



Research infrastructures: metadata model & data capturing in FRIS

EUROCRIS WEBINAR — 24/11/2021

FRIS
Research portal



DEPARTMENT OF
ECONOMY
SCIENCE &
INNOVATION

ecoom



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

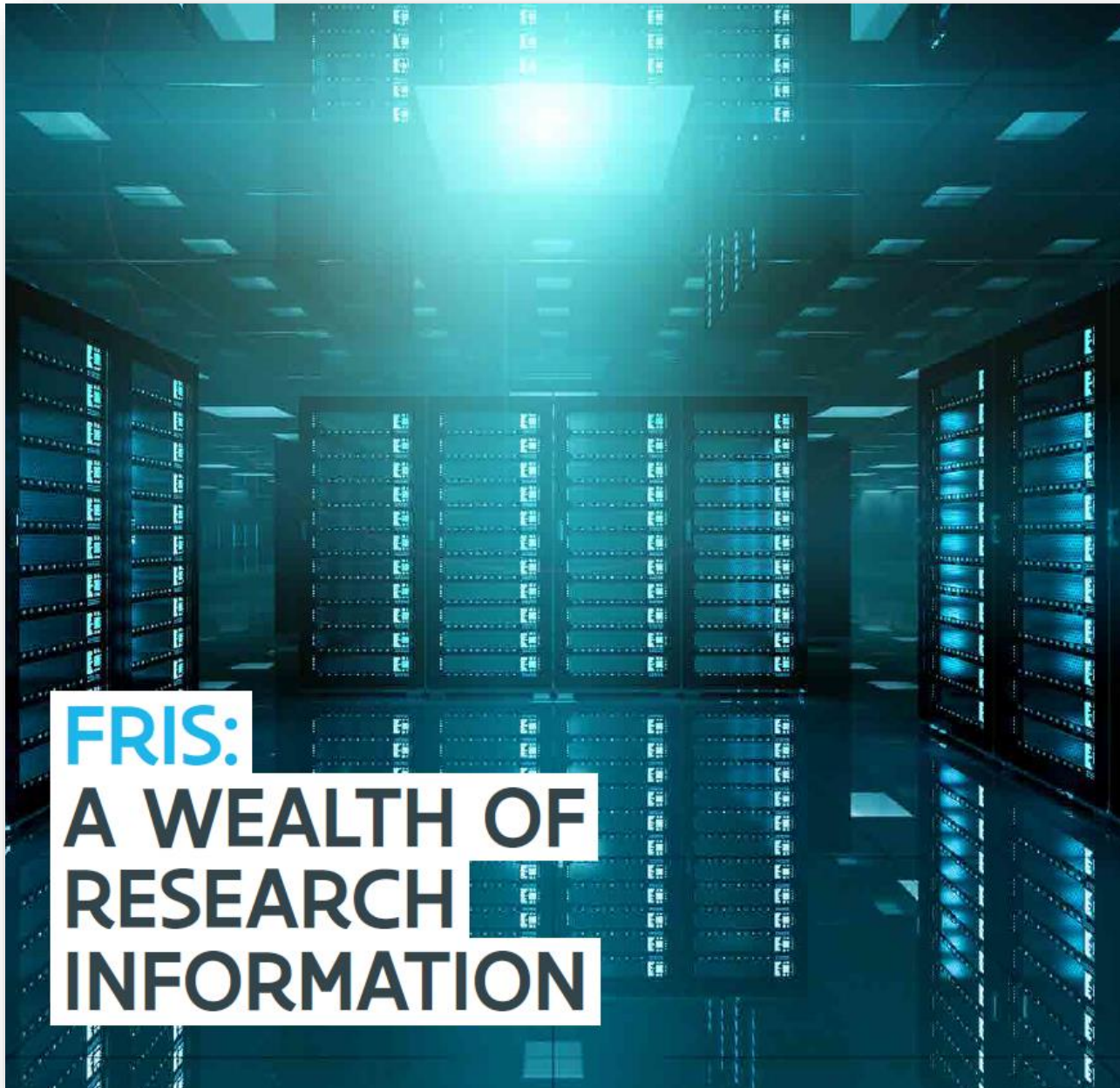
3. Research infrastructures in FRIS

>> Pascale Dengis, business & BI-expert FRIS



What is FRIS?
And why research
infrastructures?

