
France Bio Imaging: Setting up image data management solutions at the national level

Perrine Paul-Gilloteaux

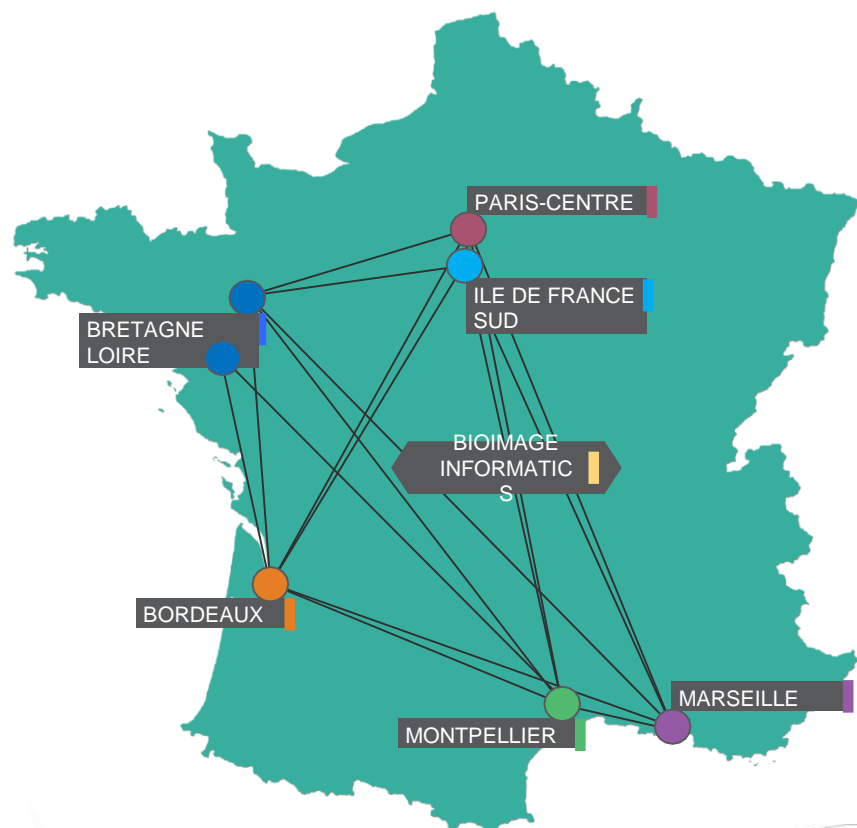
UAR BioCore MicroPICell

Bio Image Informatics Node, Bretagne Loire Node of France BioImaging



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FBI IN A NUTSHELL



- 7 Nodes with complementary expertises
- 18 Imaging Core Facilities
- 30 associated R&D teams
- ~ 300 staff (engineers & researchers)
- >350 set-ups (45 Super-Res co-financed PIA1)
- 20-25 M€ of budget /year (full cost)
- 600 ke/year to run and develop FBI
- ~6000 Users

2 new nodes!
Toulouse and
Alsace



GLOBAL
BIOIMAGING
growing collaboration



Innovation



Bring together research and innovation

- Speed up transfer R&D to "**Imaging platforms**"
- Promote **new collaborations** between R&D labs, between R&D labs and Industry, between...
- Strengthen **attractiveness and competitiveness** of our Core F , Institutes, R&D labs, innovative SMEs...

Access



Improve access to advanced technologies and methods

- Provide technological **expertise in biological imaging**, matching with local **excellency in scientific topics**
- **Access to** 100s commercial or "in house" imaging installations of the "state of the art" (More than **600 000 hours-machines/year**)
- Continuously evaluate strategic plan of equipment investment and R&D in the whole territory

Training

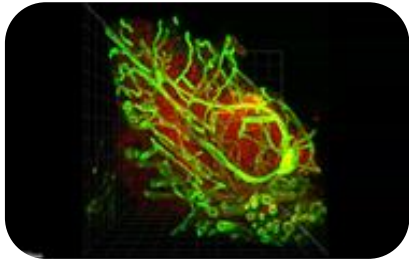


Sustain training, education and dissemination (outreach)

- Provide technological expertise to labs and teams not in the perimeter of FBI
- Facilitate infrastructure **accessibility**, in particular by developing effective **teaching/training** methods for **rapidly emerging** echnologies
- Participate in the promotion and strengthening of the bioimaging community in France and abroad

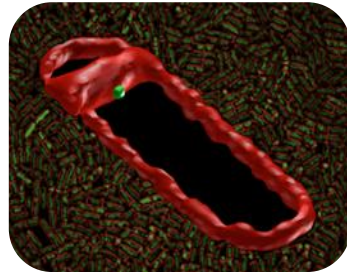


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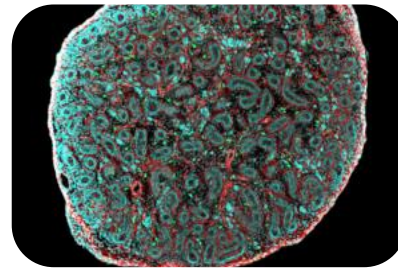
Bretagne Loire Node

- Microscopy for preclinical research
- Cancer Research
- Regenerative Medicine
- Physiopathology



