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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

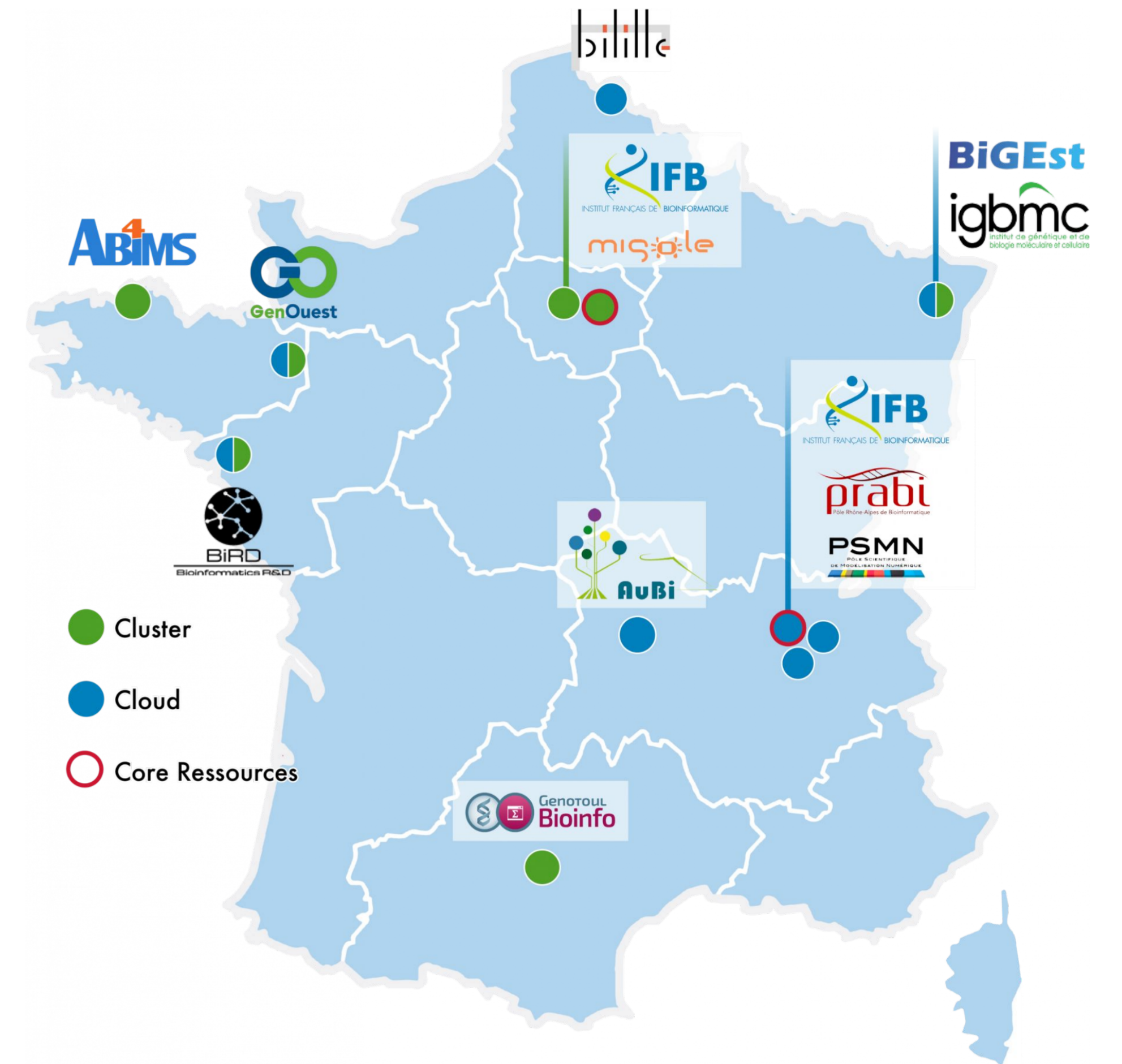


Allocation of resources to training and education



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

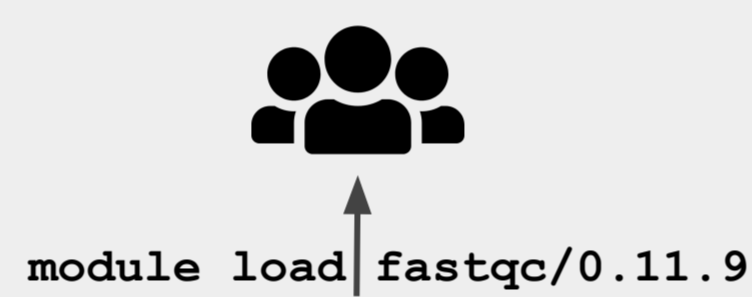


## IFB NNCR Cluster

- 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](http://community.france-bioinformatique.fr)
- Site redundancy for high availability
- Support for software development by the IFB community

