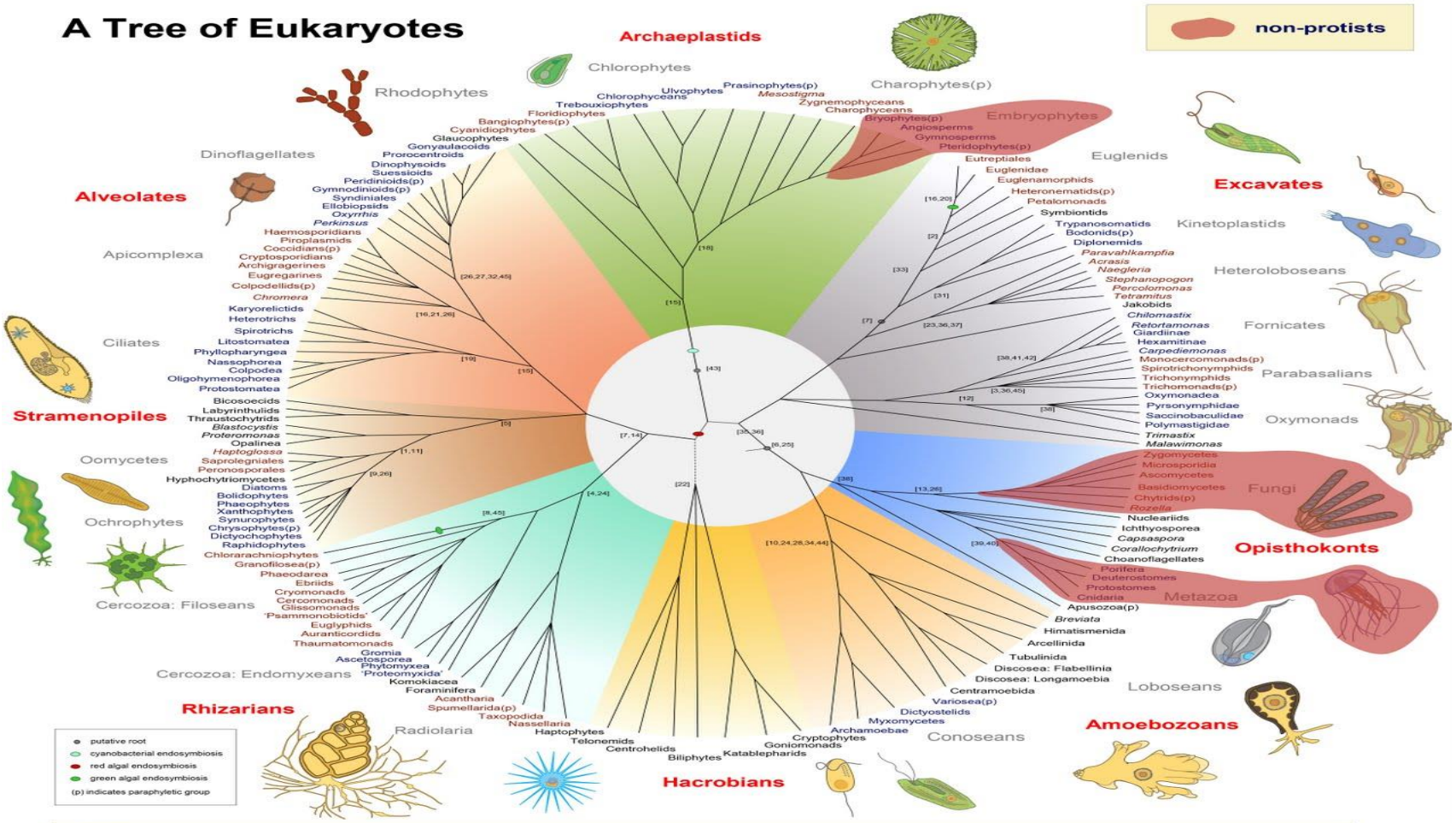

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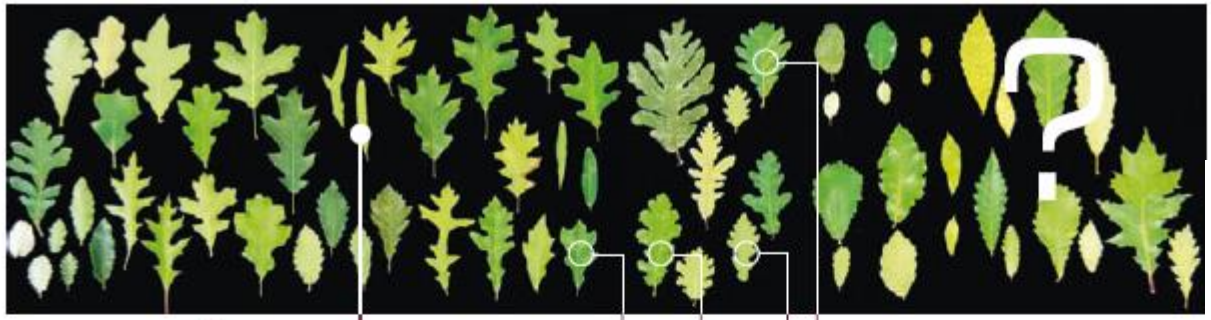
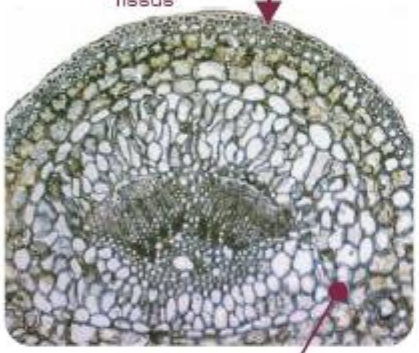
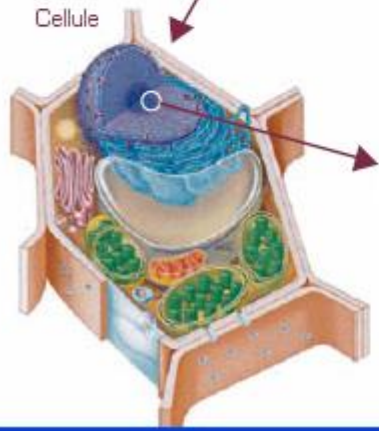


Tissus



ACGTGTGCTAT ▶ *Quercus petraea*
ACGCGTGCTAT ▶ *Quercus robur*
ACGT--GCTAT ▶ *Quercus pubescens*
ACGCAGTCTAT ▶ *Quercus cocinea*

Cellule



Extraction,
Amplification,
Séquençage
ADN

Which tools are available?

ADDED TOOLS

virtual_BiodiversityL@b

- MAFFT alignment (basic options)
- BMGE block selection
- Fasta to Phylip conversion
