Research infrastructures: metadatamodel & datacapturing in FRIS

EUROCRIS WEBINAR – 24/11/2021

FRIS Research portal

DEPARTMENT OF ECONOMY SCIENCE & INNOVATION

ecoom

UHASSELT
KNOWLEDGE IN ACTION

Agenda:

1. FRIS and Research infrastructures?

>> Ils De Bal, program manager FRIS

2. Metadatamodel & classifications

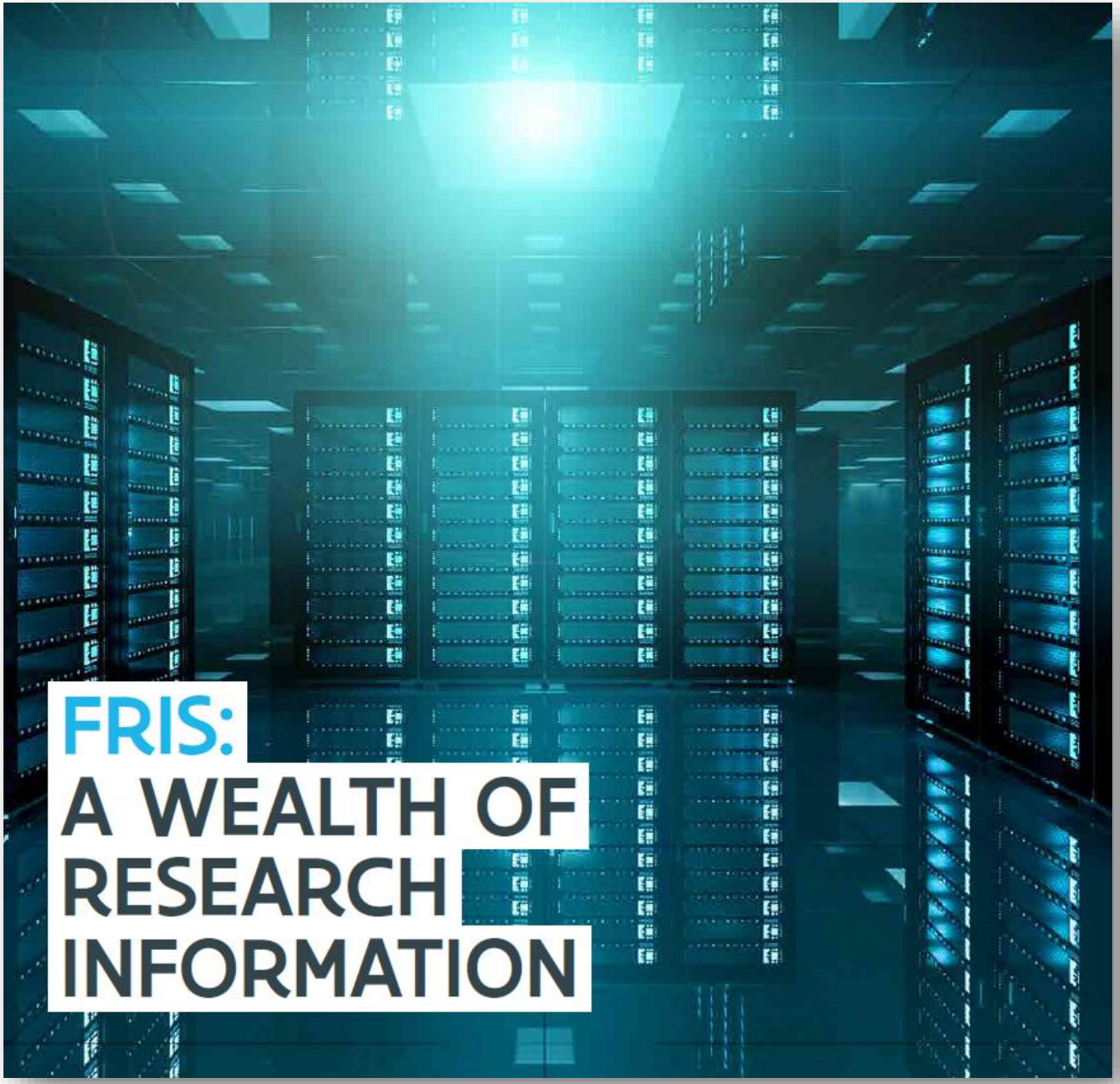
>> Hanne Poelmans, researcher ECOOM & head information management and strategic data-analysis UHasselt

