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Services deployed on the IFB National Network of Computing Resources NNCR

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National Network of Computational Resources - NNCR

Distributed infrastructure leveraging IFB's platforms forces

- www.france-bioinformatique.fr/en/compute-and-storage
- 12 IFB platforms involved
- 27,000+ HT-cores, 135 To RAM, 14 Po storage, GPU

Operation using complementary technologies

- 7 clusters (SLURM)
- 8 clouds (OpenStack)

Managed by a distributed team of experts from IFB's platforms

- 17 engineers from the IFB's regional platforms
- Sharing expertise
- Sharing developments
- Helping each other solve problems

Collaborations with regional and national computing centers

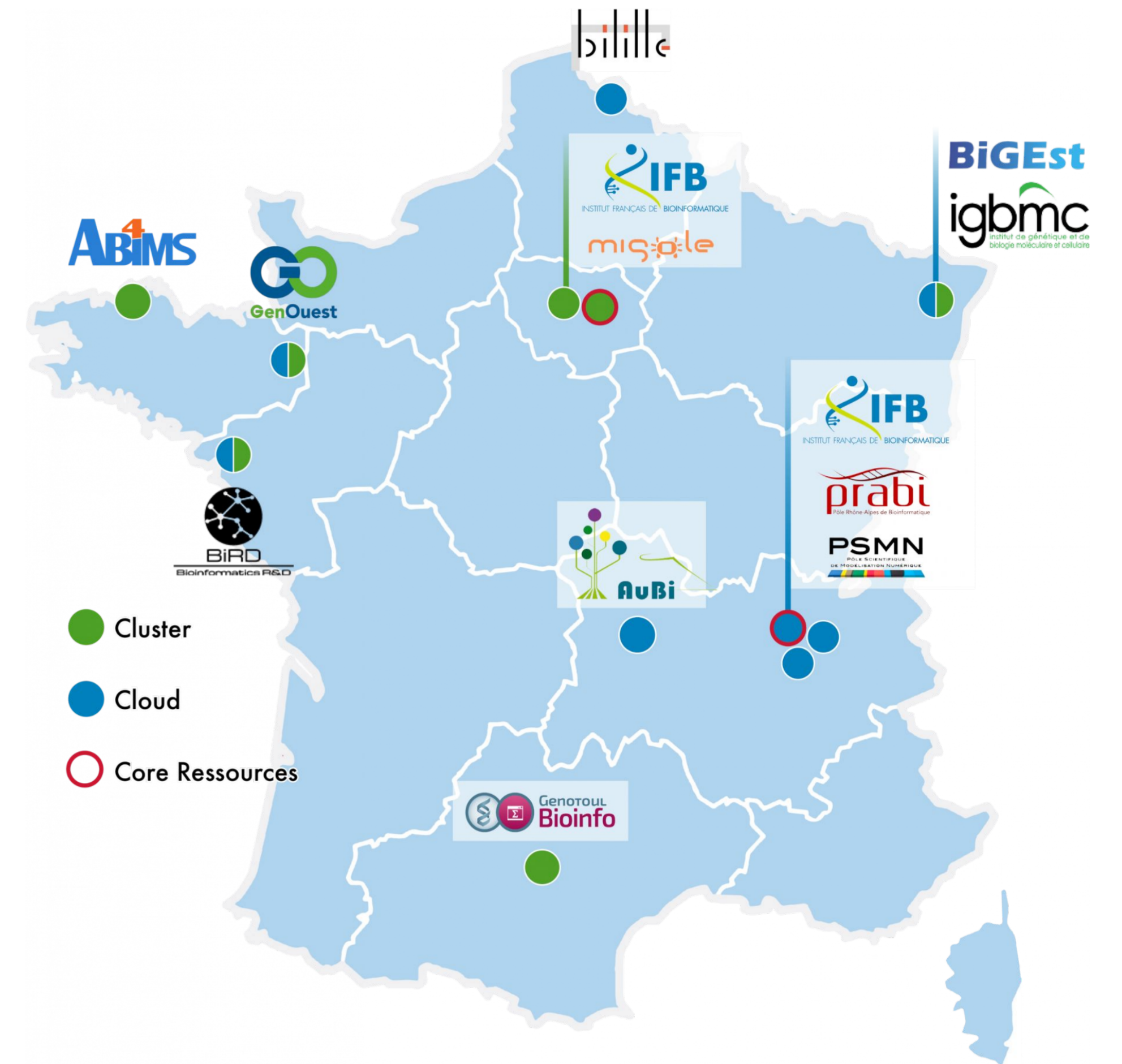


Allocation of resources to training and education



From 2021 to 2029, the NNCR Cloud and Cluster will benefit from the PIA3 ESR/Equipex+