- Fasta to Nexus conversion
- PHYML wrapper (maximum likelihood phylogenies)
- Draw ascii tree (newick)
- BEAST wrapper

DECLIC

- Disseq
- Distance ape
- Declic Graph
- Declic MDS

DIAGNO-SYST (HIDDEN TOOLS)

- Diagno-Syst char format Formats charfile
- Diagno-Syst
- Disseq reads to taxo
- Taxonomic inventory from

Alignment (multiple)

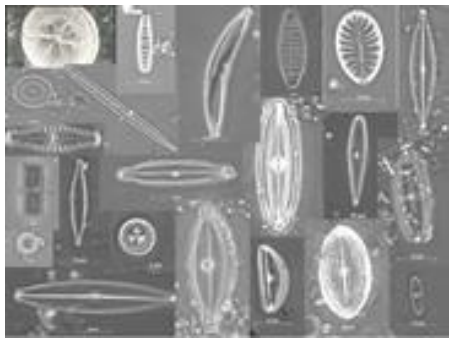
Phylogeny

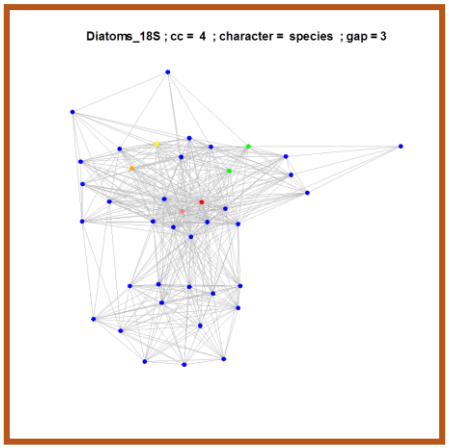
Distance based methods
Smith-Waterman (exact)
Evolution models

Graph clustering

MDS - NLM

Aggregative clustering (fast ,,,,)