3. Research infrastructures in FRIS

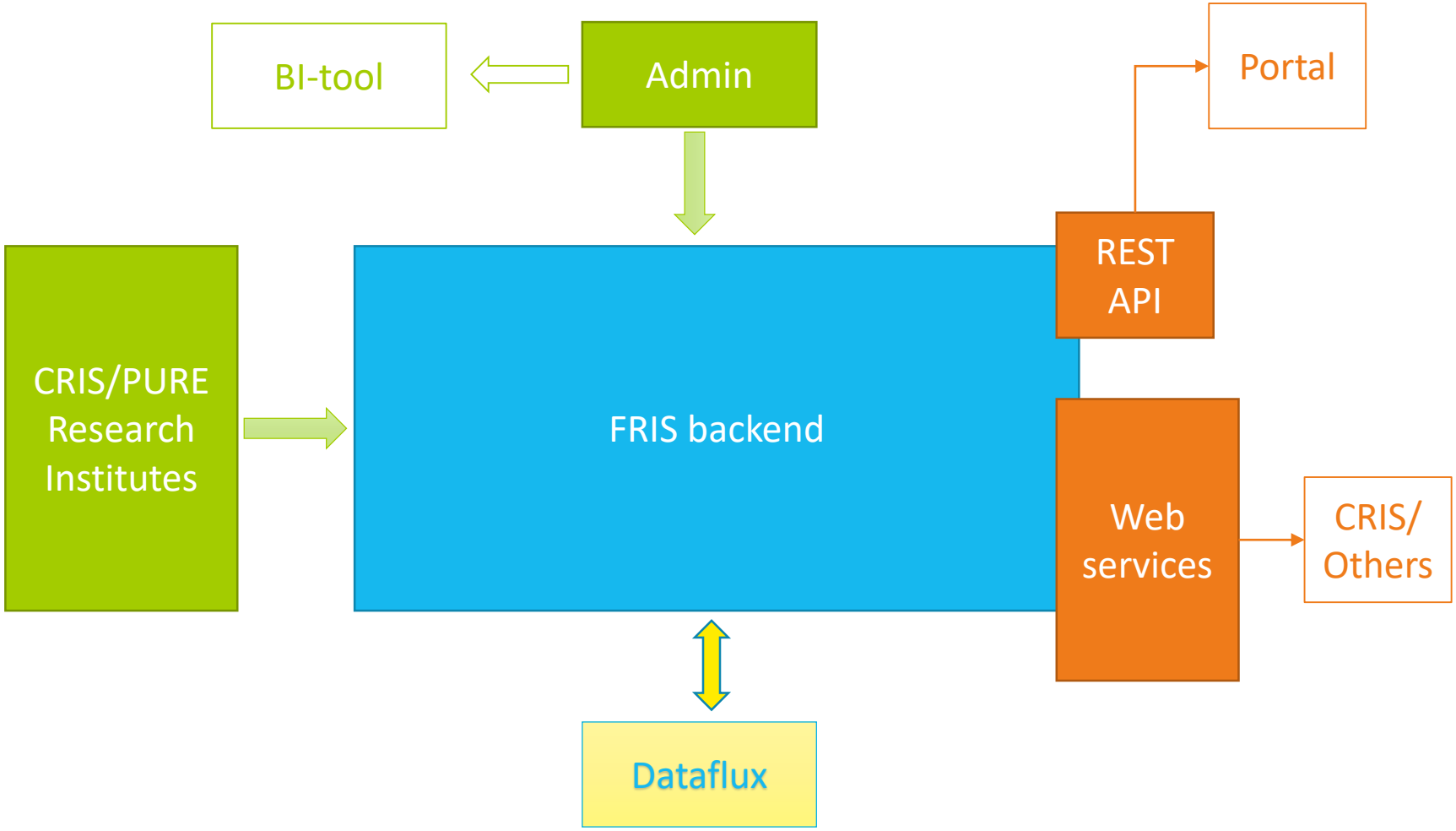
>> Pascale Dengis, business & BI-expert FRIS

What is FRIS?
And why research infrastructures?

Flanders Research Information Space



FRIS-system: high level integrations



FRIS in numbers

NEW in 2022:

- > Patents
- > Research infrastructures
- > Datasets

FRIS - goals

To deepen and share expertise in Flanders, leading to new insights, creating an innovation-driven economy and research landscape

To accelerate the chain from idea to innovation by ensuring a better information flow between research institutions and innovative organisations.

To reduce administrative burden through webservices by:

- requesting information just once and then sharing and reusing it to get the most out of available data;
- obtaining research information directly from the systems of the government and research institutions.

