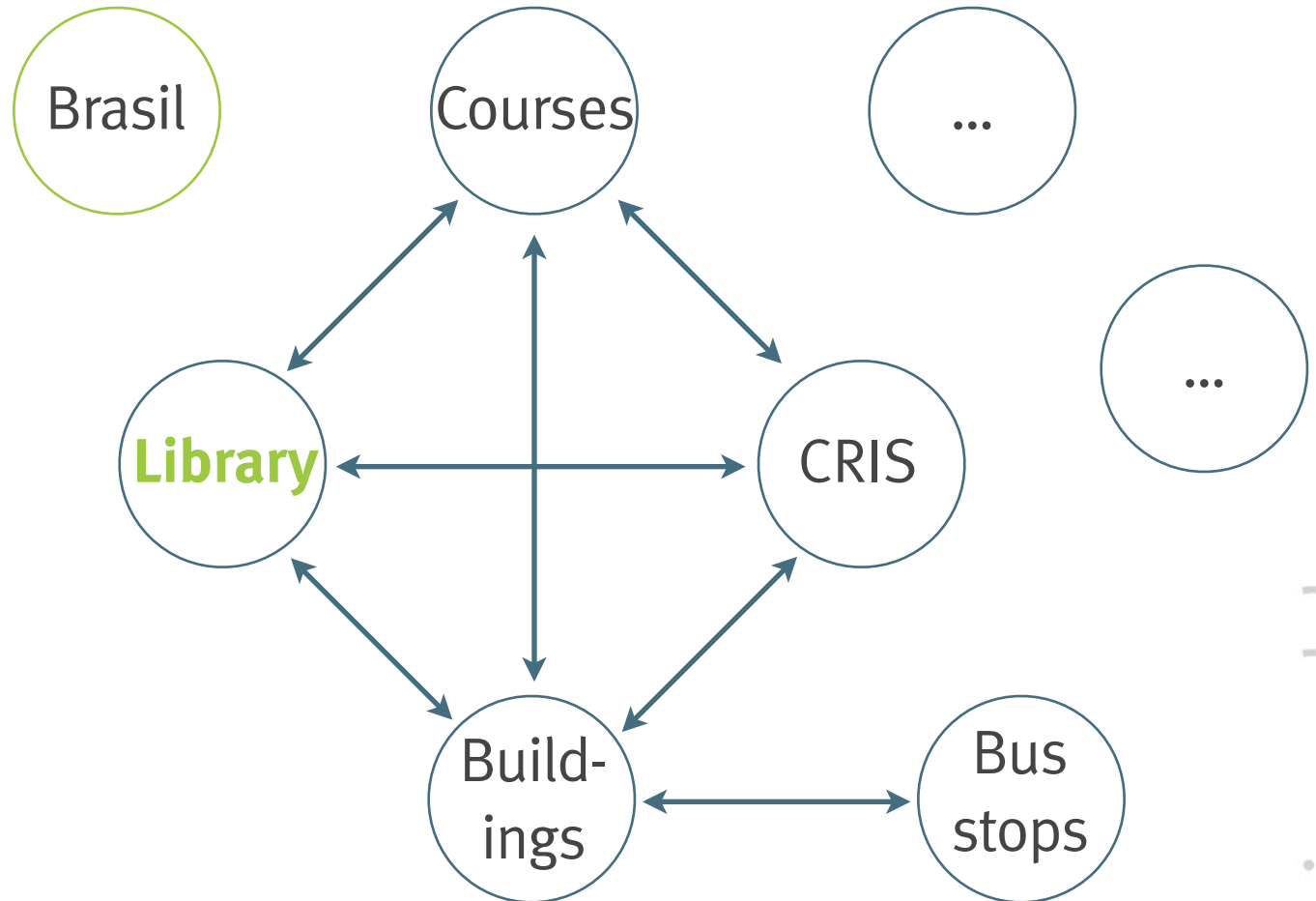


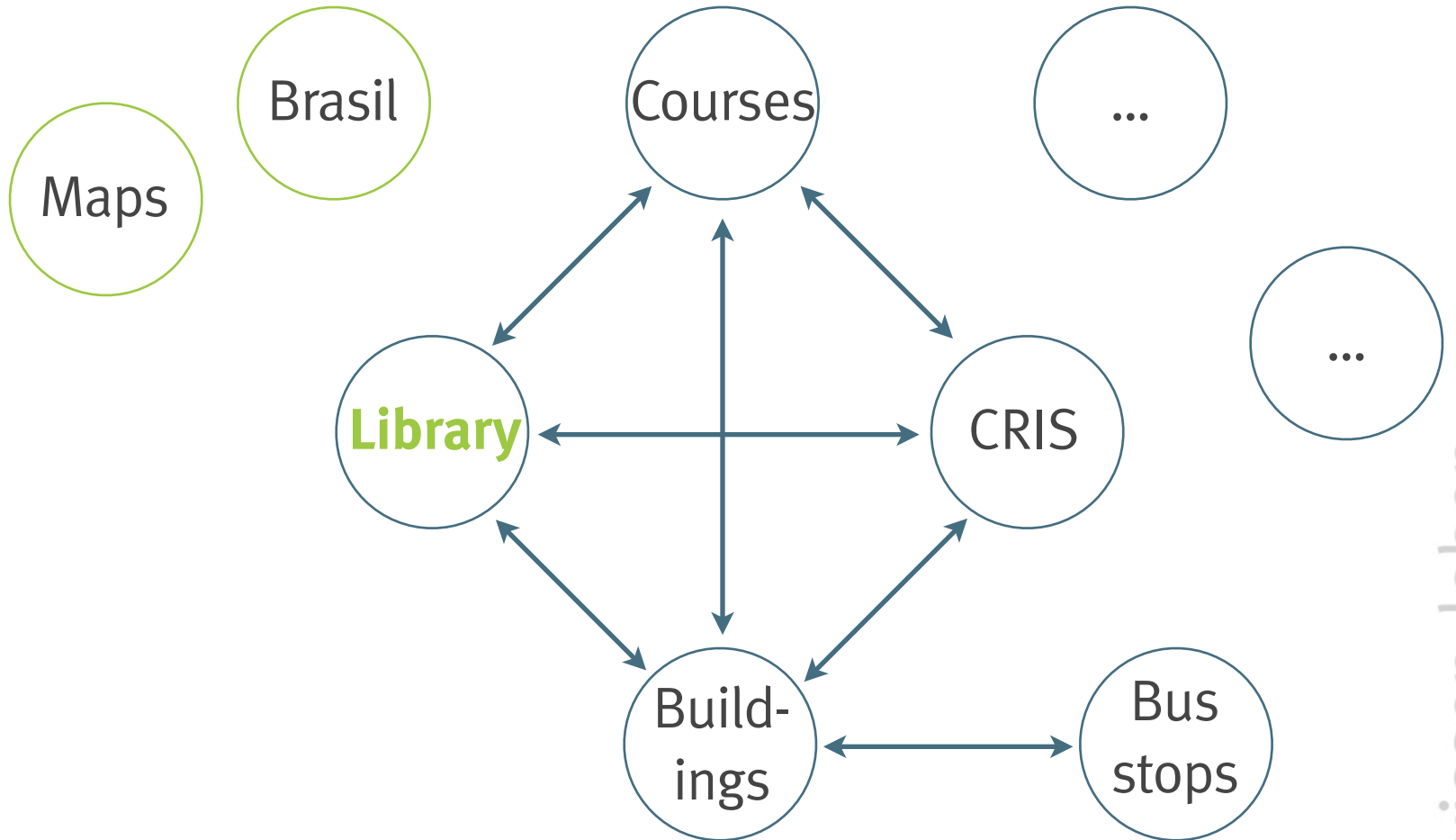


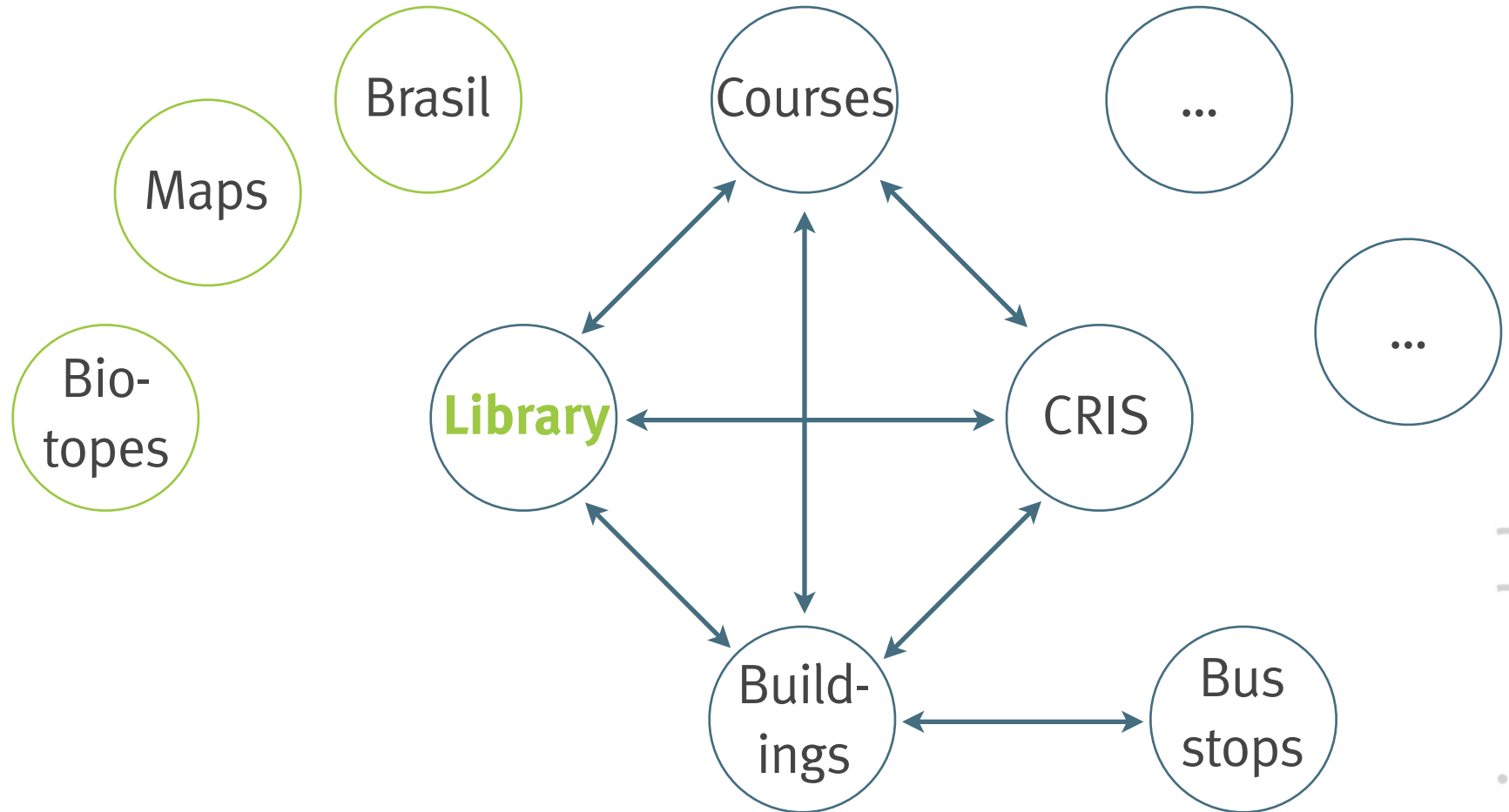


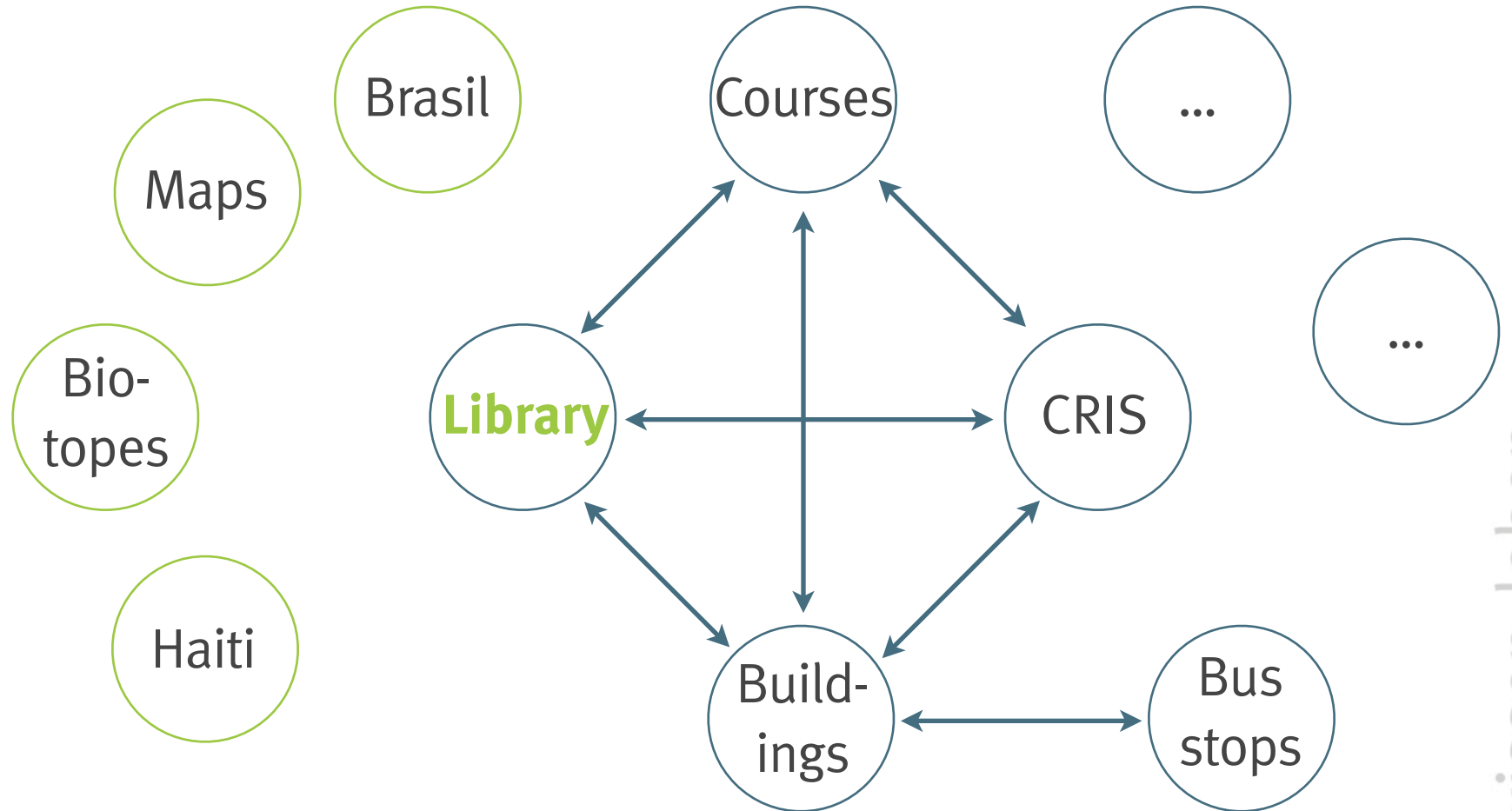