Molecular based taxonomy and systematics: An open route for (new) methods

Sequences known by pairwise distances → **Distance geometry**
pattern recognition
machine learning

Clustering

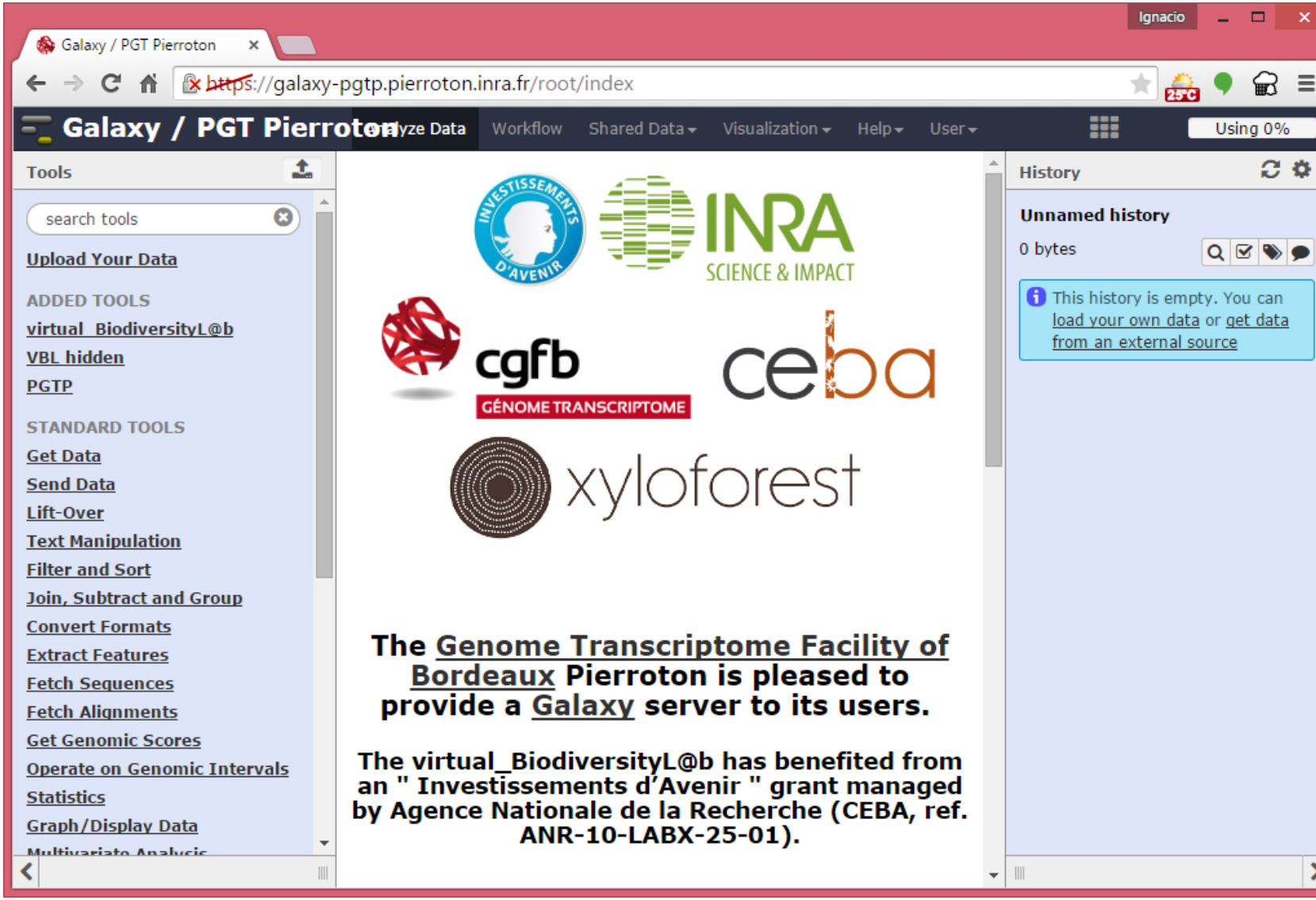
Multidimensional Scaling
linear and nonlinear (e.g. Sammon, 1969)

Manifold learning
IsoMap, EigenMap, etc …

Graph based methods
spectral clustering

Machine learning
SVM, …

Galaxy portal



Where is it possible to compute?