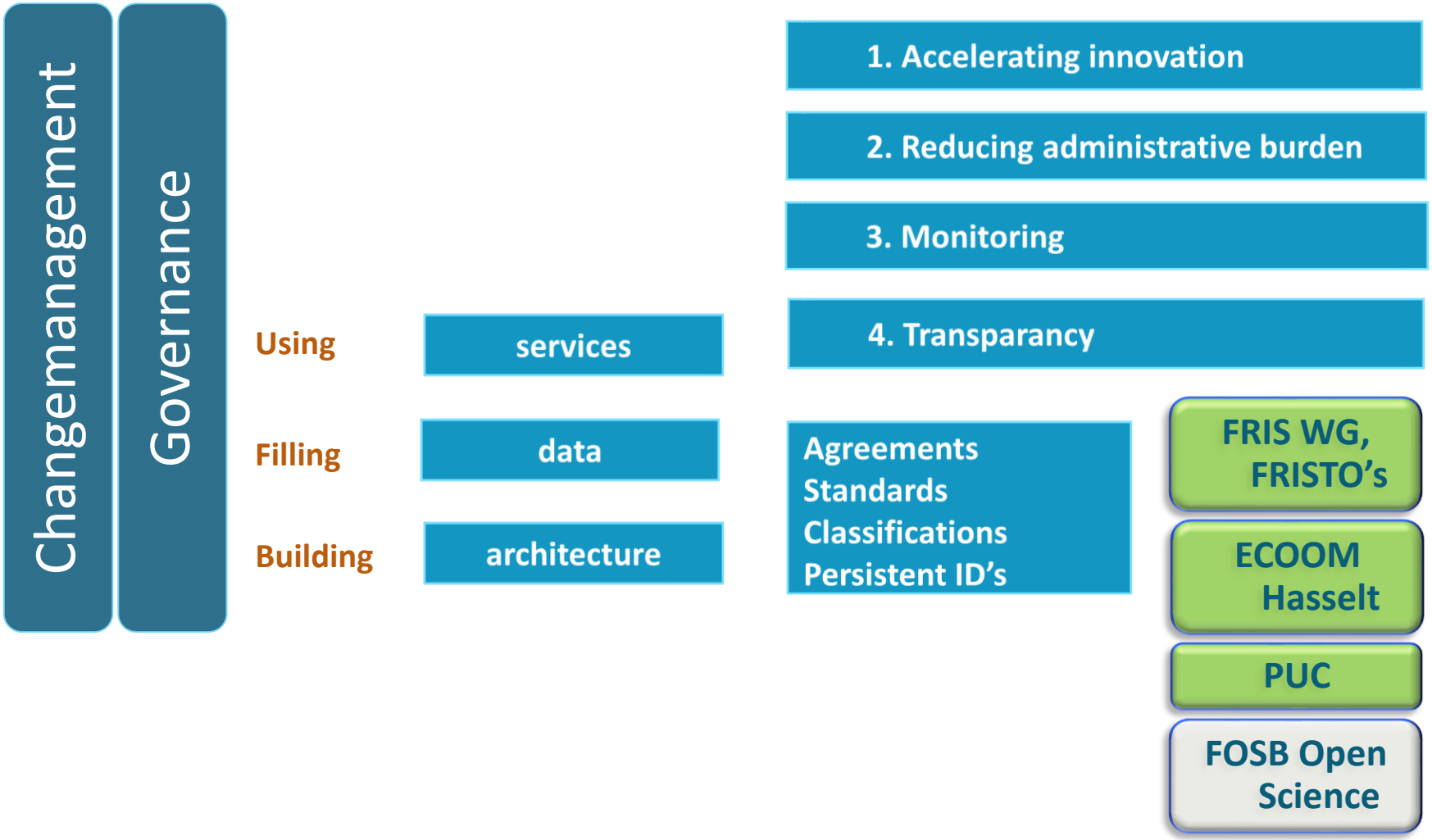
To make the **innovation strategies** of government, industry and research institutions more **efficient** by offering correct, complete and up to date information.

To make **research data publicly available**, so that everyone can use it freely.

