Flanders Research Information

Space (FRIS). A use case from

Flanders

Leen Van Campe - Program Manager FRIS

Department Economy, Science and Innovation Flemish Government

Madrid, Horizontal Working Group on Monitoring and Evaluation

Octobre 23 2019

Agenda

- **Introduction to FRIS**
- **FRIS architecture**
- **Use of FRIS**
- **FRIS and Open Science**
- **FRIS and monitoring**

Flanders
State of the Art

FRIS introduction

Content, objectives, main audiences

Flanders
State of the Art

FRIS:
A TREASURE
TROVE OF
RESEARCH DATA

Meet Flanders Research Information Space.

Digital platform, built by the department of Economy, Science and Innovation (EWI), containing information (=metadata) on researchers and their publicly funded research (projects, outputs).
In 2018 we've launched a major new release of our platform to allow a direct and continuous integration between external systems and the FRIS system in both directions.
In order to achieve the following objectives: promotion of innovation; more effective and efficient policy; administrative simplification; Transparency for the citizen.

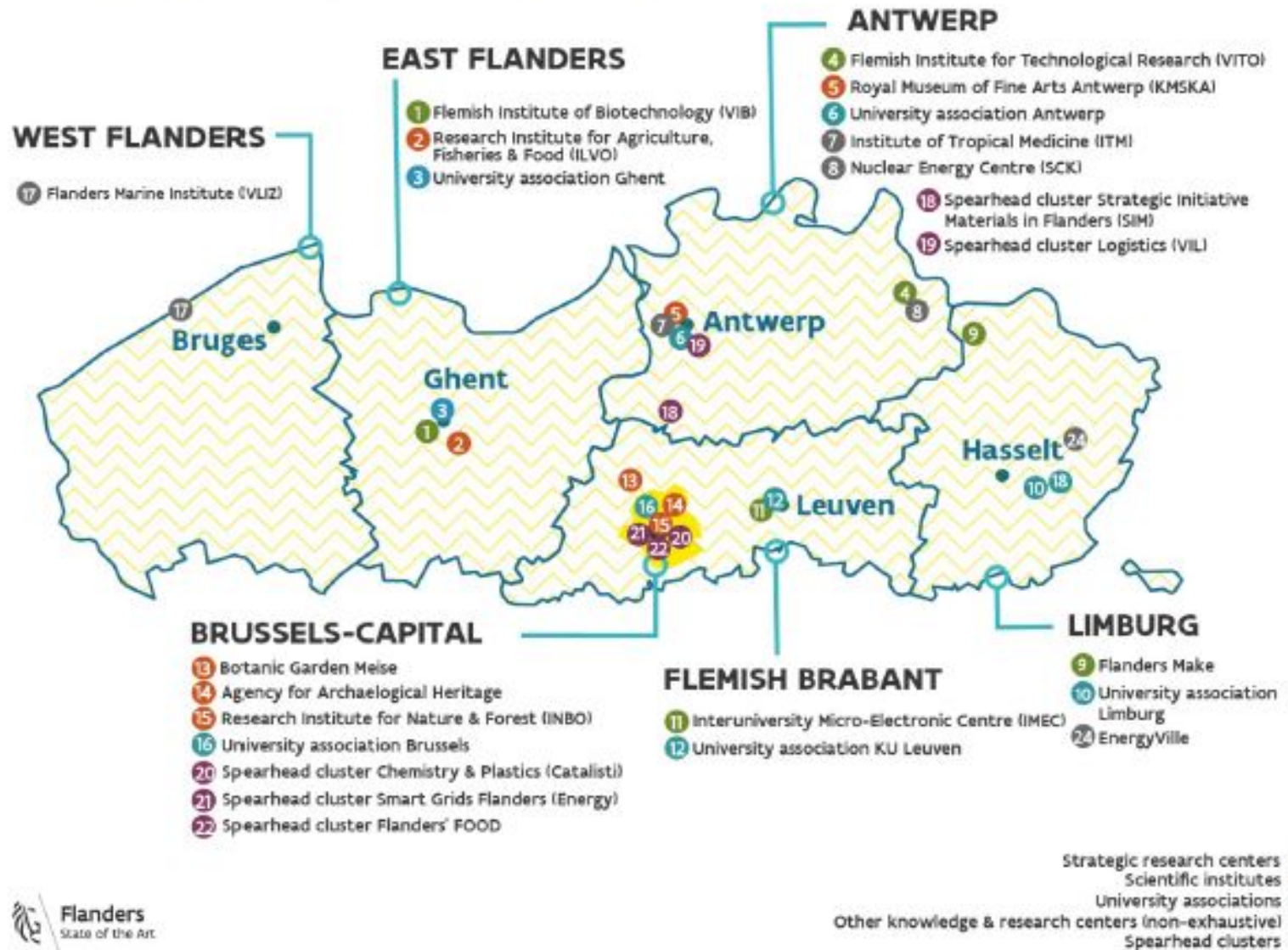**36.000 research projects**
80.000 researchers
402.000 publications

FRIS DATAPROVIDERS

Geographical presentation of the main public actors in scientific research and innovation in Flanders