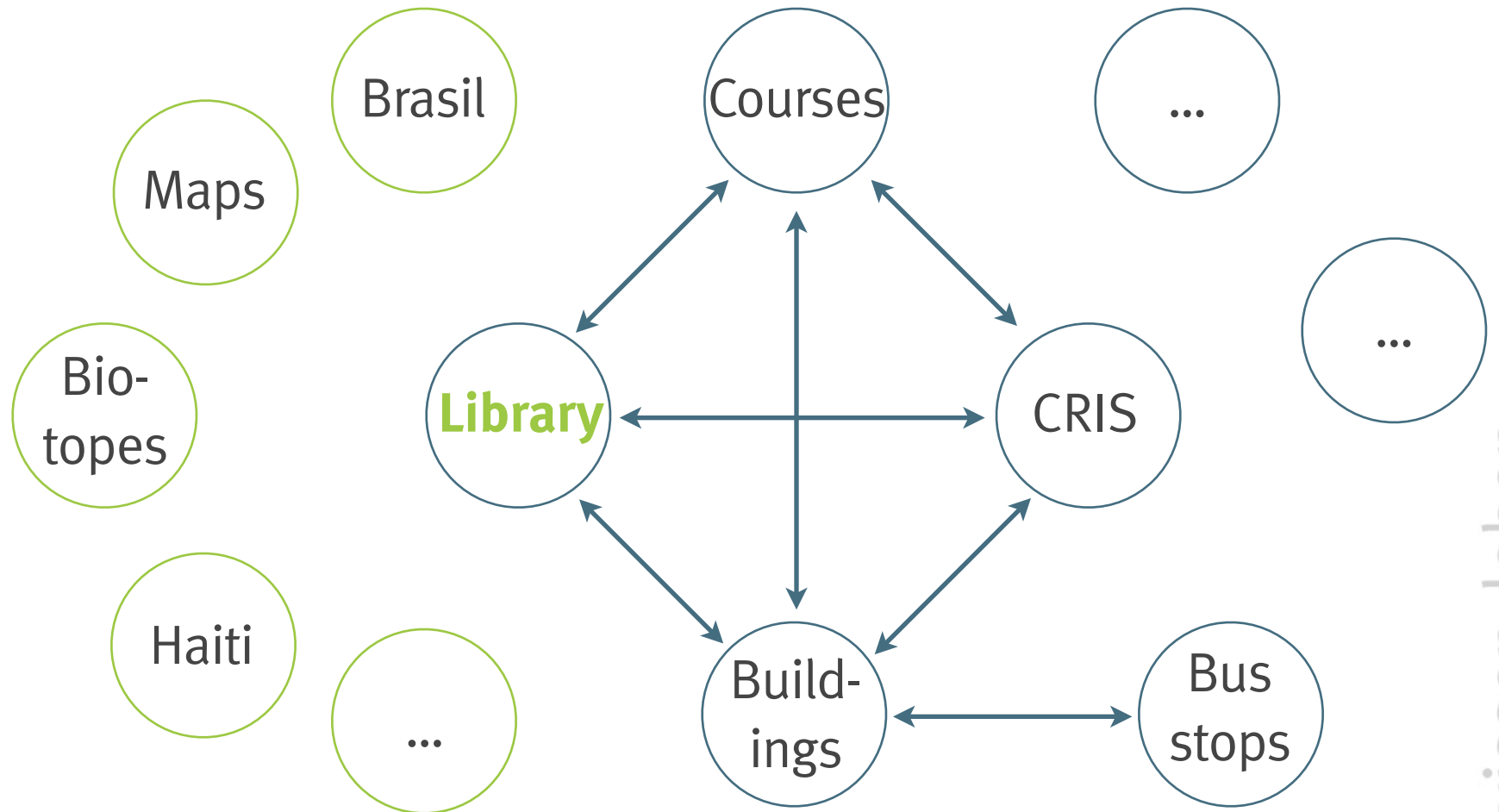


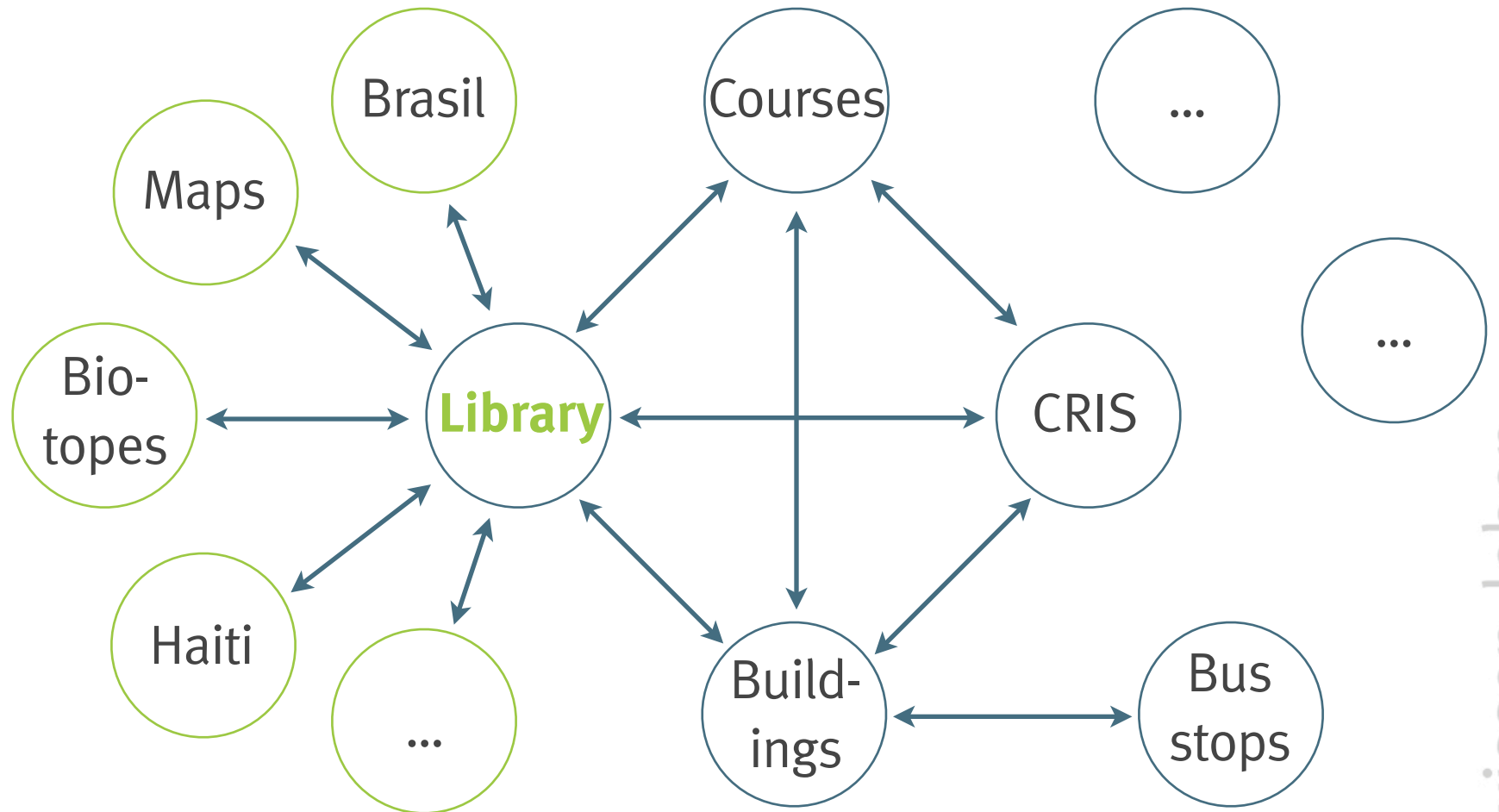












Data governance strategy

1. Create **Incentives** (for research and teaching)