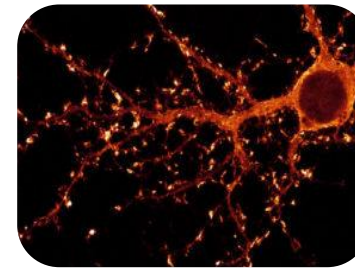
Montpellier Node

- Functional super-resolution
- High-throughput microscopies
- Genome organization
- Gene expression



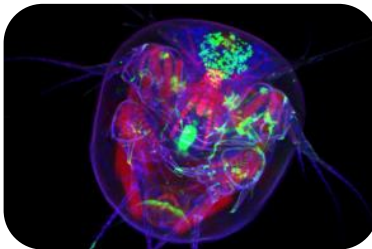
Marseille Node

- Multimodal imaging
- New imaging contrasts
- Immunology
- Developmental biology



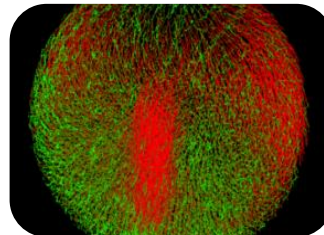
Bordeaux Node

- Super Resolution
- 3D Tomography correlative microscopy
- Neurosciences
- Plant physiology



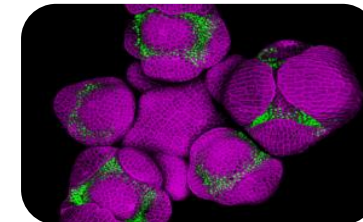
Paris Centre Node

- 3D CLEM
- High Content Screening
- Preclinical imaging
- Optogenetics & Biosensors
- Cell biology, Host-Pathogens, Cancer Research



IDF Sud Node

- In vivo in toto 3D+t imaging
- Non-linear contrasts
- Developmental biology
- Plant cell biology

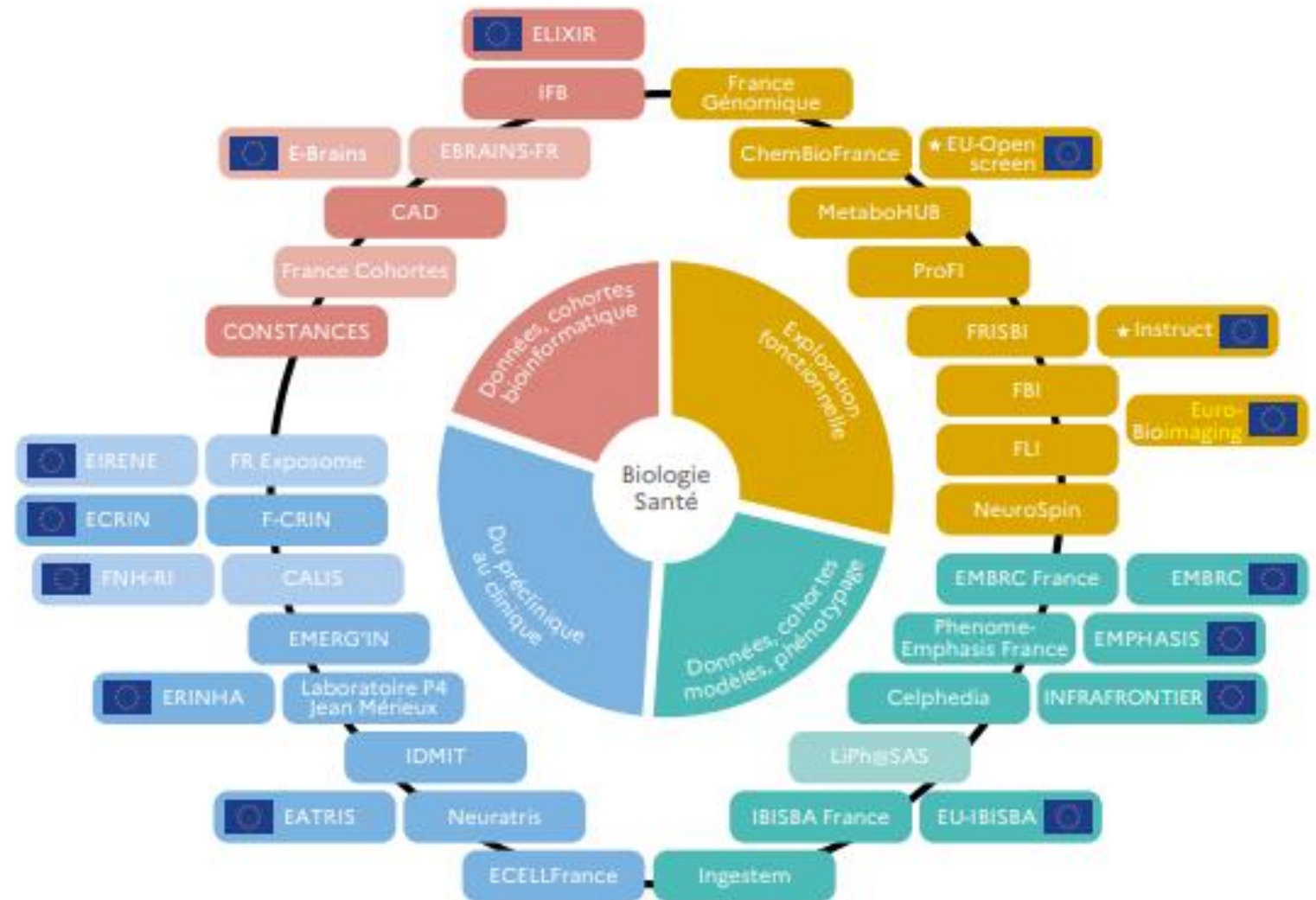


BioImage Informatics Node

- Bioimage informatics
- Data management
- Software platforms
- Very large data management & Mining
- AIIA and data visualization