WEST FLANDERS

17 Flanders Marine Institute (VLIZ)

EAST FLANDERS

1 Flemish Institute of Biotechnology (VIB)
2 Research Institute for Agriculture, Fisheries & Food (ILVO)
3 University association Ghent

ANTWERP

4 Flemish Institute for Technological Research (VITO)
5 Royal Museum of Fine Arts Antwerp (KMSKA)
6 University association Antwerp
7 Institute of Tropical Medicine (ITM)
8 Nuclear Energy Centre (SCK)
18 Spearhead cluster Strategic Initiative Materials in Flanders (SIM)
19 Spearhead cluster Logistics (VIL)

BRUSSELS-CAPITAL

13 Botanic Garden Meise
14 Agency for Archaelogical Heritage
15 Research Institute for Nature & Forest (INBO)
16 University association Brussels
20 Spearhead cluster Chemistry & Plastics (Catalisti)
21 Spearhead cluster Smart Grids Flanders (Energy)
22 Spearhead cluster Flanders' FOOD

FLEMISH BRABANT

11 Interuniversity Micro-Electronic Centre (IMEC)
12 University association KU Leuven

LIMBURG

9 Flanders Make
10 University association Limburg
24 EnergyVille

Strategic research centers ●
Scientific institutes ●
University associations ●
Other knowledge & research centers (non-exhaustive) ●
Spearhead clusters ●

Flanders
State of the Art

FRIS : 4 OBJECTIVES

OPEN-NESS

- **Accelerate the chain from idea to innovation** by ensuring a better information flow between research institutes and innovative organisation s

SIMPLI-CITY

- **Simplifying administration through webservices**
- Obtaining information directly from systems
- Requesting information just once, sharing and reusing it to get the most out of it

EFFECT-IVENESS

- To make the government, corporate and research **innovation strategy** more **effective** and **efficient**

TRANS-PARENCY

- To make research information **publicly available** so that everyone can use it freely

FRIS : TARGET GROUPS

RESEARCH INSTITUTES

- Details on your research and its results are shared **with all FRIS research partners and users**.

- **Become known** in your field of expertise as we **share your research data** with various companies, allowing them to develop applications that rely on your area of expertise

RESEARCHER

- Quickly and easily **reach out** to other researchers
- Find **partners** in your area of expertise with whom you can **collaborate** or who can help to give your **application** for **funding** a better chance at succes
- Increase your project's **market value** by gaining international and national name **recognition**
- Get access to all publicly funded research in Flanders and see how **innovative** your research is

FRIS TARGET GROUPS

INDUSTRY

- Quickly **find** the **experts** you seek, even in very specific disciplines
- Enjoy **access** to the **open data** of all Flemish research, so you can develop your own applications
- **Attract researchers** in very specific scientific domains more easily
- **Save** on your research **costs**: data from earlier research projects is quickly available
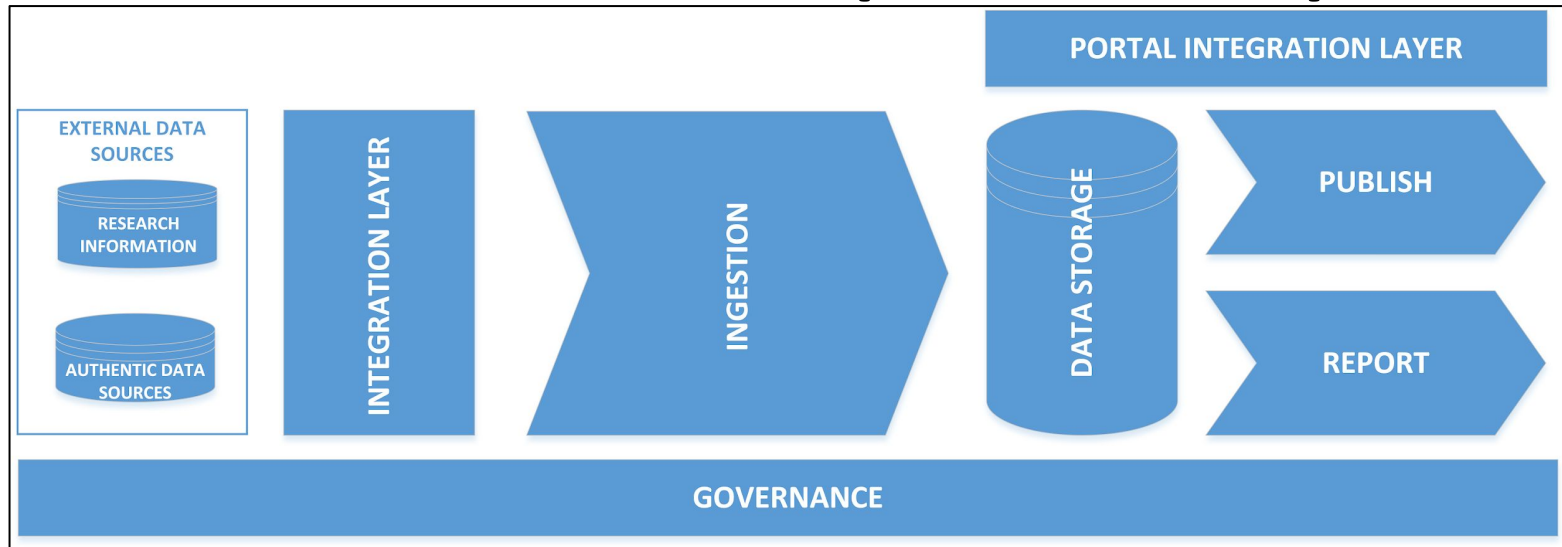
GOVERNMENT BODY