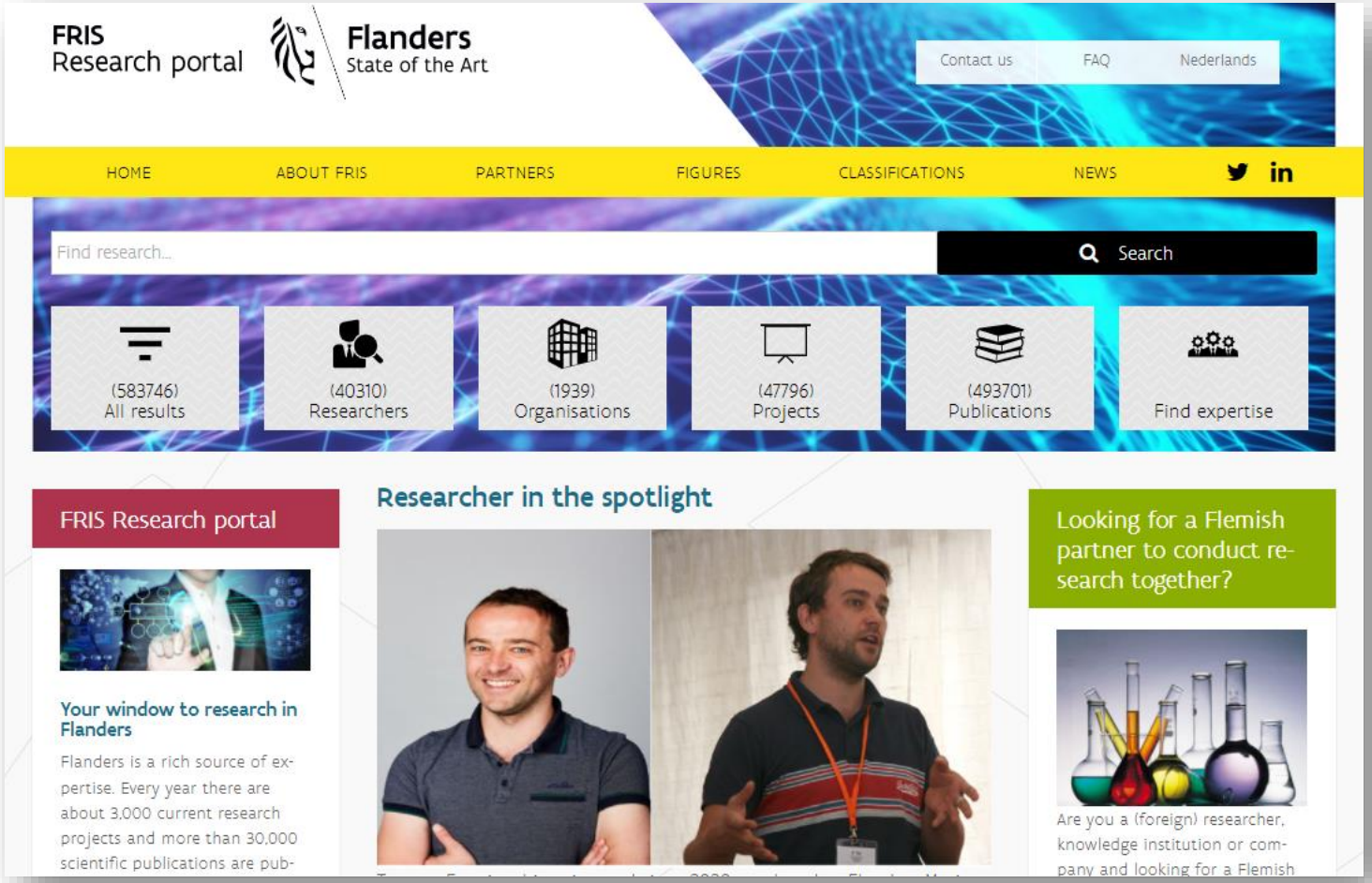
FRIS-principles

- Data ownership by the research institutes
- Contract with the research institutes, not the individual researcher
- No data manipulation, we do say yes to enrichment
- Working in silo’s (because of ownership)
- Linking of information through system of aliasing by PID’s and in the future: golden record-visualization