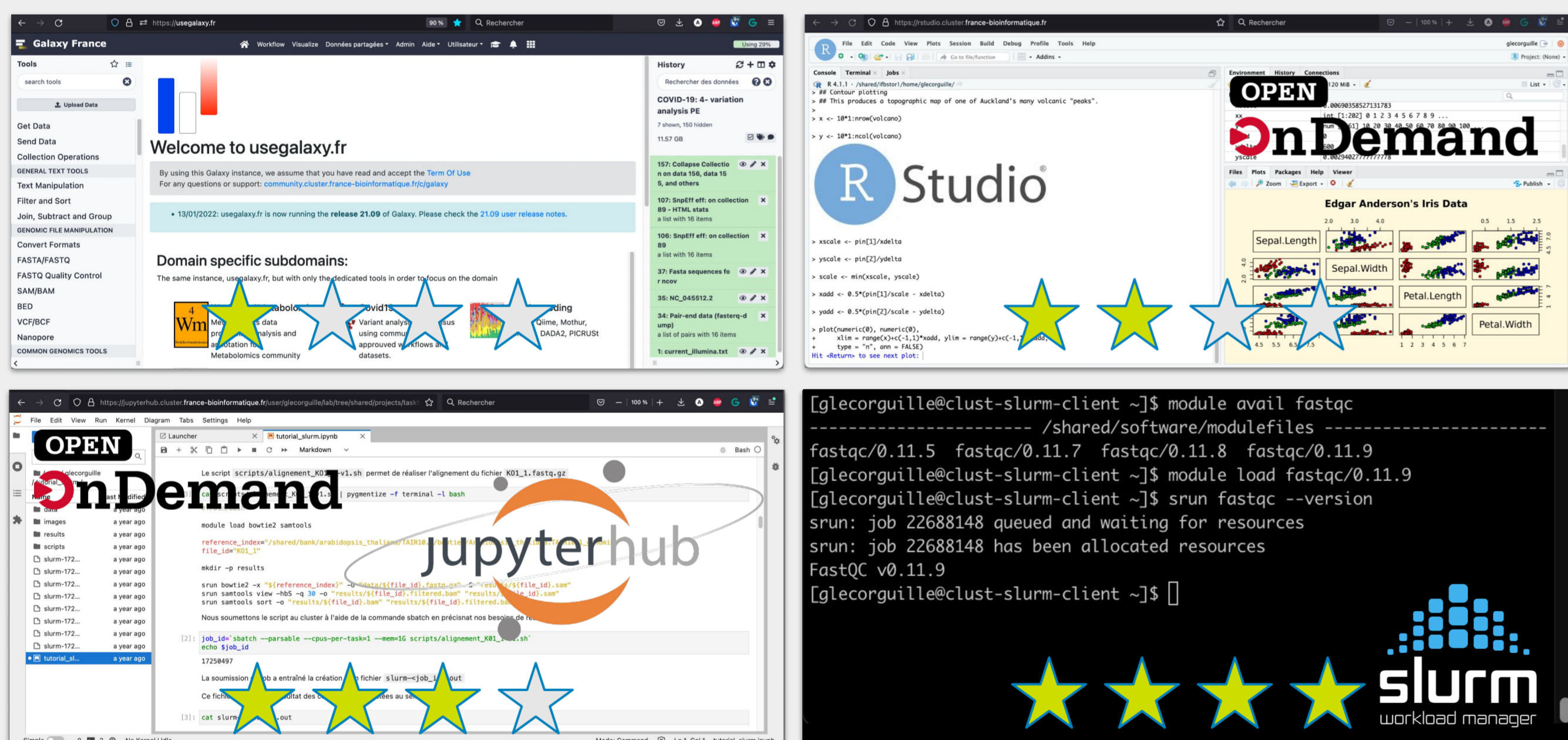
### Tools

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



BIOCONDA | Aptainer  
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	-
<b>Total IFB clusters</b>		<b>21 588</b>	<b>16 150</b>	<b>128 999</b>	<b>19</b>