National exchanges between national infrastructures

MINISTÈRE
DE L'ENSEIGNEMENT
SUPÉRIEUR,
DE LA RECHERCHE
ET DE L'INNOVATION
*Liberté
Égalité
Fraternité*



À ce titre, ces infrastructures constituent les premiers centres de référence thématiques qui couvriront une partie des domaines scientifiques :

Astronomie et astrophysique



Système Terre et Environnement



Sciences Humaines et Sociales



→ catalogue/entrepôt : <https://data.progedo.fr/>



Huma-Num^{IR*} → catalogue/entrepôt : <https://nakala.fr/>

Biologie-Santé



LOCAL in universities (multi disciplinary) -> data support referring to **NATIONAL THEMATIC ENTRY POINTS** according to data type and field for the recommendations

National Infrastructures are entry points for researchers for data management



Image data services @ FBI

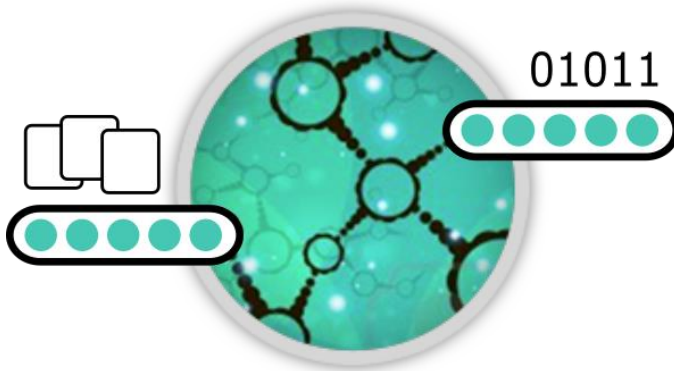
- > FBI.data : data management/ access to computational resources
- > FBIAS, the hub of image analysts: Bioimage Analysis services for users.



F-BIAS

France-Bioimaging Image
Analysis Services

Jean-Yves Tinevez, Anne-Sophie
Macé



Two congruent goal:

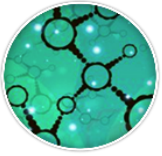
Phase 1:

A. Foster professional and technical skill development of the analysts.

Phases 2 & 3:

B. Build a nationwide, remotely operating core-facility that deliver services in bioimage analysis.

Today, we are at Phase 2.



FBI.data

National effort within infrastructures, with partnerships with ELIXIR-FR and other national RIs

Defining and implementing the data management plan of FBI

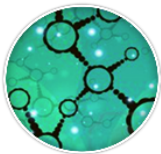
Providing tools and training to the facilities to help their users, and mutualize nationally