Flanders Research Information Space



FRIS:
**A WEALTH OF
RESEARCH
INFORMATION**

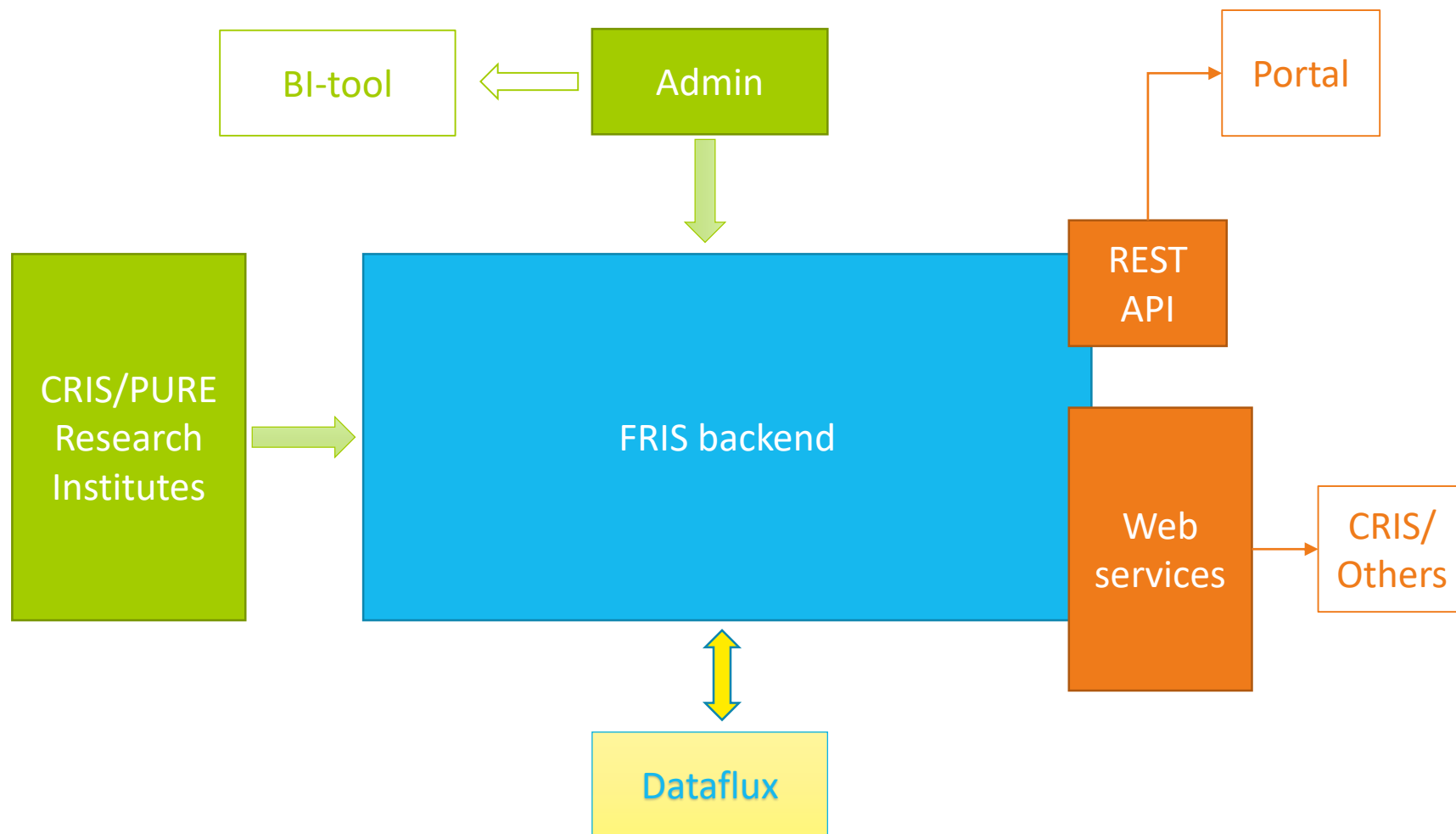
FRIS in numbers



NEW in 2022:

- > Patents
- > **Research infrastructures**
- > Datasets

FRIS-system: high level integrations



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.