2. **Lower the barriers** (technical, economic, legal, institutional)
3. **Staged licensing model**, ranging from confidential to Creative Commons / ODbL
4. **Rules** for publishing scientific data and models
5. **Reversal of the „burden of proof“**, requiring justification for data that are *not* published

Teaching LOD(UM)

- 3 classes so far covering different aspects of LOD
- Killing two birds with one stone:
 - teaching students modeling, semantic technologies, ...
 - expand the group of developers building apps on top of our data
- Examples:
 - local public transport data
 - LOD-based campus plan app

Teach

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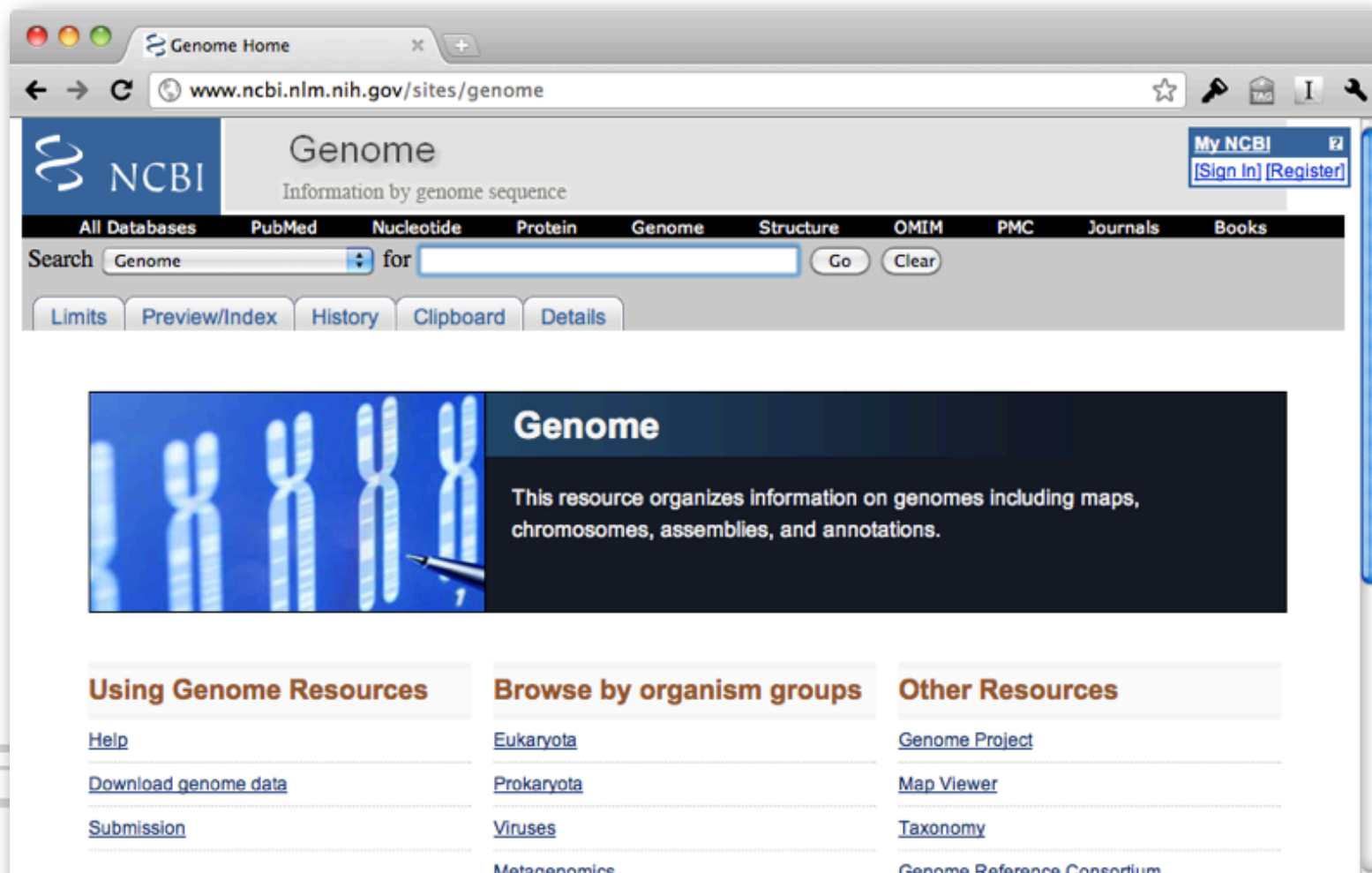