- Use FRIS as a reliable **source** to monitor your own policy
- See the results of the research you are funding, discover trends and conduct impact **analyses**
- Look up what research has already been conducted in your policy domain and who the **experts** are

FRIS architecture

FRIS architecture (2014-2018)

- **Accurate reflection of the state of research in the region**
- **Service Oriented Architecture:** sustainable and more agile information exchange with all knowledge institutions in Flanders
  - Webservices : incremental model with changes in real time
  - Common European Research Information Format (CERIF) standard: neutral architecture – interoperability
  - Persistent and unique Identifiers for Researchers / Organisations / Publications / Journals / Datasets such as ORCID, DOI, Handle, ISSN, GRID
- **Publish as open and reusable information: FRIS webservices** geared towards public access with all public data as **open data** and **open** Application Programming Interfaces (API)

Flanders
State of the Art

FRIS architecture future (2020-…)
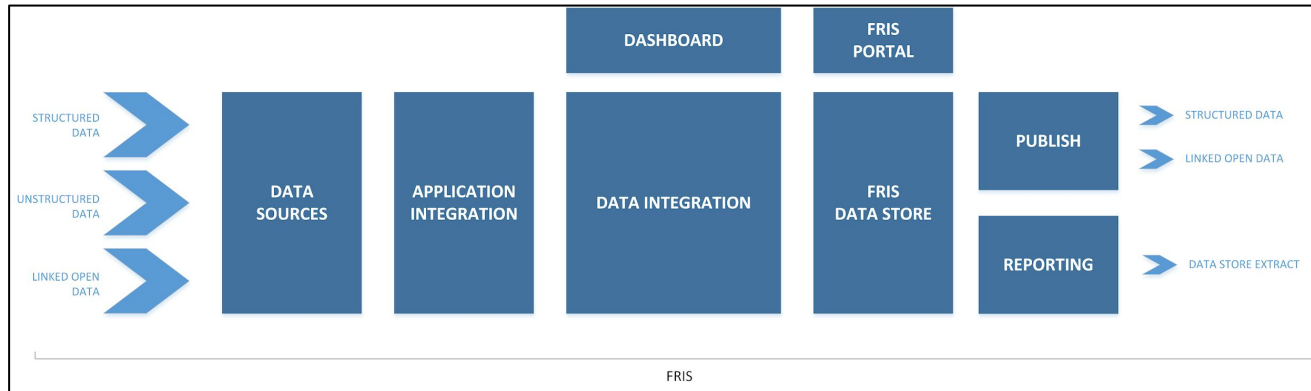
- ## Data sources
  - More datasources – not limited to Flemish knowledge institutions
    - Funding bodies
    - International databases
  - Unstructured data / linked open data
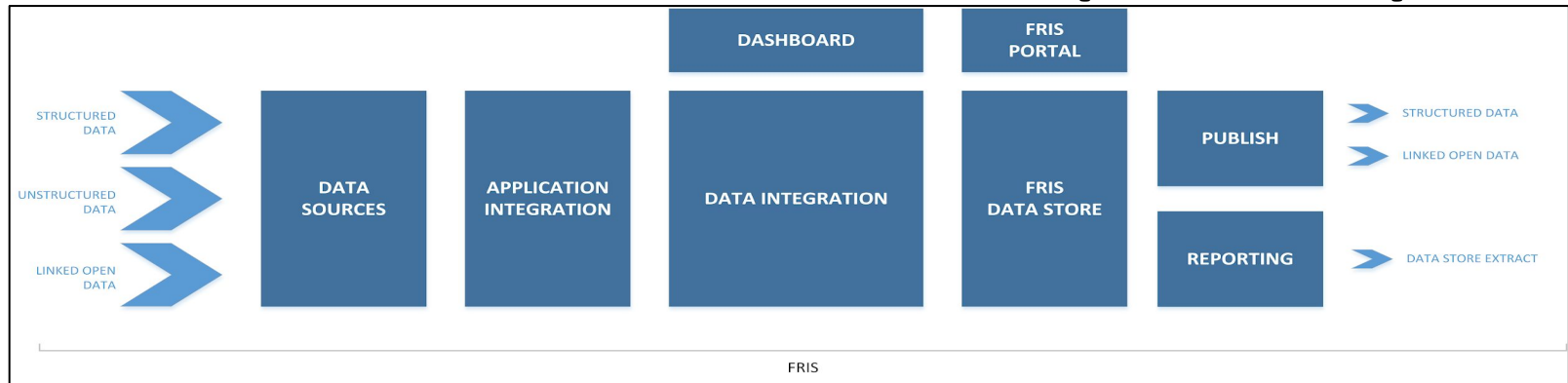 - Information on datasets, infrastructure, patents
- ## Application/data Integration layer
  - A single entryway for all external data sources
  - Support for multiple protocols and text carriers
- ## Dashboard
  - Tracking the use of our platform / system monitoring
  - Data quality