11.4 M€ for equipments
1 M€ for functioning

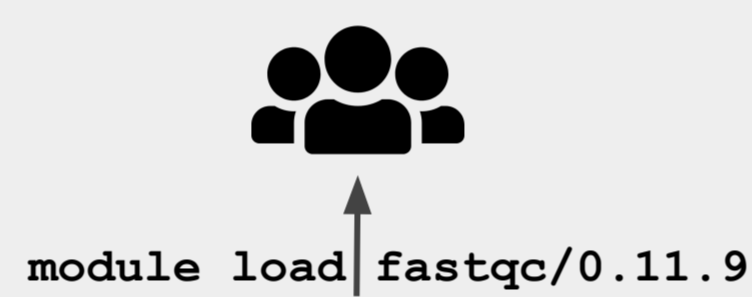


IFB NNCR Cluster

- High-performance hardware (GPU, BigMem, Cores, etc.)
- User interfaces adapted to needs and levels of expertise
- Reproducible deployments
- Shareable project spaces
- Scientific project support
- Community end-user helpdesk
community.france-bioinformatique.fr
- Site redundancy for high availability
- Support for software development by the IFB community

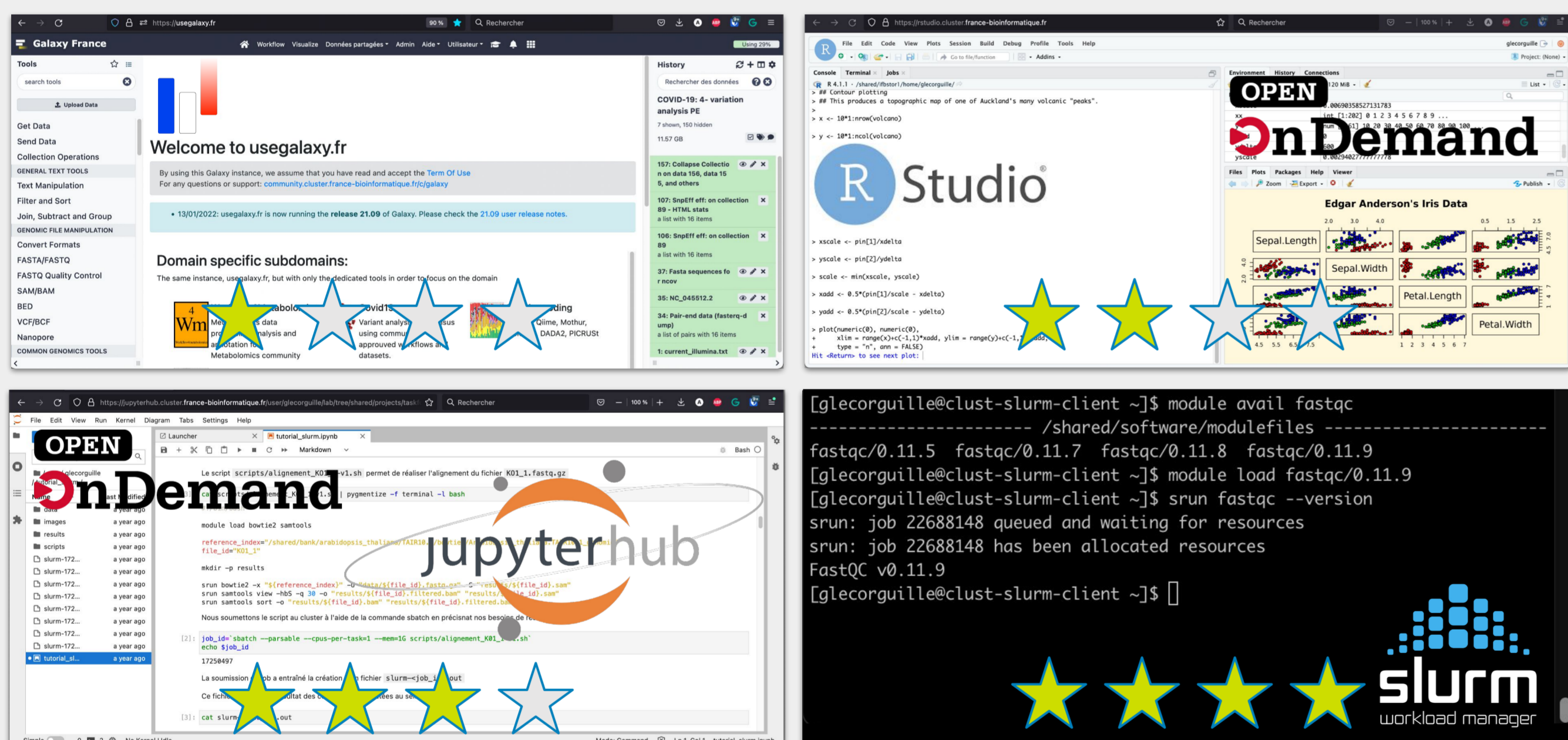
Tools

- 588 scientific tools (9300 versions)
- 400 R packages



Ex-Singularity

☆☆☆☆ Skills requested