FRIS'programme management



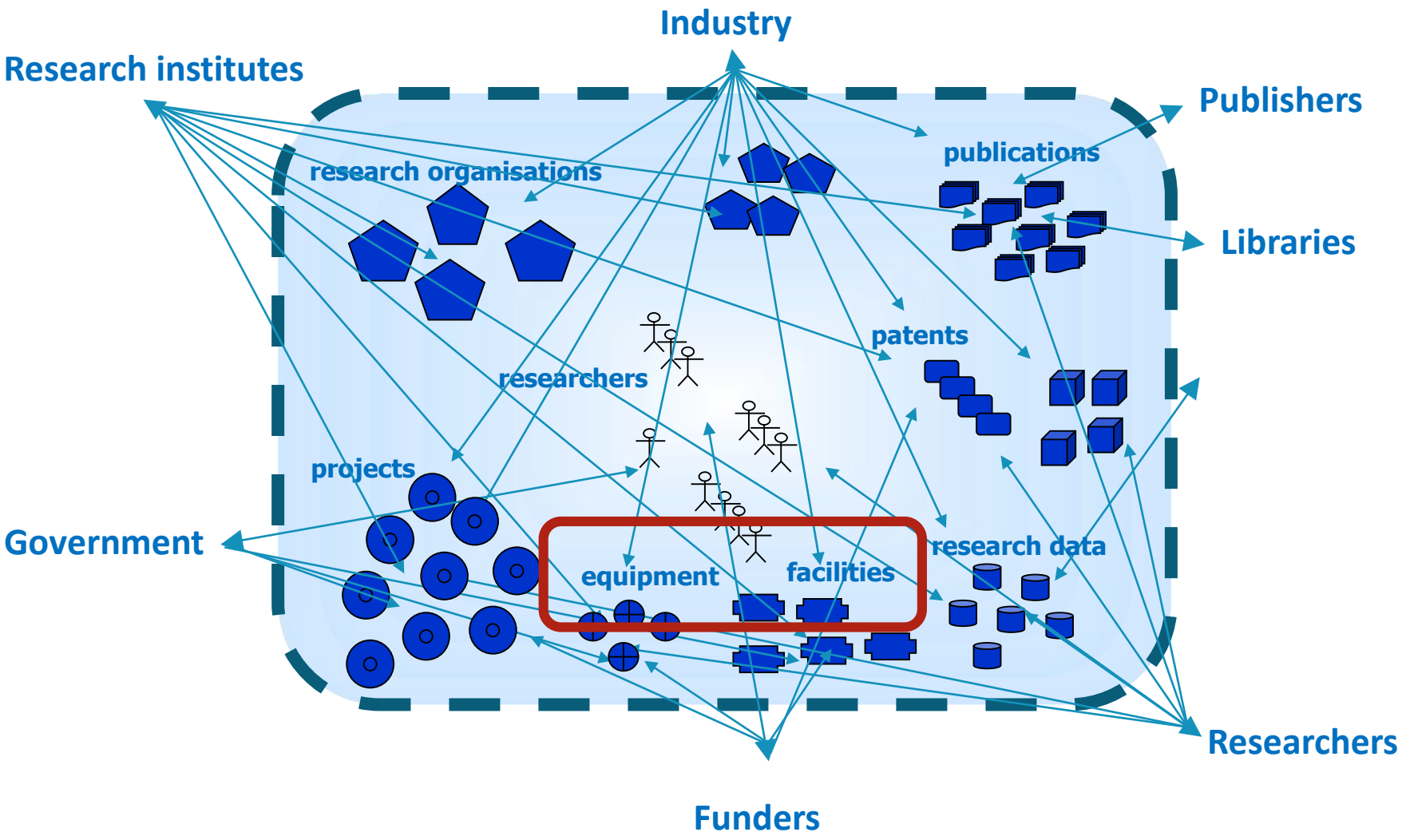
Researchportal



- www.researchportal.be
- www.researchportal.org

FRIS is growing…

And growing…


Industry
Research institutes
Publishers
publications
research organisations
Libraries
patents
researchers
projects
Government
research data
equipment
facilities
Researchers
Funders

Research infrastructures: why?

- **Flemish government invests millions of euros in R&D including research infrastructures. The next coming years: extra 195 mio € will be invested in infrastructure**
- **Need of a helicopterview**
- **Need to expose the investments made to accelerate innovation (and to put Flanders on the innovation-map)**

Goals to capture research infrastructures

- **Reporting of €**, particularly money from Flemish public funders (BOF/IOF, FWO + ad hoc investments)
- **Making infrastructure and expertise visible**
  - Leads to efficient use of infrastructure available, also outside the own research institute
  - Stimulating collaboration between research institutes and/or industry
  - Accelerating innovation
- **Future**: visualizing which research projects make use of the infrastructure and which publications are the result of data created by a certain infrastructure

Collaboration with ECOOM

- **Capturing info = collaborating with ECOOM as important partner in standardisation & facilitation between stakeholders (ECOOM Hasselt)**
- **Creating a model which is futureproof and flexible**

Metadatamodel, classifications and semantics: why?