Flanders
State of the Art

FRIS architecture future (2020-…)

- **Data integration**
  - Management of integration processes such as quality control, GDRP conformity, data deduplication, enriching services
- **Reporting**
  - Trend analytics; descriptive analytics (what is happening), and predictive (something will happen)
- **Publishing:**
  - A publishing service supporting servicing of public data through SOAP, REST and Linked Data endpoints guaranties integration and openness of the platform. This will also allowintegration with EOSC and other services
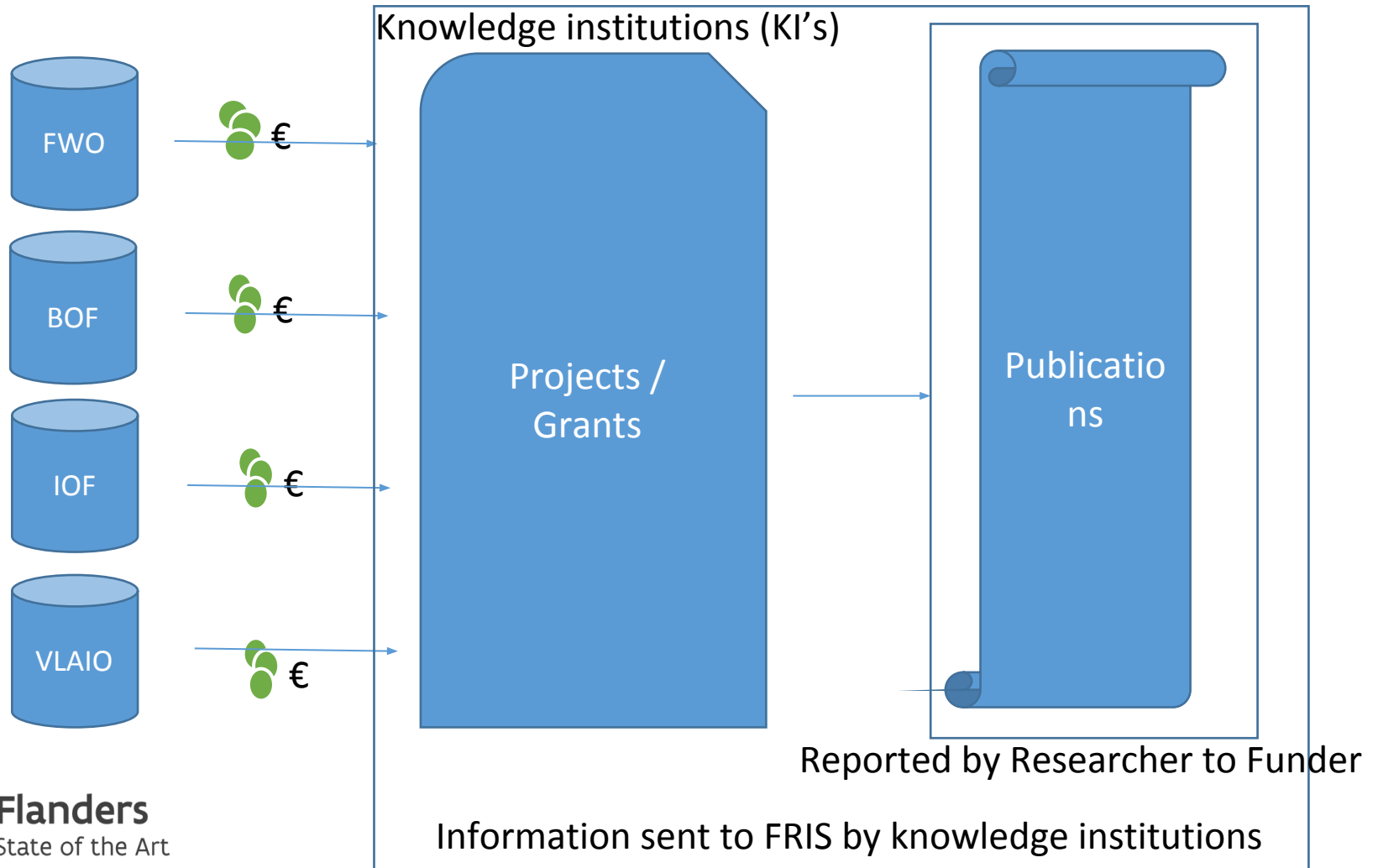
Flanders
State of the Art