Emmanuel Faure, Perrine Paul-Gilloteaux

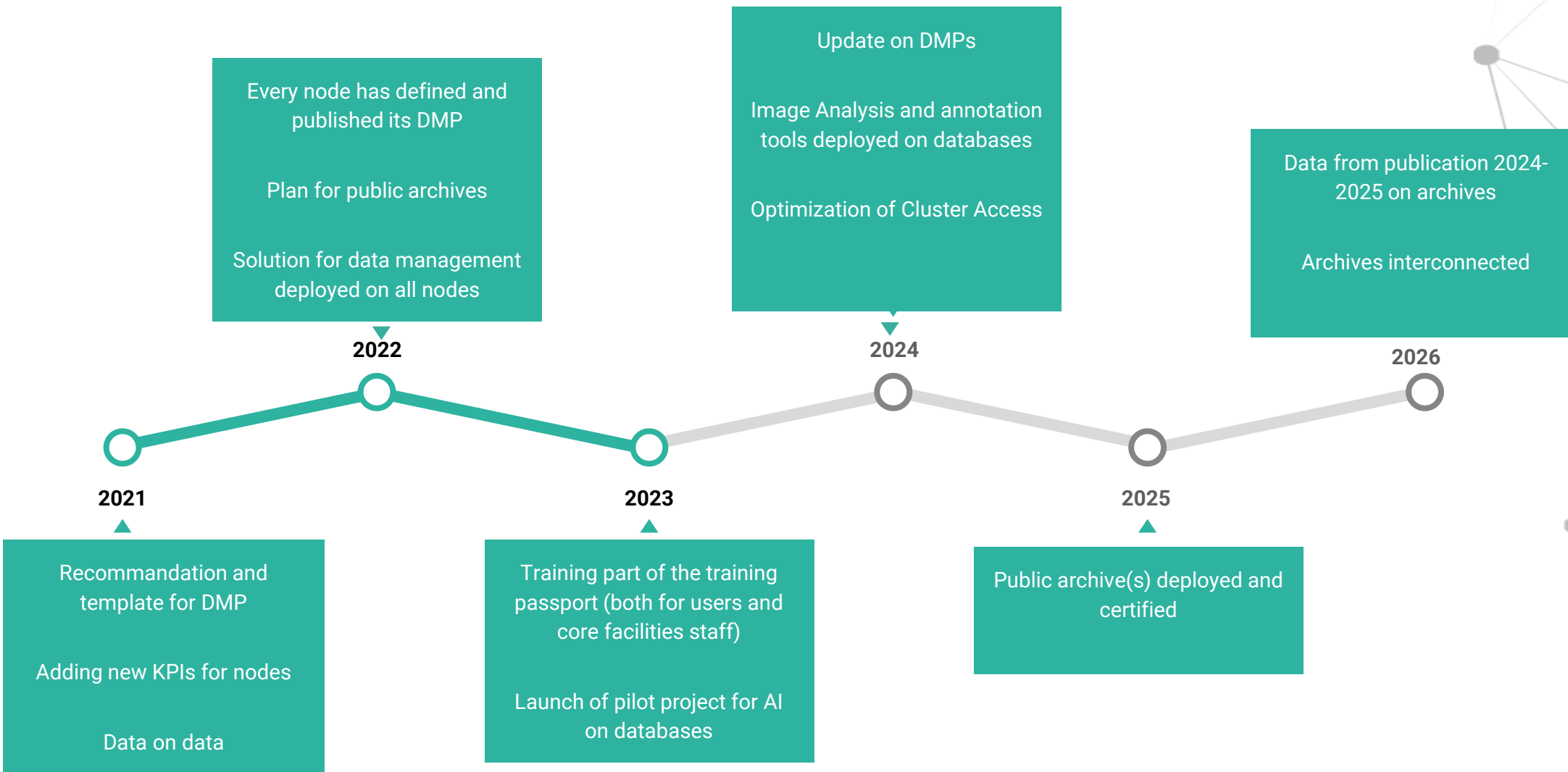
FBI.data team

Guillaume Gay, Marc Mongy, Jean-François Guillaume, Guillaume Maucort,
Raphaël Braud-Mussi, Thierry Pecot, Dorian Kauffmann



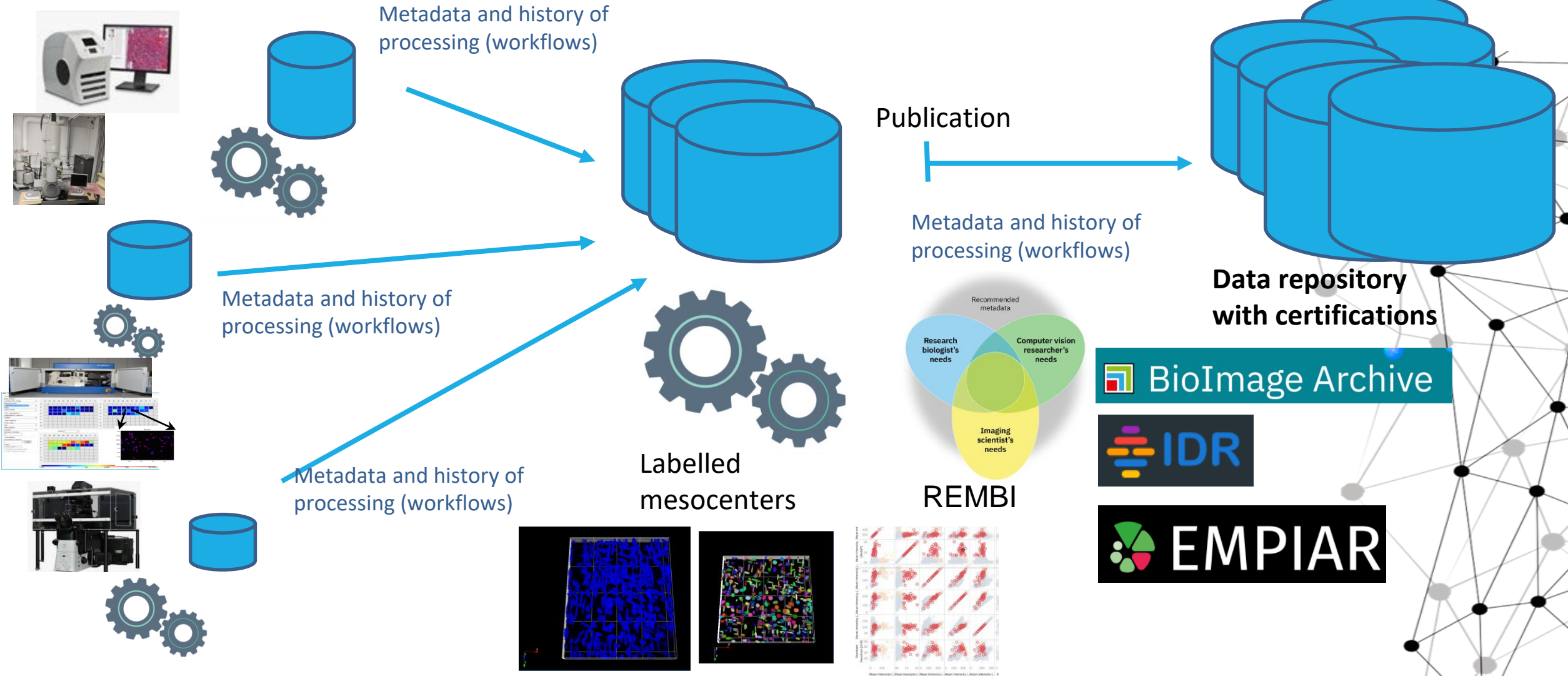


FBI Road Map





DMP in a nutshell



Metadata and history of processing (workflows)