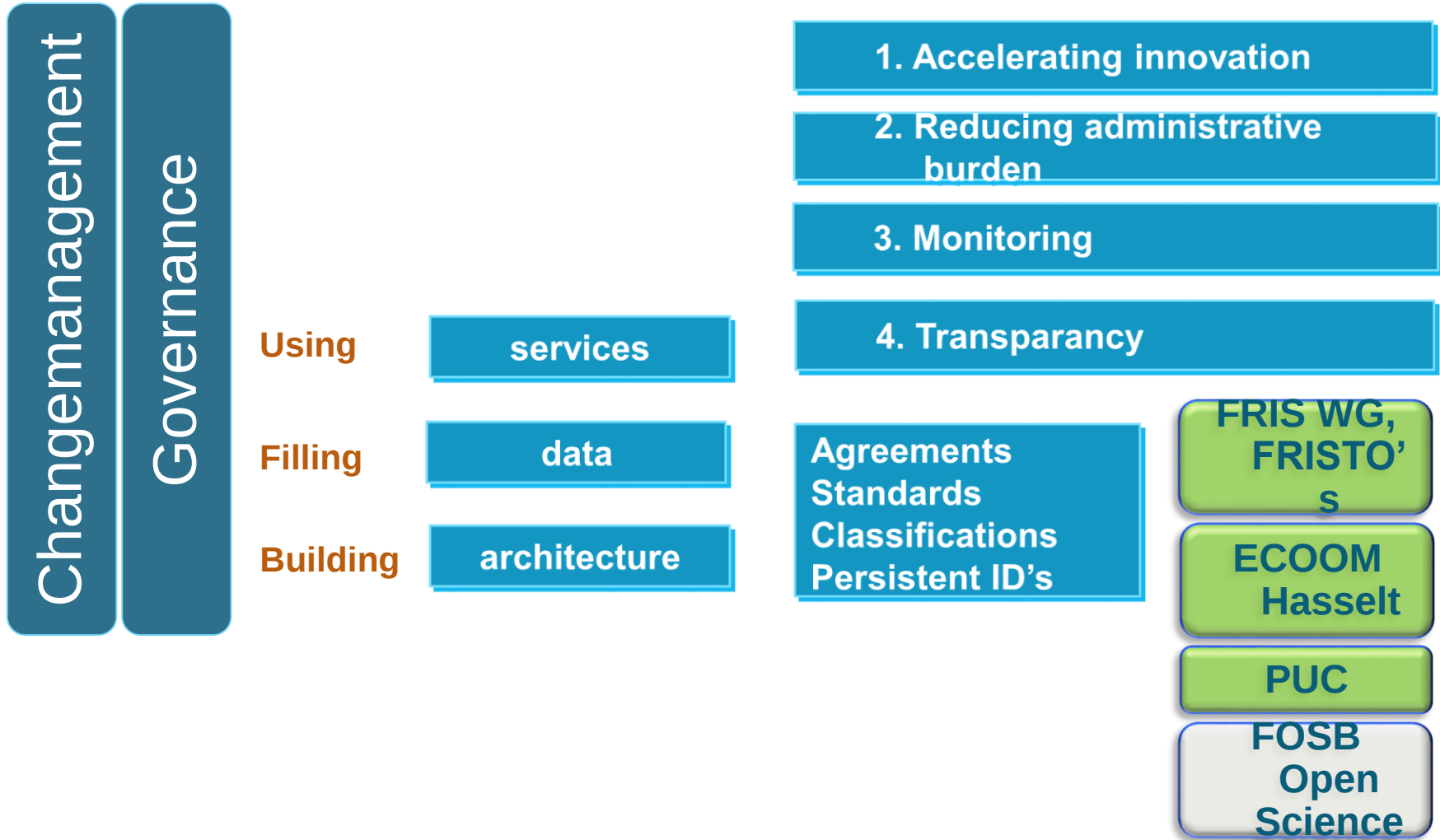


To make **research data** publicly available, so that everyone can use it freely.