FRIS use

Interest from public parties

- **Winner of the e-gov award in 2018 in categories of "Open Data" and "Best e-gov project 2018)**
  - https://www.youtube.com/watch?v=c3t4wMUyPKU&feature=youtu.be
- **Feeding data to the federal level**
- **Feeding data to OpenAire (work in progress)**
- **FRIS as an application used by other departments of the Flemish government to manage the research information**
  - Five scientific institutes, each managed by a department of the Flemish Government. These perform scientific research in a specific policy field.
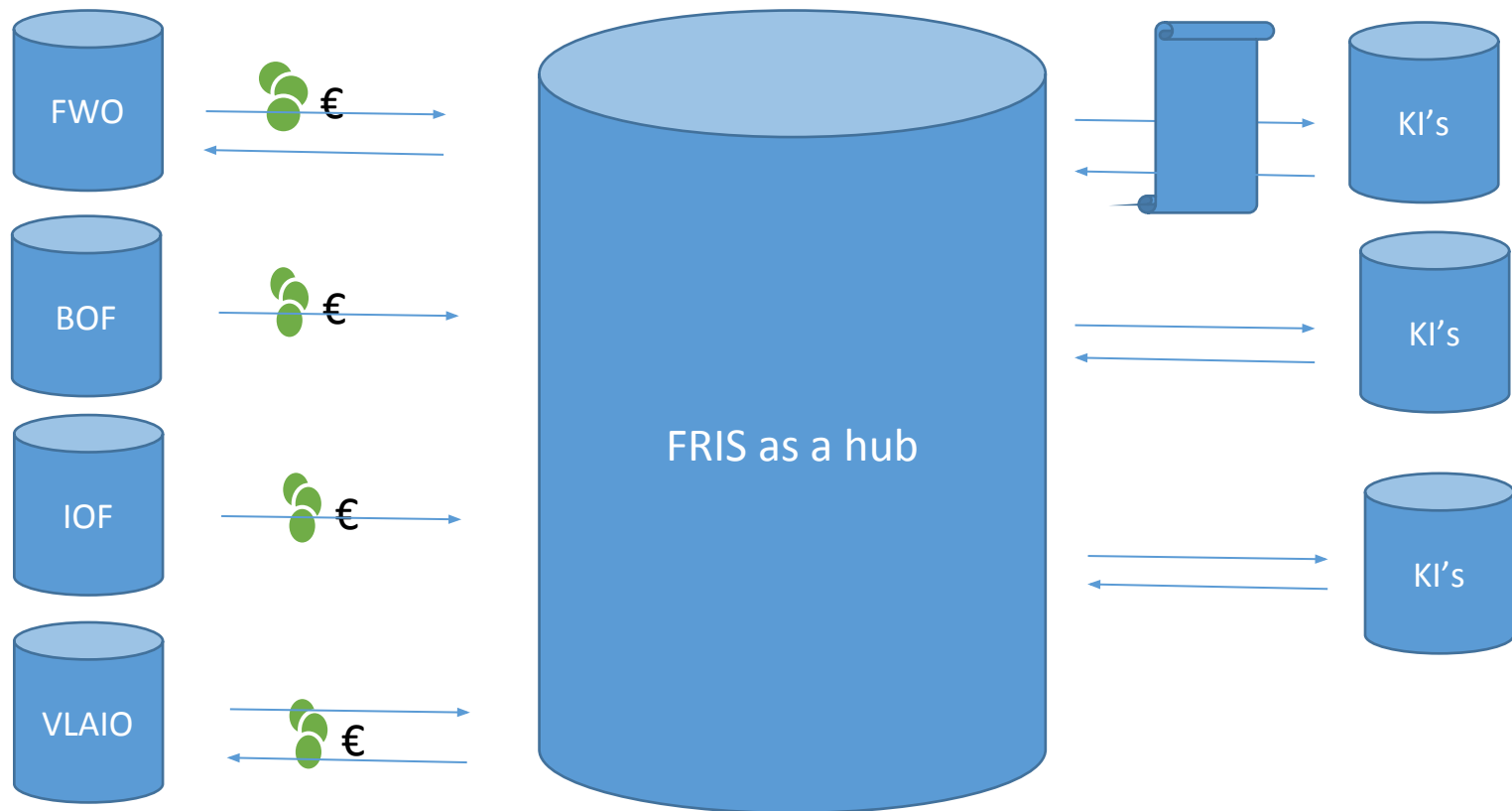
Flanders
State of the Art

Interest from public parties: funders

- **Research Foundation Flanders (FWO) and Flanders Innovation and Entrepeneurship (VLAIO)**

Knowledge institutions (KI's)

FWO

BOF

IOF

VLAIO

€

Projects / Grants

Publications

Reported by Researcher to Funder

Information sent to FRIS by knowledge institutions

Interest from public parties: funders

- **Research Foundation Flanders (FWO) and (VLAIO) in 2020-…**

FWO as a direct dataprovider to FRIS
Reporting on outputs via FRIS as a hub

Flanders
State of the Art

Interest from private parties

- **ONTOFORCE**

  MEDICAL DATA SEARCH PLATFORM

  Find data faster, smarter and simpler with DISQOVER
  Our semantic linked data and visualization platform DISQOVER powers citizen data science.

- **IdFuse**

  RESEARCH BENCHMARKING TOOL IMPACTER

  IMPACTER
  Write better grant proposals
  Impacter supports you **while you write** to deliver the best grant possible.

Hans Constandt
CEO **ONTOFORCE**

"Open data is given a score of 1 to 5 stars. I rate FRIS research data 4 to 5 stars. The highest score, because their data is ready to be linked to other datasets. It is the first databank that we can use so quickly and easily."