Metadata and history of processing (workflows)

Metadata and history of processing (workflows)

Publication

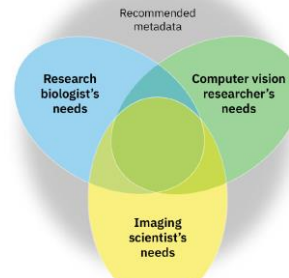
Metadata and history of processing (workflows)

Data repository with certifications

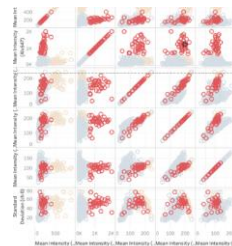
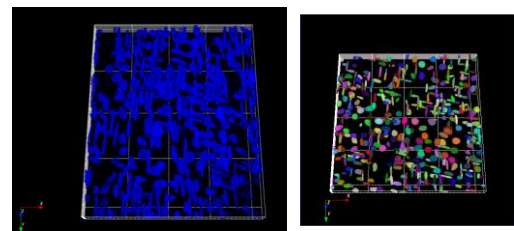
BioImage Archive

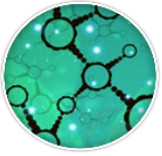
IDR

EMPIAR

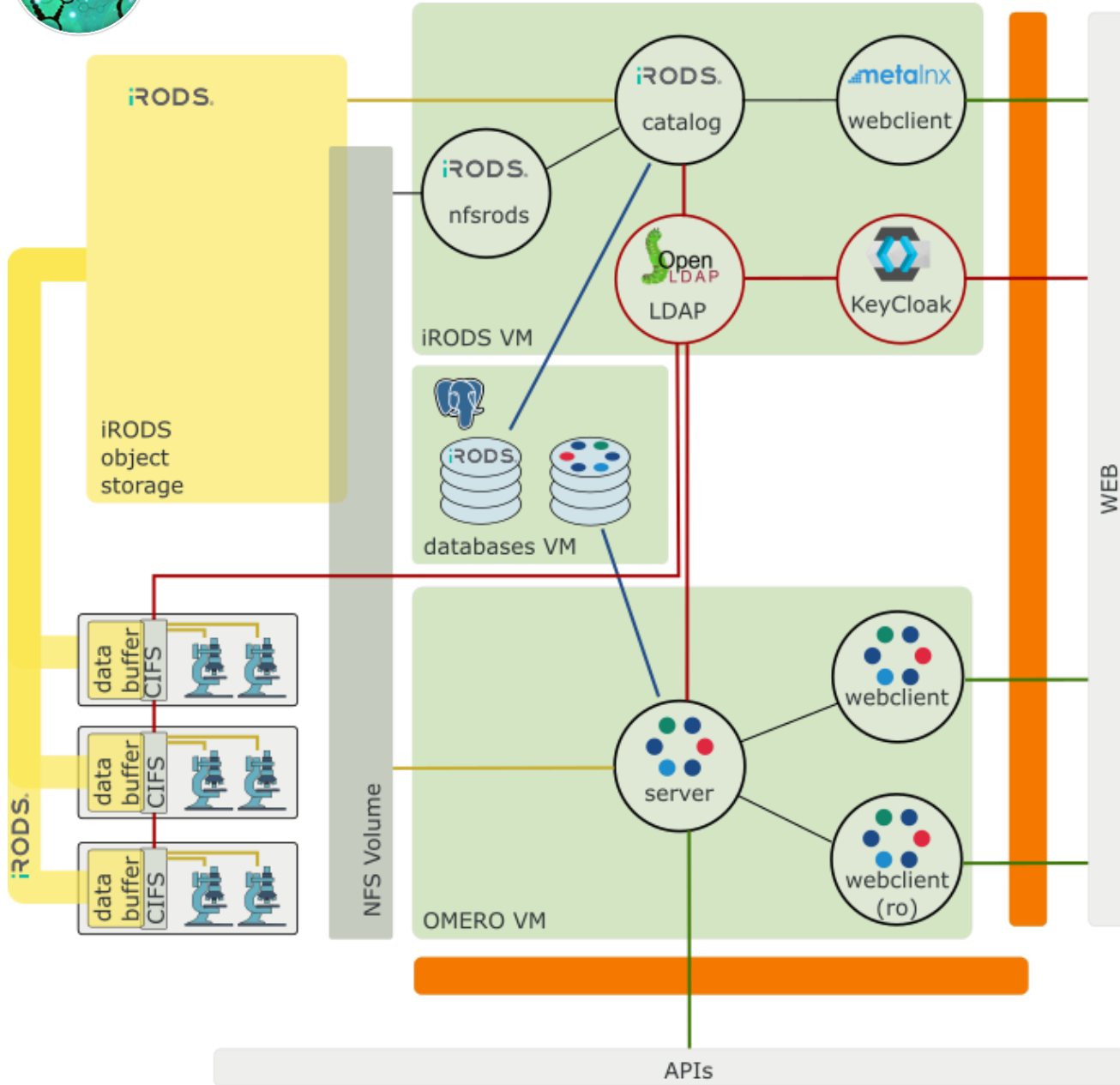


REMBI



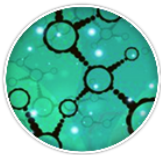


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ID	Name	2023									
		Jan 2023	Feb 2023	Mar 2023	Apr 2023	May 2023	Jun 2023	Jul 2023	Aug 2023	Sep 2023	Oct 2023
1	Keycloak (JFG)		█	█	█	█					
2	Account Gestio n (GG/GM)			█	█	█	█	█	█		
3	OpenLDAPb(JFG/GG)		█	█	█	█					
4	IRODS Catalog (GG)		█	█	█	█					
5	Backups (GM)					█	█	█	█		
6	OMERO NFS-Rods		█	█	█						
7	OMERO Web/Server (MM)		█	█	█						
8	Scripts IRODS Import (GG/GM)		█	█	█	█					