ECOOM

- **What is ECOOM?**
  - → Expertise Centre for Research and Development monitoring
  - → Interuniversity consortium with the mission to map the R&D and innovation landscape in Flanders

- **ECOOM-Hasselt**
  - → Modelling research information
  - → Research classifications
  - → Semantic governance

FRIS

FRIS: Metadatamodel for research infrastructure

1. Installation of a governance layer (WHO): FRIS working group

- Representation of Flemish government, Flemish research universities, higher education colleges, strategic research centres, research institutions, Flemish research funders

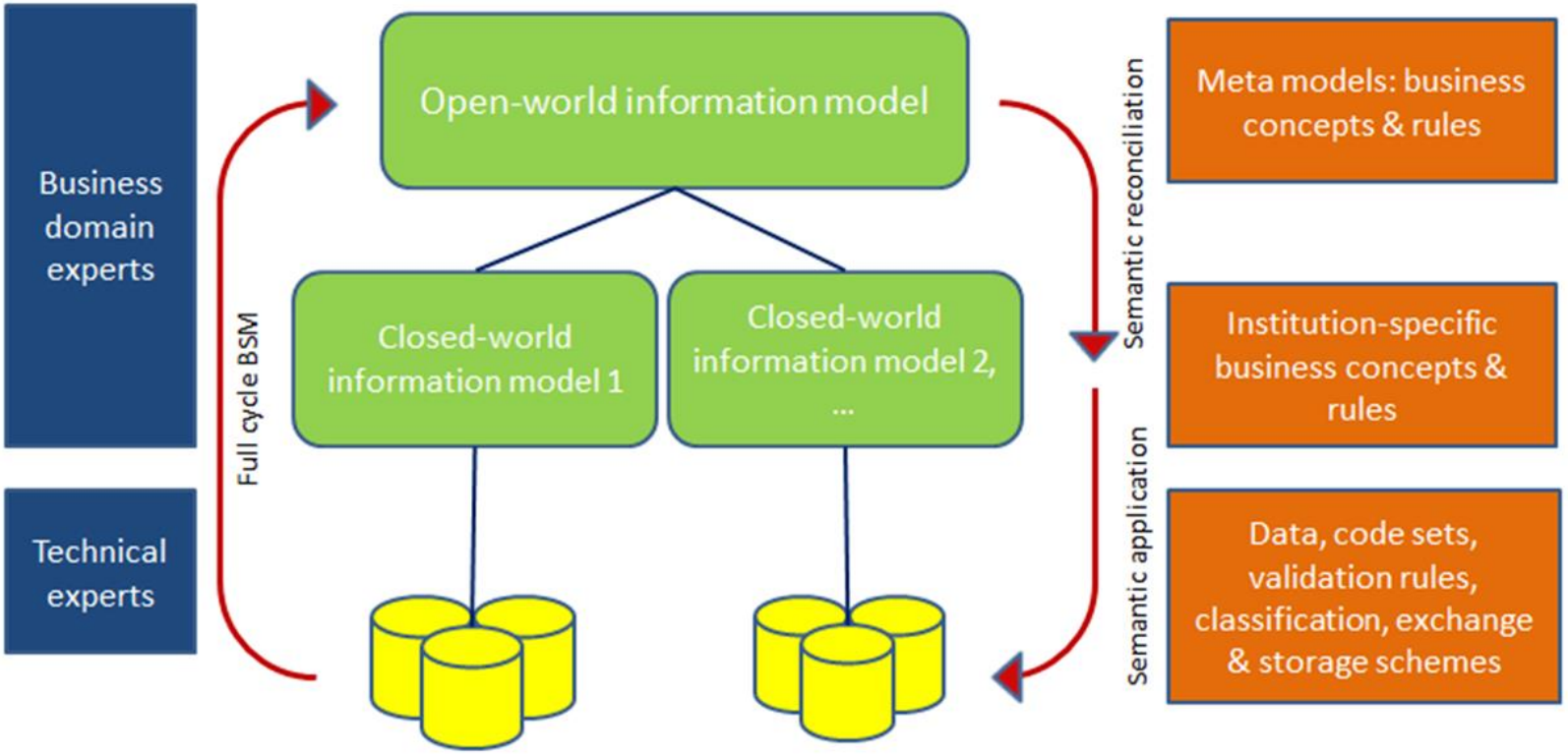
2. Creation of a business layer (WHAT):

- Inventory of generic metadata models
- Recording of business concepts & meanings by terminological theory

FRIS: Metadatamodel for research infrastructure

3. Inter-organizational semantic alignment

- Definition of required business concepts on the meta-level
- Collaborative, machine-readable manner



FRIS: Metadatamodel for research infrastructure

- **Definition research infrastructure**

"Concept term used to group all equipment, e-resources and facilities used for scientific research."