Platform	Location	Compute (#CPU-core HT)	Storage (#TB)	RAM (#GB)	GPU (#Cards)
ifb-core-cluster	Orsay	8 396	2 400	52 008	9
ABiMS	Roscoff	3 184	2 500	15 075	2
GENOTOUL	Toulouse	6 224	8 000	36 500	1
GenOuest	Rennes	1 866	2 300	11 616	7
BiRD	Nantes	902	600	6800	-
MIGALE	Jouy en Josas	1 016	350	7000	-
Total IFB clusters		21 588	16 150	128 999	19

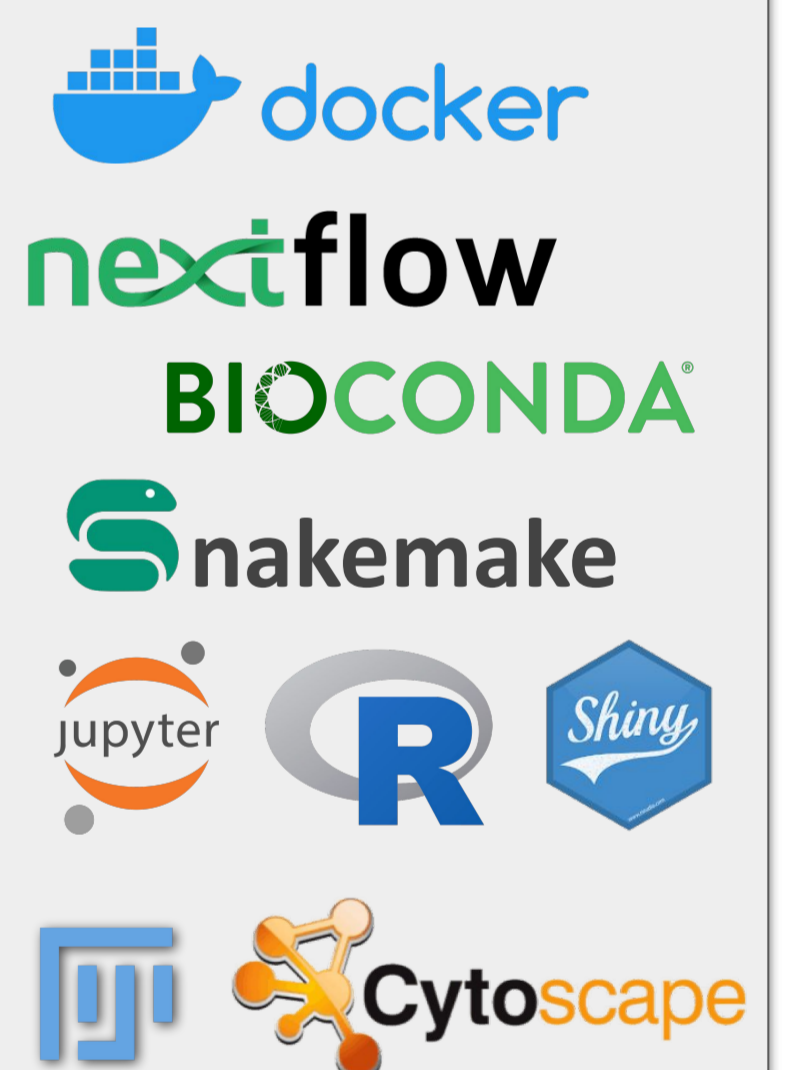
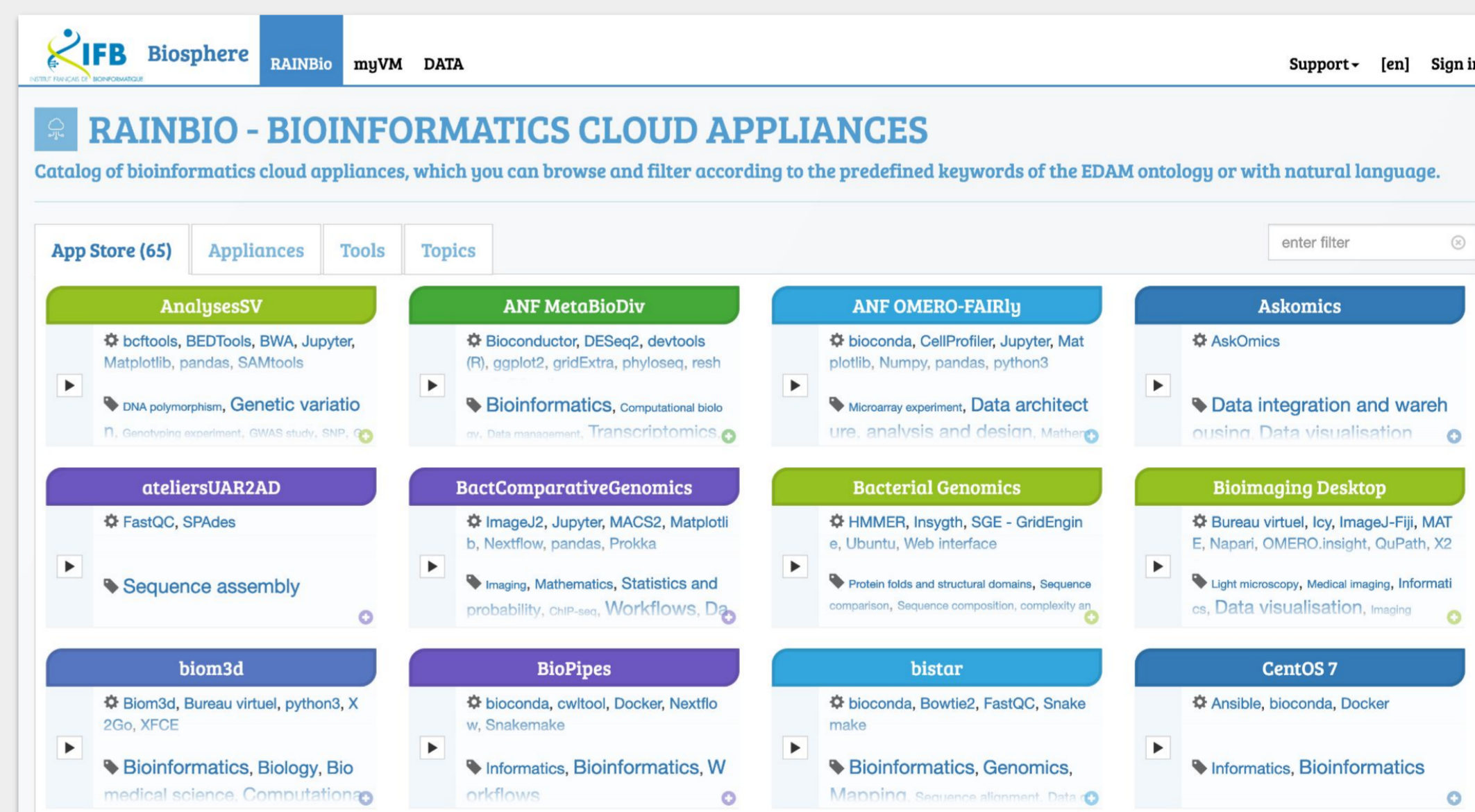
- A laboratory for developing new tools and experimenting with new technologies.
- Automated deployment of scientific tools on 8 platforms
- Managed as an Infrastructure as Code (IaC)