9	Integrati o n tests					█	█	█	█	█	
10	Fu l l Build Linke o				◆						
11	Deployment test Staging								█		
12	Beta tests								█	█	
13	Secre. Vault (GG)						█	█			
14	Monitoring tools (GG)							█	█	█	
15	OpenLink				█	█	█				
16	Integrati o n continue (EF)				█	█	█				

IRODS (hosted nationally IN2P3) and OMERO deployed via dockers to ease national maintenance.



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Data Manager



- Provide Data Manager Container
- Contract national maintenance
- Ensure Interoperability
- Develop FBI modules (meso access,...)



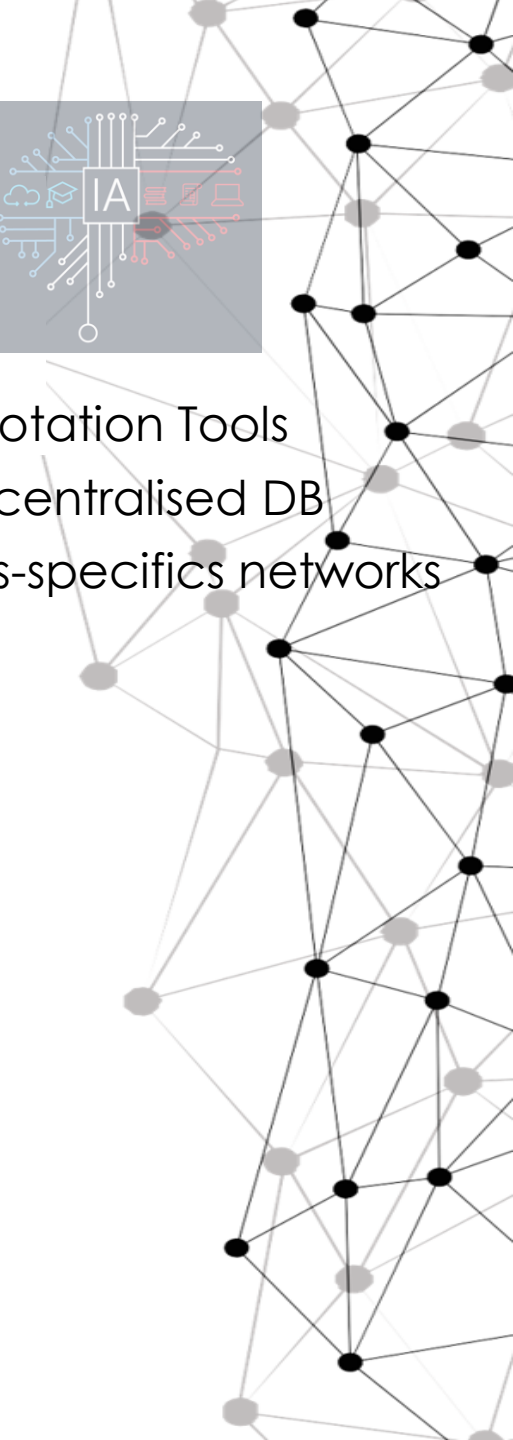
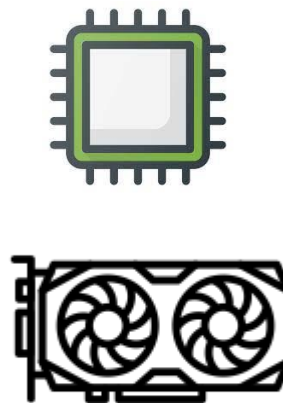
Data Reconstruction and analysis

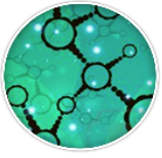
- Increase partnership with Meso Centers
- Incremental Computations Mutualisation
- Maintain FBI methods Containers
- Develop FBI ImageJ/Icy plugins for remote computation on mesocenters