- **3 types**
  - → Equipment
  - → E-resources
  - → Facilities

FRIS: Metadatamodel for research infrastructure

- **Characteristics**
  - → 25 metadata fields
  - → Specification who has to provide which information:
    - × Institution/consortium coordinator vs. consortium partner
    - × Mandatory, Mandatory if applicable, Optional
  - → Definitions
  - → Practical examples
  - → Extra information or value specification

Metadata field	Institution/consortium coordinator	Consortium partner	Definition	Practical example	Extra Info/values
Identifier	M	M	Unique identification number assigned to the infrastructure by the data provider when it is delivered to FRIS.	Institution-specific identifier	Persistente identifier
Name	M	M	Technical name of the *infrastructure* .		Name is always provided in 2 languages (English/Dutch). The name and/or abstract must clearly state the exact subject with the brand name if relevant, e.g. what kind of microscope, what it is used for, etc.
Description	M	M	Description of the *infrastructure* (what can you use it for, technical specifications, ...).		Descriptive tekst field. Description is always provided in 2 languages (English/Dutch).

FRIS: Metadatamodel for research infrastructure

- **Characteristics**
  → 25 metadata fields

- Identifier
- Federated identifier
- Name
- Acronym
- Description
- Keywords
- Type
- Location type
- Accessibility
- User modalities
- Starting date
- End date
- Location(s)
- Contact
- Website
- Technology classification (Fraunhofer-35)
- Research disciplines (FRDS)
- Data provider is consortiumcoordinator?
- Consortiumcoordinator
- Organisation(s) of consortiumpartners of infrastructure project
- Affiliations of consortiumpartners of the infrastructure project that provide data to FRIS
- Link to funding project(s)
- Link to projects utilizing infrastructure
- Link to publications utilizing infrastructure
- Link to other infrastructure

FRIS: Metadatamodel for research infrastructure

- **Characteristics**
  → 25 metadata fields

Classifications

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FRIS: Metadatamodel for research infrastructure

- **Characteristics**
  → 25 metadata fields

Links to other research objects

- Identifier
- Federated identifier
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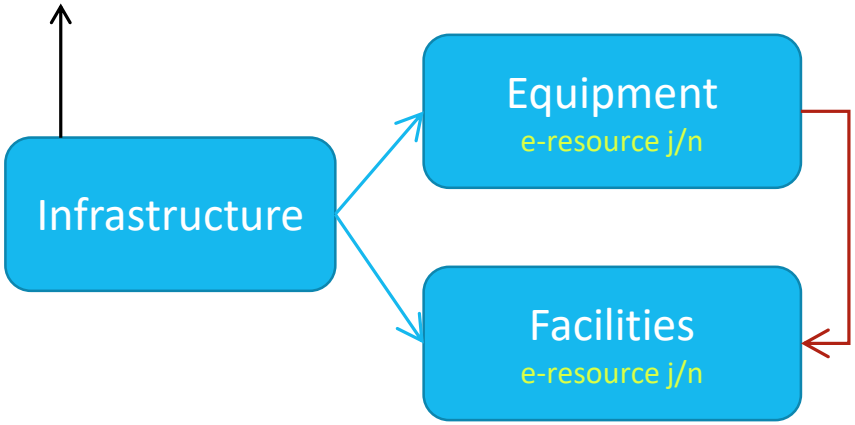
Research infrastructures in FRIS

Types of infrastructure in FRIS

Infrastructure: **concept that groupes equipment, e-resources and facilities used for scienctific research**



Equipment: **a device for scientific research (typically available on the market (off-the shelf), installed at one physical location**

eg. Scanning Elektronen Microscope, X-rayspectrometer, bioreactor, telescope …

Facility: **a (virtual and/or distributed) space for scientific research usually wth one or more pieces of equipment and/or resources. A facility provides a service (service desk).**

Operational cost (in addition to an investment cost) to keep the service operational (maintenance, skilled staff to operate it etc.).

Eg. Elixir: facility without equipment or e-resources

eg. Flemish Supercomputer Center: facility with e-resources (Tier 1, Tier 2…)

eg. Cleanroom: faciliteit with equipment (spectrometers, etching machines, …)

eg. Lifewatch: facility with equipment and e-resources

e-resource: y/n

e-Resource: **ICT based resources (computers, storage devices, networks, software, platforms etc.), analysis tools and data(bases) to support scientific research**

eg. supercomputer, database, virtual research environment (VRE), ESS …

Which infrastructure will be included in FRIS?