FRIS and Open Science

Governance: Flanders and the EOSC

- **Represented in EOSC Governance Board**
- **Various experts from Flanders in working groups of EOSC Executive Board**
    - Landscape: mapping the existing research infrastructures which are candidates to be part of the EOSC federation
    - Architecture: defining the technical framework required to enable and sustain an evolving EOSC federation of systems
- **Strong connection to implicated ESFRI's such as Elixir**

- **EWI, as a policy preparing department, has conducted in 2019 a study to establish the right governance for a Flemish Research Data Network :**
    - Different scenario's identified in the study among which "Flemish Open Science Board (FOSB)" with representatives from all knowledge institutions aiming at establishing a roadmap for operational implementation to connecting to EOSC

Flanders
State of the Art

EUROPEAN OPEN
SCIENCE CLOUD

Legislation FRIS - Open Science

- **Changes made to decrees / legal agreements on FRIS and Open Science in 2019**
  - Decree on the organisation and funding of the Science and Innovation
  - Decree on the funding of the Special Research Funds (BOF) at the universities in the Flemish Community
  - Decree on the funding of Industrial Research Funds (IOF) at the university and university colleges in the Flemish
  - Agreement between the FWO and EWI
- **Mandate FRIS – Open Science**
  - Publications that result from these different funds are made available as quickly as possible free of charge and online in an open access repository. The monitoring and reporting on this must be done via FRIS.
  - Data based on that research is made publicly available according to the principle "as open as possible, as closed as necessary". The monitoring and reporting on this must be done via FRIS.

Technical: FRIS – Open Science

- **FRIS as metadatahub in Flanders given its current SOA architecture**
- **Information in FRIS : FAIR metadata**
  - Metadata publications with persistent identifiers and rich metadata (**F**AIR)
    - Bibliographic information, an ISBN, an ISSN, a DOI, an open access label, the link to the digital repository, the link to the funding project or mandate;
  - Metadata datasets with persistent identifiers and rich metadata (**F**AIR)
    - Information on the content, accessibility, technical format, a DOI, an open data label, the link to the open data repository, the link to the BOF project or mandate if applicable; ..
  - Retrievable by their identifier using standard protocols – metadata will remain accessible even if data aren't (F**A**IR)
  - Accurate metadata, clear provenance, community standards (FAI**R**)
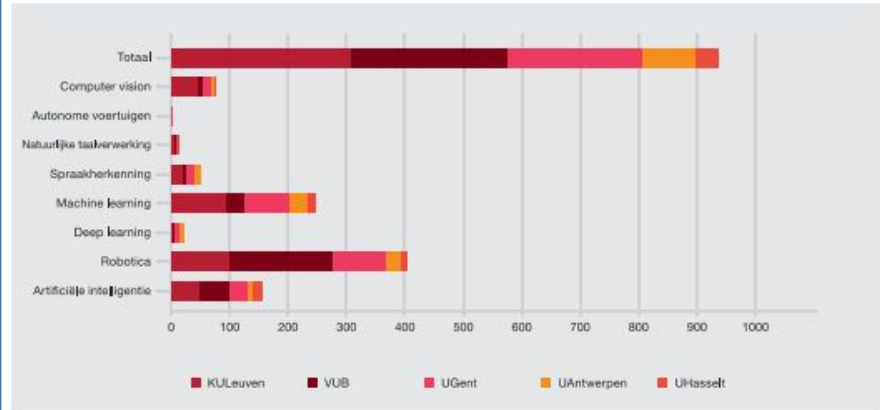
FRIS and monitoring

# Monitoring scientific expertise in Flanders

Use case : artificial intelligence

Analysis done based upon research output / knowledge institution in Flanders

Analysis of certain themes: Who is involved? Which projects? Which publications? Who funds it?