New tools IA

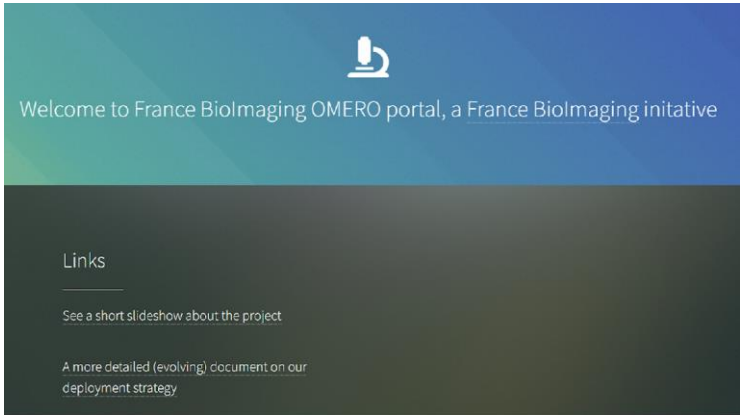


- Provide Mutualised Annotation Tools
- Remote Annotations in centralised DB
- Create pre-trained tasks-specifics networks





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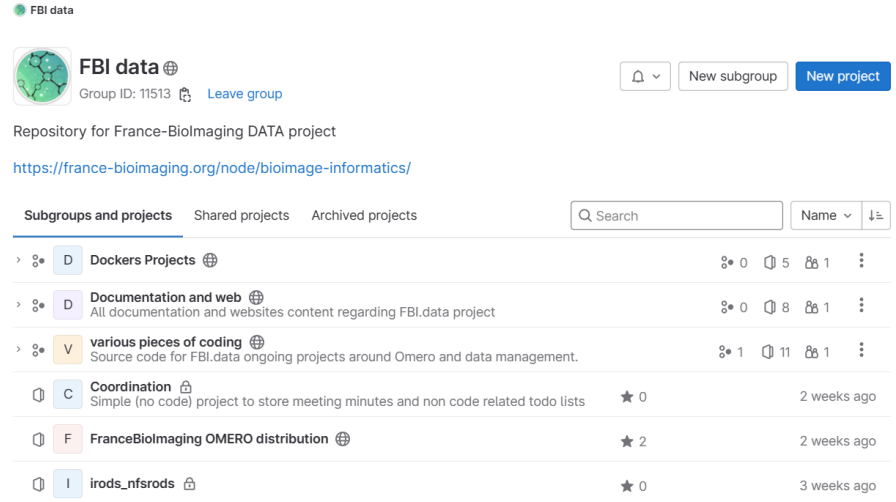


Welcome to France BioImaging OMERO portal, a France BioImaging initiative

Links

- See a short slideshow about the project
- A more detailed (evolving) document on our deployment strategy

[Welcome to the FBI OMERO portal \(omero-fbi.fr\)](http://omero-fbi.fr)



FBI data

Group ID: 11513 [Leave group](#)

Repository for France-BioImaging DATA project

<https://france-bioimaging.org/node/bioimage-informatics/>

Subgroups and projects | Shared projects | Archived projects

Subgroup/Project	Stars	Issues	Milestones	Actions
D Dockers Projects	0	5	1	⋮
D Documentation and web All documentation and websites content regarding FBI.data project	0	8	1	⋮
V various pieces of coding Source code for FBI.data ongoing projects around Omero and data management.	1	11	1	⋮
C Coordination Simple (no code) project to store meeting minutes and non code related todo lists	0			2 weeks ago
F FranceBioImaging OMERO distribution	2			2 weeks ago
I irods_nfsrods	0			3 weeks ago

[FBI data - GitLab \(in2p3.fr\)](https://in2p3.fr)



France BioImaging data blog

Tags

download Fiji Huygens ImageJ Importer ISA Jupyter

métadonnées OMERO OMERO.downloader

OMERO.downloader-gui OMERO.figure OMERO.image-viewer

OMERO.iviewer OMERO.web Ordonner

Partager Rechercher REMBI Traiter Télécharger

Visualiser

[France BioImaging data blog \(omero-fbi.fr\)](http://omero-fbi.fr)