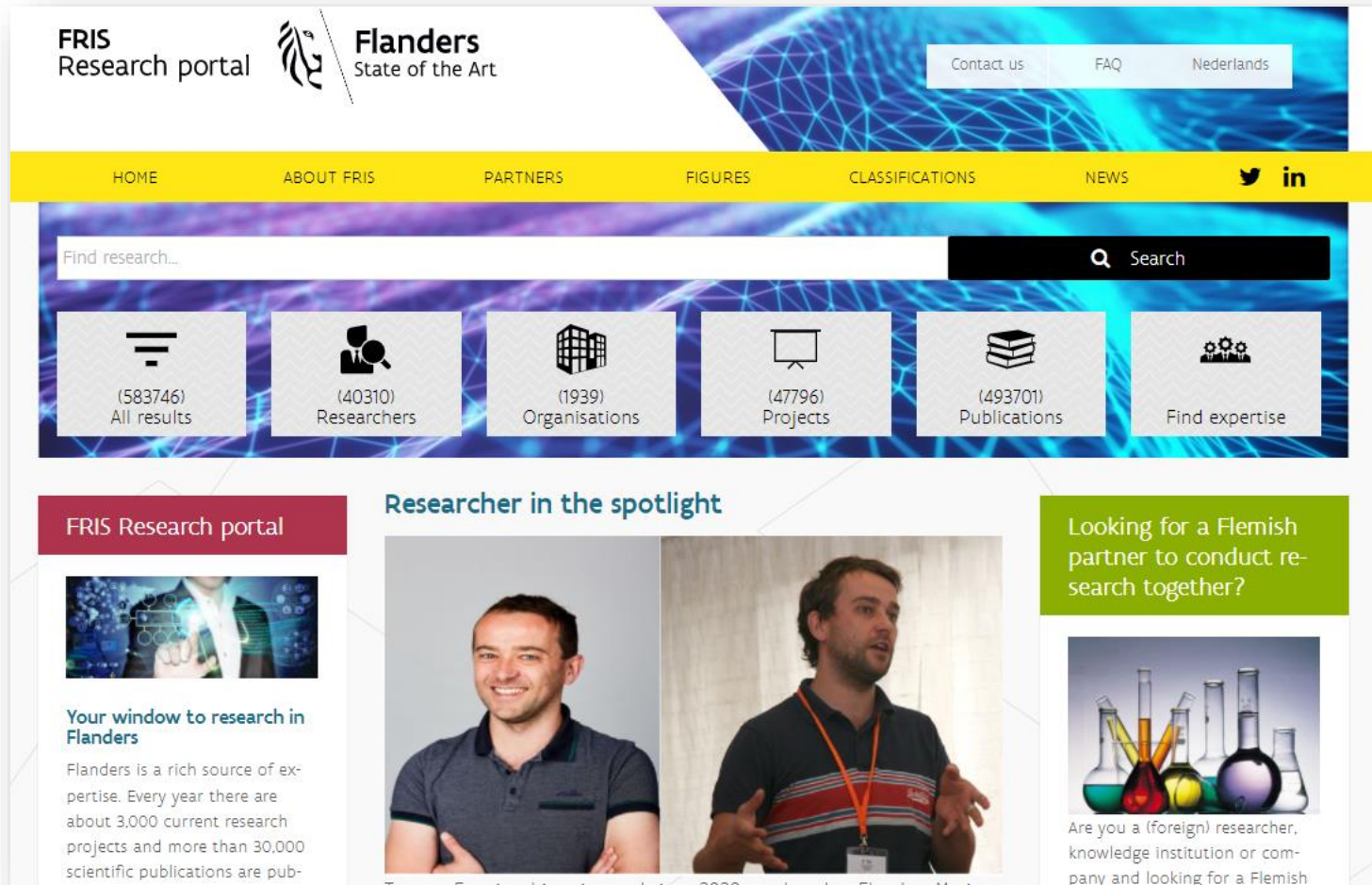
FRIS-principles

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

FRIS'programme management



Researchportal



The screenshot shows the FRIS Research portal website. The header includes the FRIS logo, the text 'Flanders State of the Art', and links for 'Contact us', 'FAQ', and 'Nederlands'. A yellow navigation bar contains links for 'HOME', 'ABOUT FRIS', 'PARTNERS', 'FIGURES', 'CLASSIFICATIONS', 'NEWS', and social media icons for Twitter and LinkedIn. Below the navigation bar is a search bar with the placeholder text 'Find research...' and a 'Search' button. A row of six boxes displays