Afbeelding 6:
Indicatief overzicht van het aantal AI-gerelateerde tijdschriftartikels in Vlaanderen per universiteit (FRIS-onderzoeksportaal)
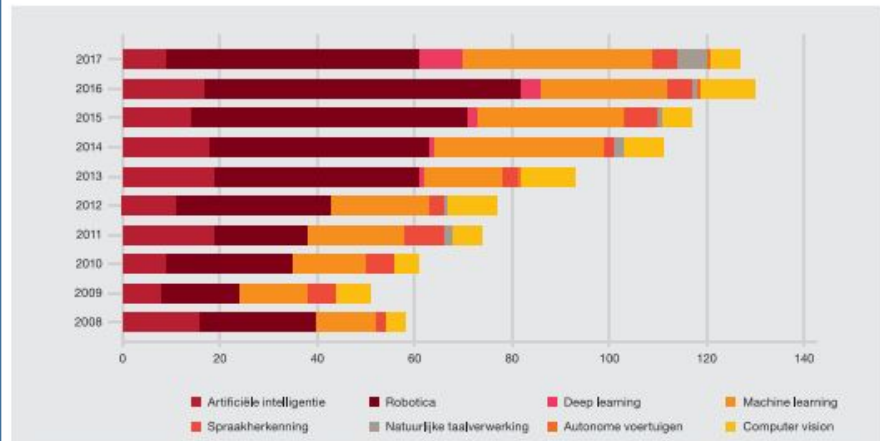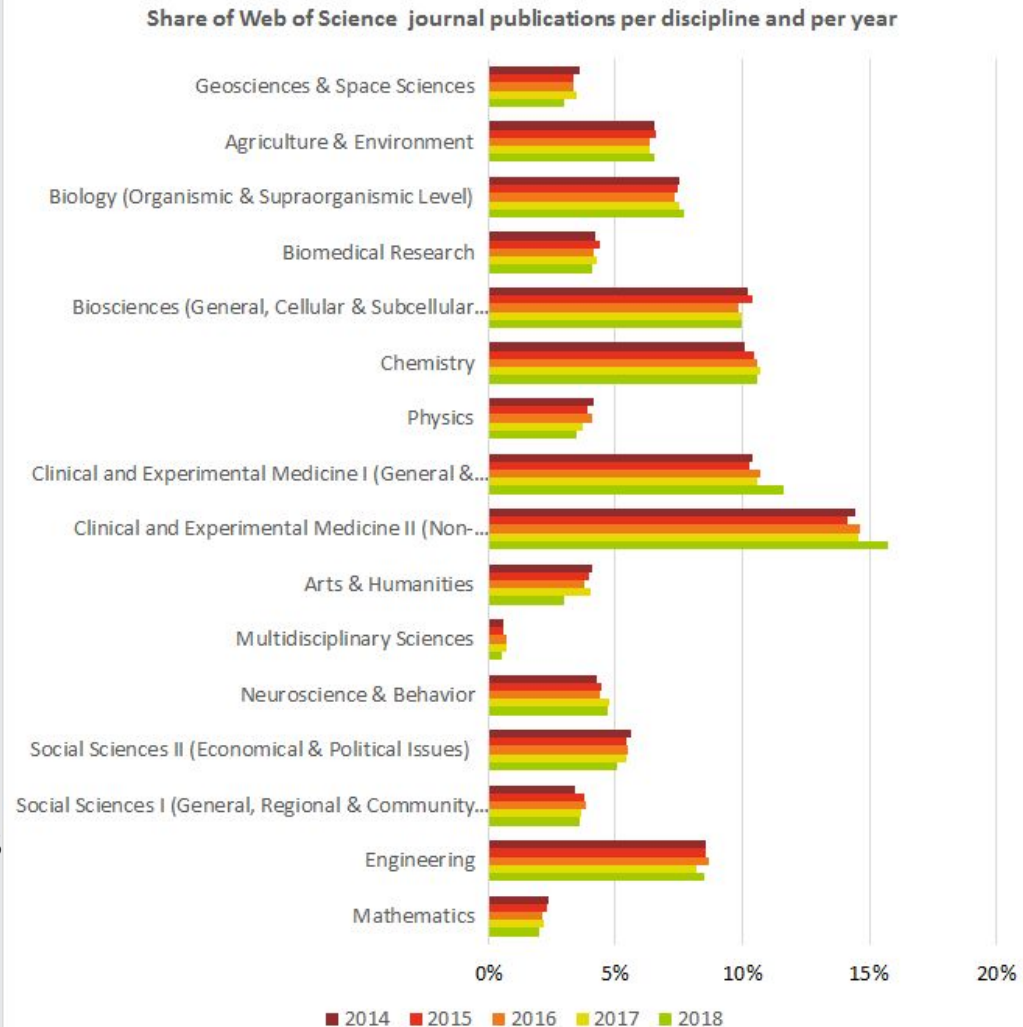

Afbeelding 7:
Totaal (indicatief) aantal AI-gerelateerde tijdschriftartikels in Vlaanderen per jaar (FRIS-onderzoeksportaal)