1. The LODUM Project
- 2. Linked Science**

What is Linked Science?

- Transparency and reproducibility of research
- Organizing scientific data online and semantically annotated
- Interlink all related resources: researchers, organizations, publications, experiments, raw data, models, methods, ...
- Vision: grant readers of a paper access to all these resources with the click of a button
- ISWC 2011 workshop: linkedscience.org/events/lisc2011
- SWJ special issue on *Linked Data for Science and Education*

Example: Bioinformatics



The screenshot shows the NCBI Genome Home page in a web browser. The browser's address bar displays www.ncbi.nlm.nih.gov/sites/genome. The page features the NCBI logo and the title "Genome" with the subtitle "Information by genome sequence". A navigation bar includes links to "All Databases", "PubMed", "Nucleotide", "Protein", "Genome", "Structure", "OMIM", "PMC", "Journals", and "Books". A search bar is present with the text "Genome" and a "Go" button. Below the search bar are tabs for "Limits", "Preview/Index", "History", "Clipboard", and "Details". A large banner image shows four blue chromosomes. To the right of the chromosomes, the text reads: "Genome. This resource organizes information on genomes including maps, chromosomes, assemblies, and annotations." Below the banner, there are three columns of links: "Using Genome Resources" (Help, Download genome data, Submission), "Browse by organism groups" (Eukaryota, Prokaryota, Viruses, Metagenomics), and "Other Resources" (Genome Project, Map Viewer, Taxonomy, Genome Reference Consortium).

Genome Home

www.ncbi.nlm.nih.gov/sites/genome

NCBI

Genome

Information by genome sequence

My NCBI [Sign In] [Register]

All Databases PubMed Nucleotide Protein Genome Structure OMIM PMC Journals Books

Search Genome for [] Go Clear

Limits Preview/Index History Clipboard Details

Genome

This resource organizes information on genomes including maps, chromosomes, assemblies, and annotations.

Using Genome Resources

[Help](#)

[Download genome data](#)

[Submission](#)

Browse by organism groups

[Eukaryota](#)

[Prokaryota](#)

[Viruses](#)

[Metagenomics](#)