statistics: 'All results' (583746), 'Researchers' (40310), 'Organisations' (1939), 'Projects' (47796), 'Publications' (493701), and 'Find expertise'. The main content area features three sections: 'FRIS Research portal' with a sub-header 'Your window to research in Flanders' and a paragraph about Flanders as a rich source of expertise; 'Researcher in the spotlight' with two portraits of men; and a green box titled 'Looking for a Flemish partner to conduct research together?' with an image of laboratory glassware and a question about finding a Flemish partner.

FRIS Research portal

Flanders State of the Art

Contact us FAQ Nederlands

HOME ABOUT FRIS PARTNERS FIGURES CLASSIFICATIONS NEWS

Find research... Search

(583746) All results (40310) Researchers (1939) Organisations (47796) Projects (493701) Publications Find expertise

FRIS Research portal

Your window to research in Flanders

Flanders is a rich source of expertise. Every year there are about 3,000 current research projects and more than 30,000 scientific publications are pub-

Researcher in the spotlight

Looking for a Flemish partner to conduct research together?

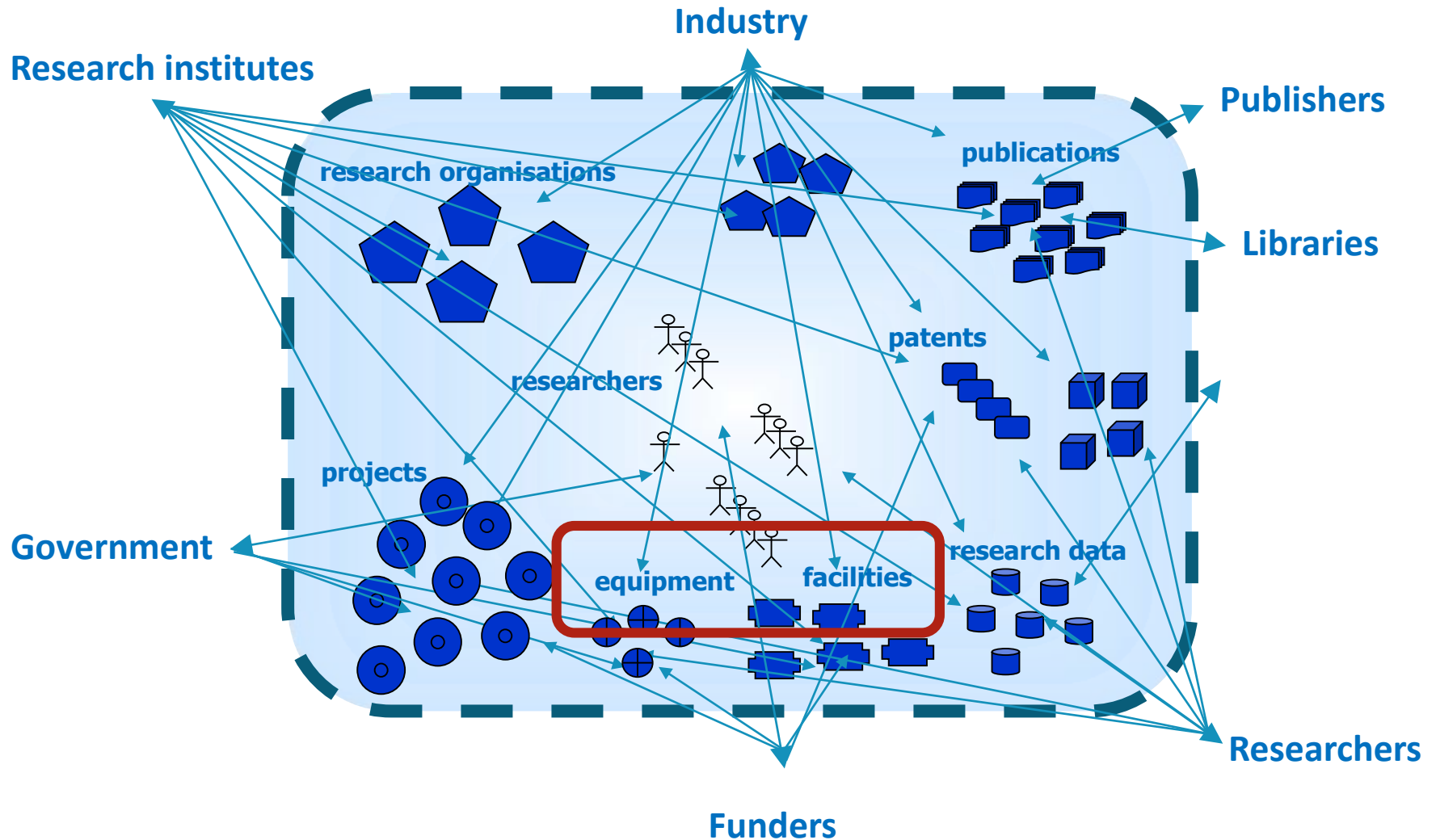
Are you a (foreign) researcher, knowledge institution or company and looking for a Flemish