→ All (Flemish contributions to) international facilities
→ All facilities, especially those with dedicated resources
→ Large-scale infrastructure (financed by FWO or ad hoc)
→ Medium-scale infrastructure FWO (awarded from 2020)
→ Infrastructure awarded by internal university funds (BOF/IOF) from 2019 on and with a purchase value of at least 144K euro vat excl.
→ All equipment and e-resources that are uesful to share with third parties (regardless of purchase value)

Infrastructure: “project” versus “object”

INFRASTRUCTURE **PROJECT**	INFRASTRUCTURE **OBJECT**
- This is the project providing funds to build or modify certain infrastructure	- This is the infrastructure itself
- Information describes the project rather than the infrastructure itself (budget, funding source, partners…)	- Information describes the functionality of the infrastructure, the technical specifications, the accessibility and user modalities, the physical location etc.
- Is limited in time	- Is valid during the entire period that the infrastructure is in use

Project

Flemish Supercomputer Center (VSC)

UNIVERSITEIT GENT

The VSC is a partnership of five Flemish university associations. The Tier-1 and Tier-2 infrastructure is spread over four locations: Antwerp, Brussels, Ghent and Louvain. There is also a local support office in Hasselt.

Date: 1 Jan 2008 → 30 Apr 2013

Keywords: supercomputer

Disciplines: Computer hardware, Computer theory, Other computer engineering, information technology and mathematical engineering, Scientific computing

RESEARCHERS

- Danny Schellemans (Promoter)
  Information and Communication Technology Department
  Duration: 1 Jan 2008 → 30 Apr 2013
- Piet Demeester (Co-promoter)
  Department of Information technology
  Duration: 1 Jan 2008 → 30 Apr 2013

PROJECT PARTNERS

- Information and Communication Technology Department
  From 1 Jan 2008 → 30 Apr 2013
  Ghent University
- Department of Information technology
  From 1 Jan 2008 → 30 Apr 2013
  Ghent University

FUNDING

1 - 1 of 1 results

- **Funding:** Department Science, Innovation and Media (Principal funding)
  Funding party: Flemish Government
  Policy level funding: Flemish

PUBLICATIONS

- Roseomonas hellenica sp. nov., isolated from roots of wild-growing Alkanna tinctoria (2021)
  Authors: Angélique Rat, Henry David Naranjo Benavides, Liesbeth Lebbe, Margo Cnockaert, Nikos Krigas, Katerina Grigoriadou, Eleni Maloupa, Anne Willems
  Number of pages: 1

Infrastructure**project** on the FRIS-portal

Infrastructure

Flemish Supercomputer Center (VSC)

The VSC has developed a differentiated infrastructure (Tier-1 and Tier-2 level) that is available to the academic and business world. This section will provide an overview of the Tier-2 infrastructure available within the various Flemish universities. More information on Tier-1 can be found here. This is not always limited to the consumption of computing time and associated standard user support (including training), but occasionally also involves a more comprehensive service, such as specific software optimisation.

Type: facility, e-resource
Location type: distributed
Accessibility: everyone
User modalities: see https://www.vscentrum.be/getaccess or contact https://www.vscentrum.be/getintouch
In use: 1 nov 2015 → present
Url: https://www.vscentrum.be/
Disciplines: Computing, Numerical computation
Technology domains: informationtechnology
Keywords: Tier 1, high performance computing, Tier 2, HPDA

PARTNERS

- ICTS (consortiumcoordinator)
  From 1 nov 2015 → present
  KULeuven
- ICT Departement (consortiumpartner)
  From 1 nov 2015 → present
  UGent
- Belspo (consortiumpartner)

LINKED INFRASTRUCTURE

- **Tier1** (e-resource)
- **Tier2** (e-resource)

PROJECTS

- Metabolic Characterization and Engineering of Streptomyces lividans Producing Heterologous Proteins (Metabole karakterisering en engineering van Streptomyces lividans voor heterologe eiwitproductie)
  Vanaf 27 okt 2008 → 18 dec 2012
  Financiering: BOF - Nieuwe Onderzoeksinitiatieven

PUBLICATIONS

- Using Generalized Learning Automata for State Space Aggregation in MAS (2008)
  Boek: Knowledge-Based Intelligent Information and Engineering Systems
  Series: Lecture Notes in Computer Science
  Auteurs: Yann-Michaël De Hauwere, Peter Vrancx, Ann Nowe, Randy Goebel, Jörg Siekmann, Wolfgang Wahlster
  Pagina's: 182-193
  Aantal pagina's: 12

KU LEUVEN UNIVERSITEIT GENT

LOCATION

KU Leuven
Heverlee

UGent
Campus Sterre – S2
Gent

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Infrastructure as **object** on the FRIS-portal (provisional mock-up)

This is a fictional example.

Thank you

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- **Pascale Dengis**
  >> Pascale.Dengis@vlaanderen.be
- **Ils De Bal**
  >> Ils.Debal@vlaanderen.be

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