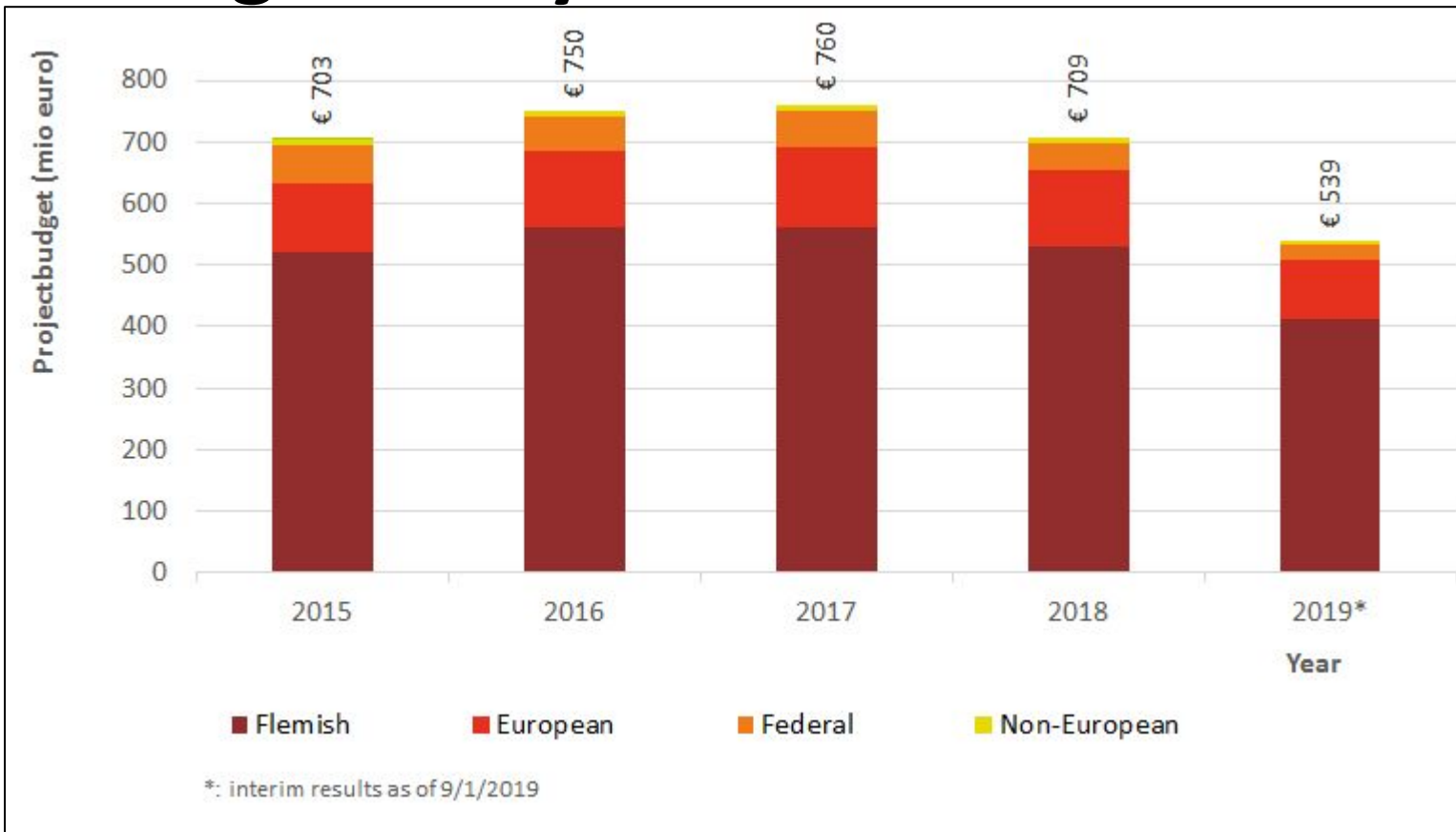**Flanders**
State of the Art

Discovering trends

Use case: Publication profile in Flanders based on FRIS data

Importance of some of the research disciplines has been increasing (e.g. clinical and experimental medicine, chemistry), of some decreasing such as physics, arts and humanities and mathematics.

This does not reflect the specialisation of research in Flanders compared to the world standard.

Share of Web of Science journal publications per discipline and per year

■ 2014 ■ 2015 ■ 2016 ■ 2017 ■ 2018

Flanders
State of the Art

Budget analysis

Use case: Budget analysis
Trends in funding
Thematic analysis and who funds it in Flanders?
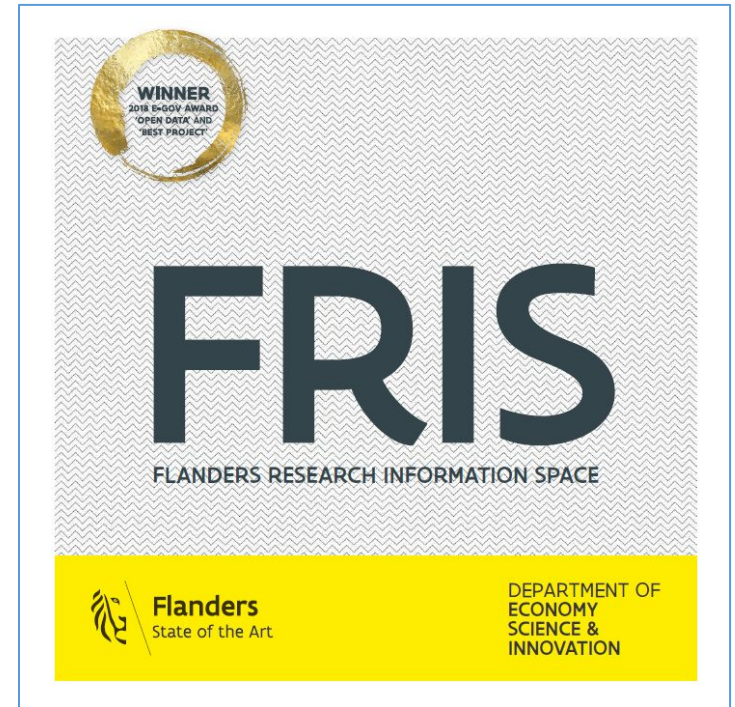
Flanders Research Information Space

>>
https://www.ewi-vlaanderen.be/en/fris-flanders-research-information-space
>> https://www.researchportal.be/en

Leen Van Campe
leen.vancampe@vlaanderen.be