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

FRIS is growing...

2008	KU Leuven	UGent	UHasselt	VUB	UAntwerpen
2018	INBO	ILVO	ITG	Plantentuin Meise	KMDA
	KMSKA	VLIZ	Alamire	Begunstigden van VLAIO-financiering (Tetra, ...)	Waterbouwkundig Lab
2021 - ...	IMEC	VIB	Flanders Make	VITO	Hogescholen (DOSP)
	Vlerick Business School	Orpheus Instituut	FWO	VLAIO	eCorda

And growing...



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 helicopter view**
- ▶ **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**

Metadata model, 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: Metadata model for research infrastructure

1. Installation of a governance layer (WHO)

- FRIS-TO & FRIS working group
- Representation of Flemish government, Flemish research universities, higher education colleges, strategic research centres, research institutions, Flemish research funders

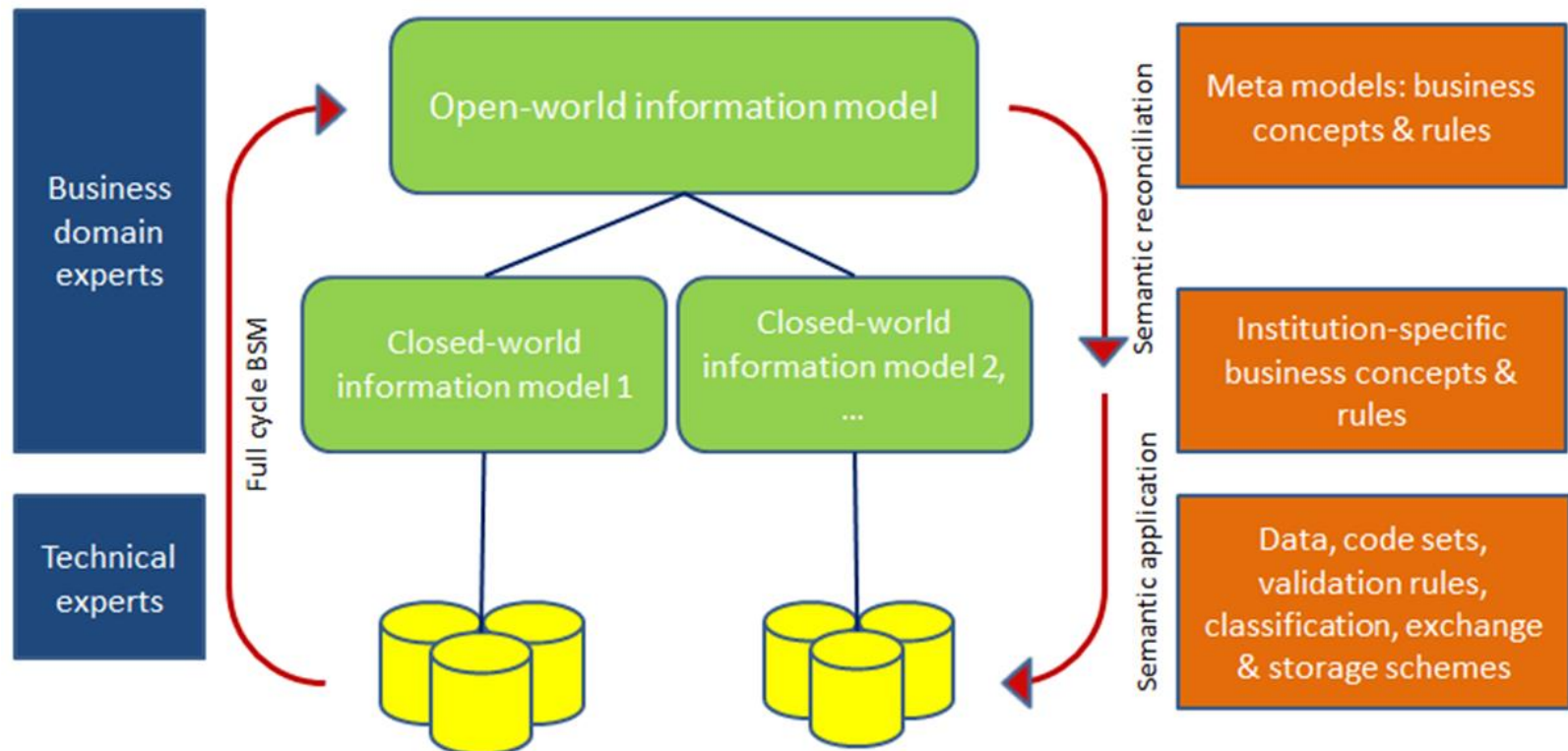
2. Creation of a business layer (WHAT):

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

FRIS: Metadata model for research infrastructure

3. Inter-organizational semantic alignment

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



FRIS: Metadata model 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: Metadata model 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	Persistent identifier
Name	M	M	Technical name of the <i>infrastructure</i> .		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 <i>infrastructure</i> (what can you use it for, technical specifications, ...).		Descriptive tekst field. Description is always provided in 2 languages (English/Dutch).

FRIS: Metadata model 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 consortium coordinator?
- Consortium coordinator
- Organisation(s) of consortium partners of infrastructure project
- Affiliations of consortium partners 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: Metadata model for research infrastructure

► Characteristics

→ 25 metadata fields

Classifications

- Identifier
- Federated identifier
- Name
- Acronym
- Description
- Keywords
- **Type**
- **Location type**
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FRIS: Metadata model for research infrastructure