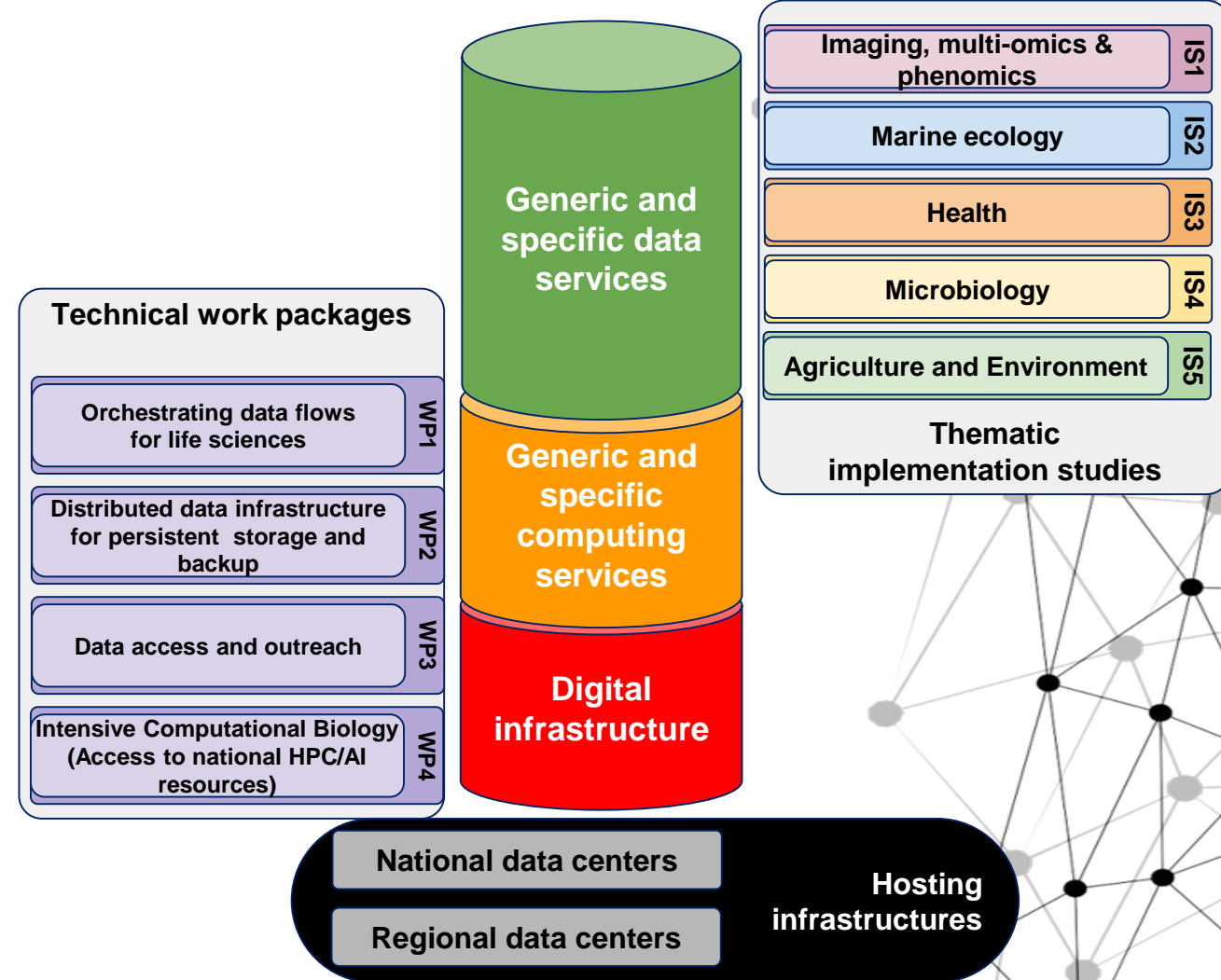
MuDiS4LS - Mutualised Digital Spaces for FAIR Life Sciences

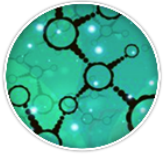
Main axes of the IFB project

- Rationalizing the national digital infrastructure
 - from 30,000 dispersed computer rooms to 30 labeled data centers
- Mutualisation of physical and human resources
- Multi-site projects
- **Data securing** during the projects (mid-term storage)
- **Orchestrating data flows** along the whole life cycle
 - **maDMP-based management**
 - data brokering
 - linking to electronic lab book
- Data **FAIRification**
- **5 thematic implementation studies** ensuring relevance to address user needs

Organisation

- 39 partner teams
- 14 partner organisms
- 4 national + 7 regional data centers, 4 partner mesocenters
- 170 persons, 3000 PM = 2.5 person•centuries
- Requested funding: 20M€ / **allocated : 16,5 M€**





Addressing the challenges step-by-step

- Acclimatation to a national data management plans for users and institutions :
 - removing local servers (only buffer space),
 - spending time and energy to annotate data
 - mutualised files organisation

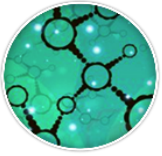
Facility staff completion of structure data management plan helped to share information and good practice

Incorporation in the FBI Training
(F. Cordelieres Training Officer and associated WG)

Giving bonus to raise interest (IA + free space)

- Avoiding effort duplication: collaboration with other infrastructures, staff mutualisation at the national level, international collaboration



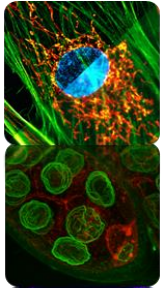


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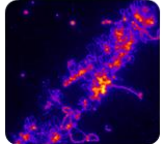
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Thanks for your attention!

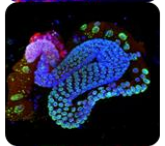


FBI data team

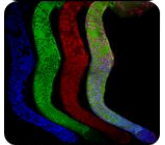
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Jean-François Guillaume,
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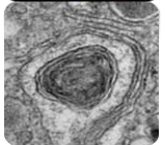


Thierry Pecot
Dorian Kauffmann



MUDIS4LS team in particular Pauliette Liebly IFB

Jean-Fançois Dufayard IFB
Faisal Bekkouche Embrc-FR
Michel Dojat FLI
Frederic Brau univ-nice
Jean Salamero FBI



PSL



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