Other Resources

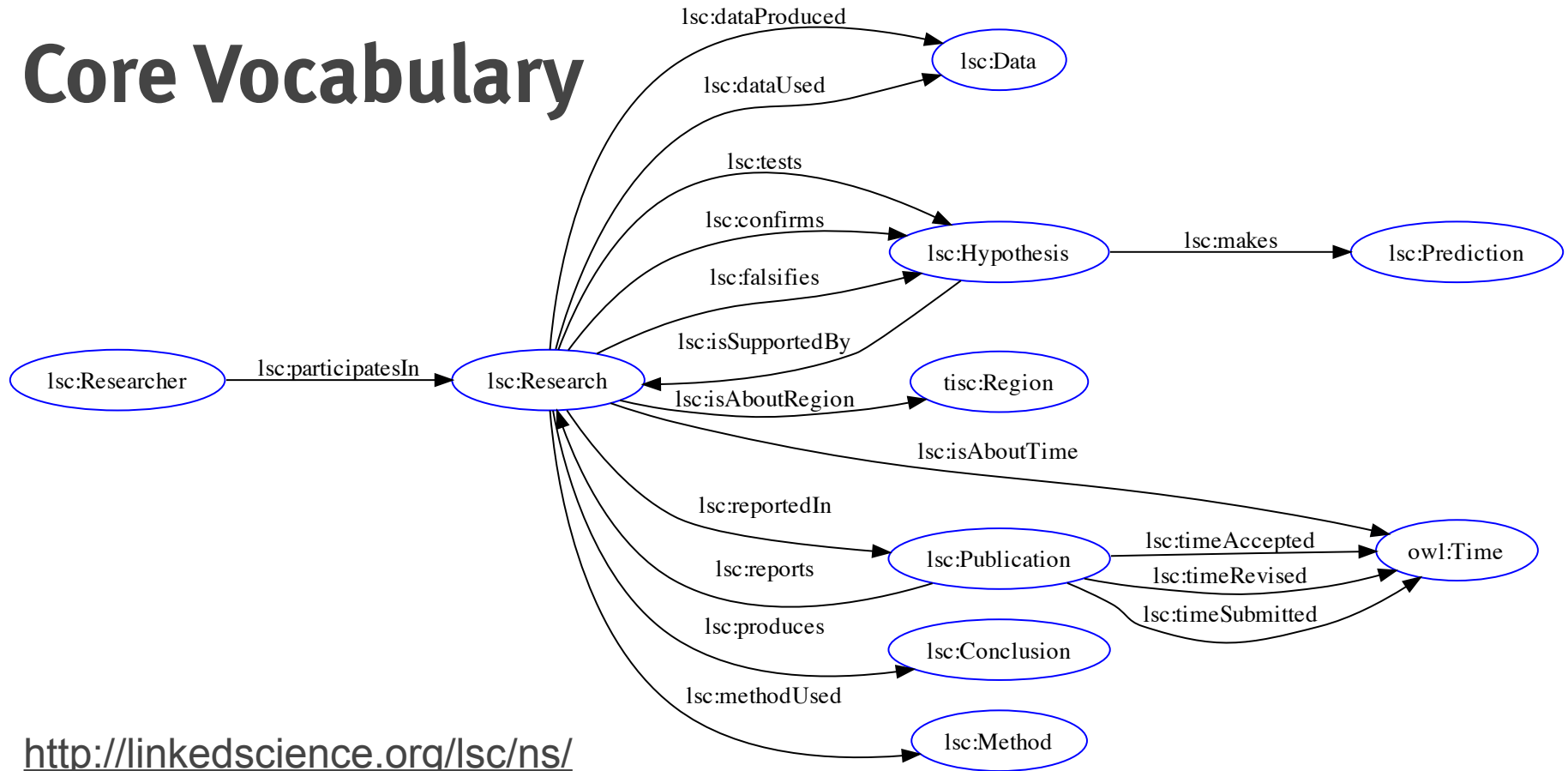
[Genome Project](#)

[Map Viewer](#)

[Taxonomy](#)

[Genome Reference Consortium](#)

Linked Science Core Vocabulary



<http://linkedscience.org/lsc/ns/>

SIMILE Widgets | COSIT Publi x

spatial.linkedscience.org

COSIT CONFERENCE LOCATIONS • COSIT PLACES OF AFFILIATION

300 Elemente

Karte Satellit Hybrid

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1 Anand_Kumar

1 Anders_Waestfelt

1 Andre_Skupin

1 Andreas_Blaser

2 Andreas_Dickmann

2D-3D MultiAgent GeoSimulation with Knowledge-Based Agents of Customers' Shopping Behavior in a Shopping Mall

3D Topographic Data Modelling: Why Rigidity Is Preferable to Pragmatism

A Classification Framework for Approaches to Achieving Semantic Interoperability between GI Web Services

A Conceptual Model of the Cognitive Processing of Environmental Distance Information

A Formal Model of the Process of Wayfinding in Built Environments

A Formal Theory of Objects and Fields

A Geographer Looks at Spatial Information Theory

A Geometric Theory of Vague Boundaries Based on Supervaluation

A Geometry for Places: Representing Extension and Extended Objects



POWERED BY Google

1000 Miles/km

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Publication Titles

Conclusions

- Making a whole university go LOD can be like painting the Forth Bridge.
- ... and it costs money.
- When you talk to other departments, offer them a service.
- You may need to build your own tools quite often.

What's missing?

- *It's the interface, stupid!*
- CMS → DMS
- Flatten the learning curve
- Document & provide examples

LODUM

Linked Open Data
University of Münster

Thanks!

Visit us at lodum.de and linkedscience.org

Johannes Trame * Umut Tas * Markus Konkol *
Sven Heitmann * Tomi Kauppinen * Werner Kuhn