IFB Cloud Biosphere

65 ready-to-use virtual research environments, with 1-click deployment.

- **Common interfaces** SSH, Web, Remote Desktop
 - Defined by developers
 - Adaptable by users
- **Base applications**
 - linux, bioconda, docker, workflows, Rstudio/Shiny, Jupyter, imaging...
 - Built by IFB-core
- **Thematic apps**
 - Genomics, metagenomics, transcriptomics, comparative genomics, bioimaging, metabolic pathways, microbial ecology...
 - Built by the IFB community



- Access to public databases (on demand)
- Access management with RENATER federation
- Secure access to VMs: user's SSH public key, session tokens for Web interfaces
- Open standards infrastructures: Openstack, Docker, CEPH, ZFS, NAS storage
- Developer services
 - VM configuration with gitlab/hub repositories, delegation of rights, asynchronous change management (Infrastructure as Code)
 - Catalog of pre-defined containers (faster deployment)

Platform	Location	Compute (#CPU-core HT)	Storage (#TB)	RAM (#GB)
ifb-core-cloud	Lyon	3 616	180	20 116
AuBi	Clermont-Ferrand	384	12	1 536
GenOuest	Rennes	600	350	2 600
PRABI	Lyon	536	144	3 300
BiRD	Nantes	860	150	2 500
BIGEst	Strasbourg	1 024	500	4 000
BILILLE	Lille	192	0	768
CBP-PSMN	Lyon	3 408	40	7 552
Total cloud federation		10 620	1 376	42 732

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