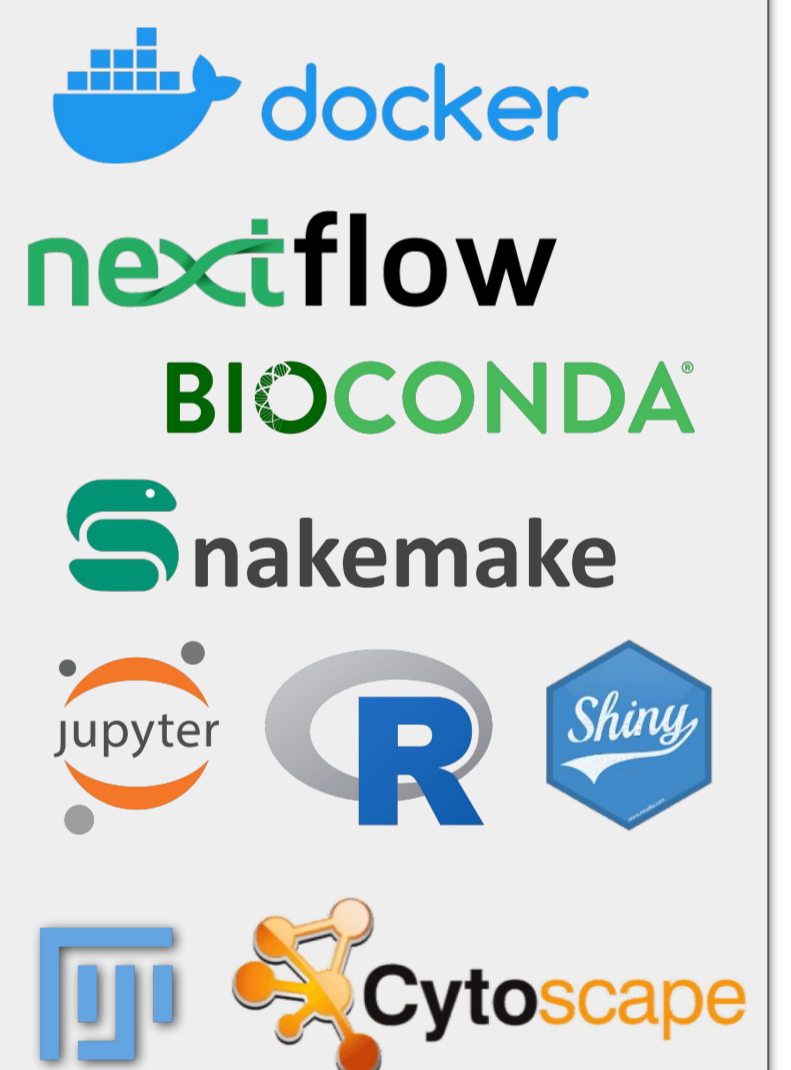
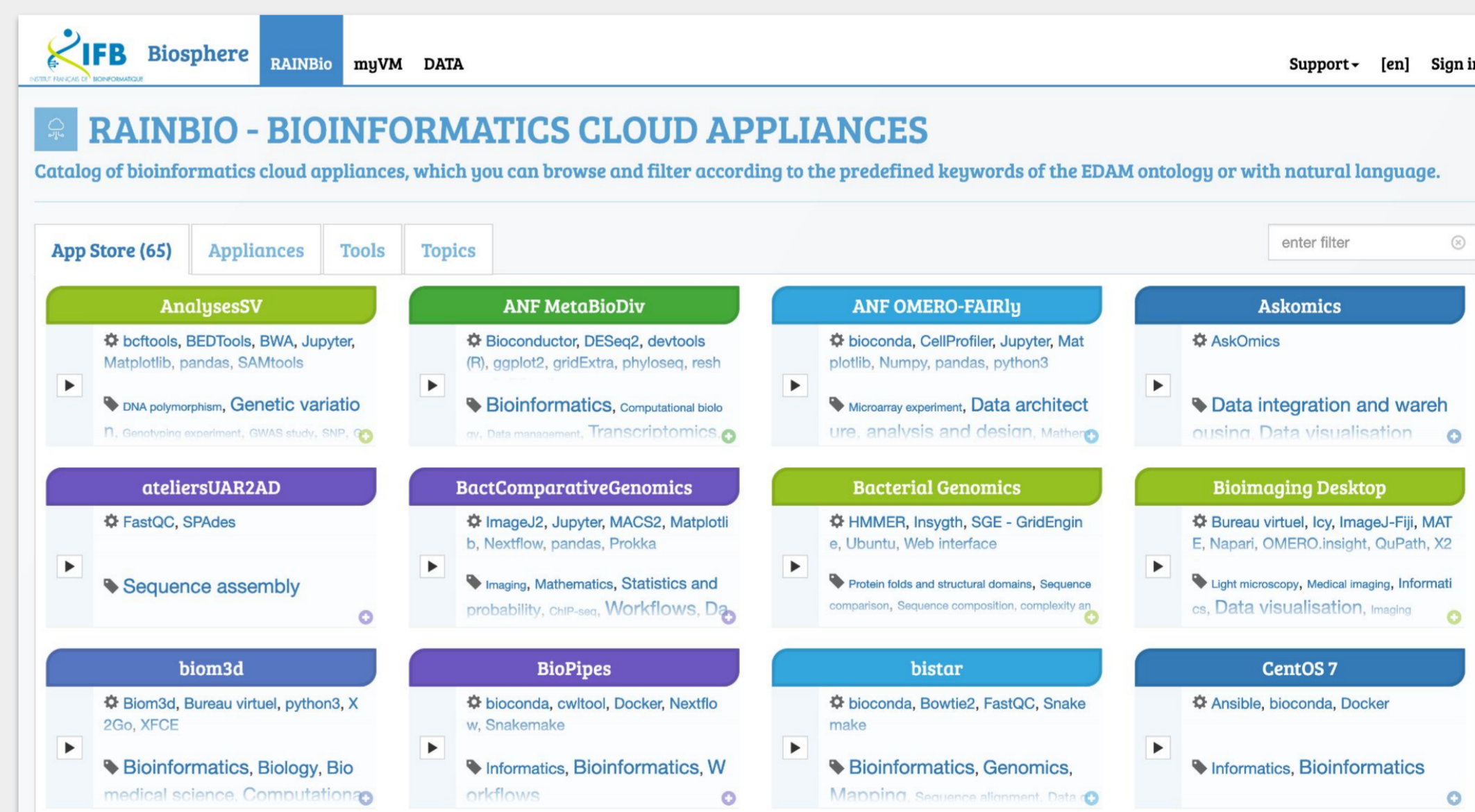
- A laboratory for developing new tools and experimenting with new technologies.
- Automated deployment of scientific tools on 8 platforms
- Managed as an Infrastructure as Code (IaC)



## 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
<b>Total cloud federation</b>		<b>10 620</b>	<b>1 376</b>	<b>42 732</b>

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