► Characteristics

→ 25 metadata fields

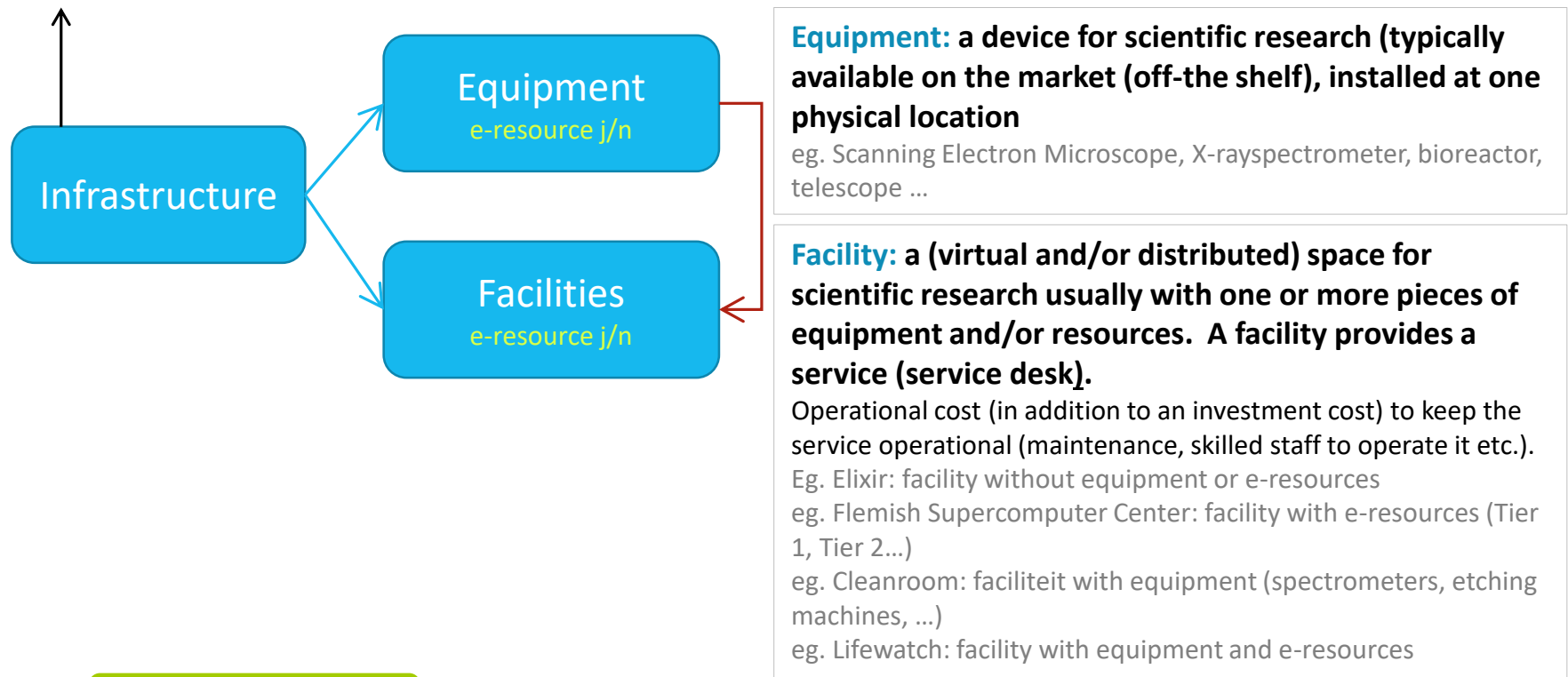
[Links to other
research objects](#)

- Identifier
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Research infrastructures in FRIS

Types of infrastructure in FRIS

Infrastructure: concept that groups equipment, e-resources and facilities used for scientific research



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 useful 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)



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 Schellekens](#) (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

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

LOCATION

KU Leuven
Heverlee

UGent
Campus Sterre – S2
Gent

CONTACT

KU Leuven:
Jan Janssens
(infrastructuurcoordinator)
Rekencentrum
Straat 55
xxxx Stad
Tel.:+32 (yy) 12 34 56

UGent:
Peter Peeters
(scientific coordinator)
Rekencentrum
Straat 55
xxxx Gent
Tel.:+32 (yy) 12 34 56

Infrastructure as **object**
on the FRIS-portal
(provisional mock-up)
This is a fictional example.

Thank you

► **Hanne Poelmans**

>> Hanne.Poelmans@uhasselt.be

ecoom



► **Pascale Dengis**

>> Pascale.Dengis@vlaanderen.be

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Research portal



► **Ils De Bal**

>> Ils.Debal@vlaanderen.be