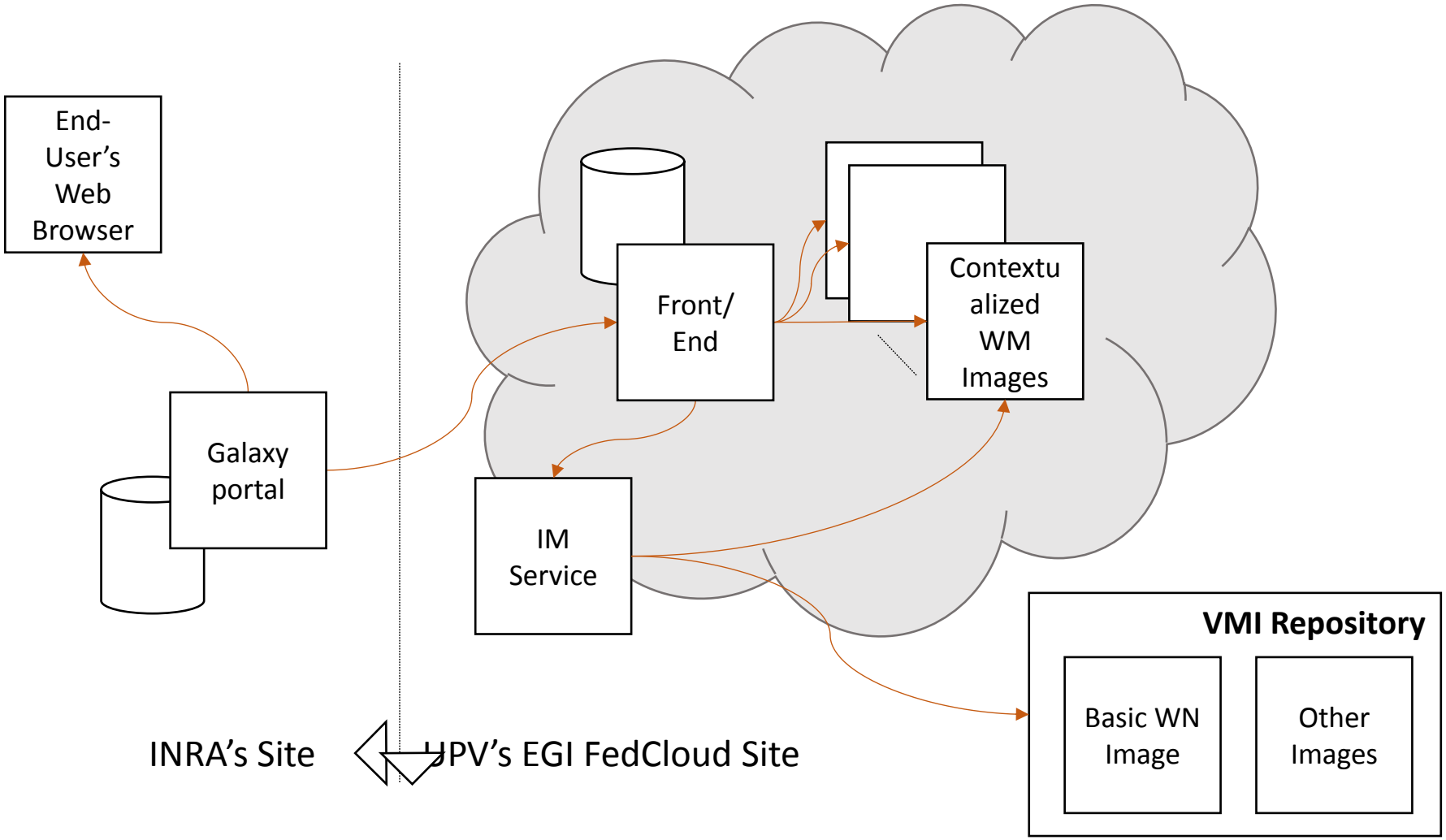
From a unique portal
the Galaxy instance

- Local Galaxy server
- Mesocentre (Tier 2)
  Avakas
  1000 cores
- Tier 1 (IDRIS, one pipeline, not via Galaxy)
- EGI GRID
  France-Grille
- Cloud (next slides …)

Where from?

From any computer connected to internet
Currenty available from French Guiana
(IP Cayenne works with it)

Software Architecture

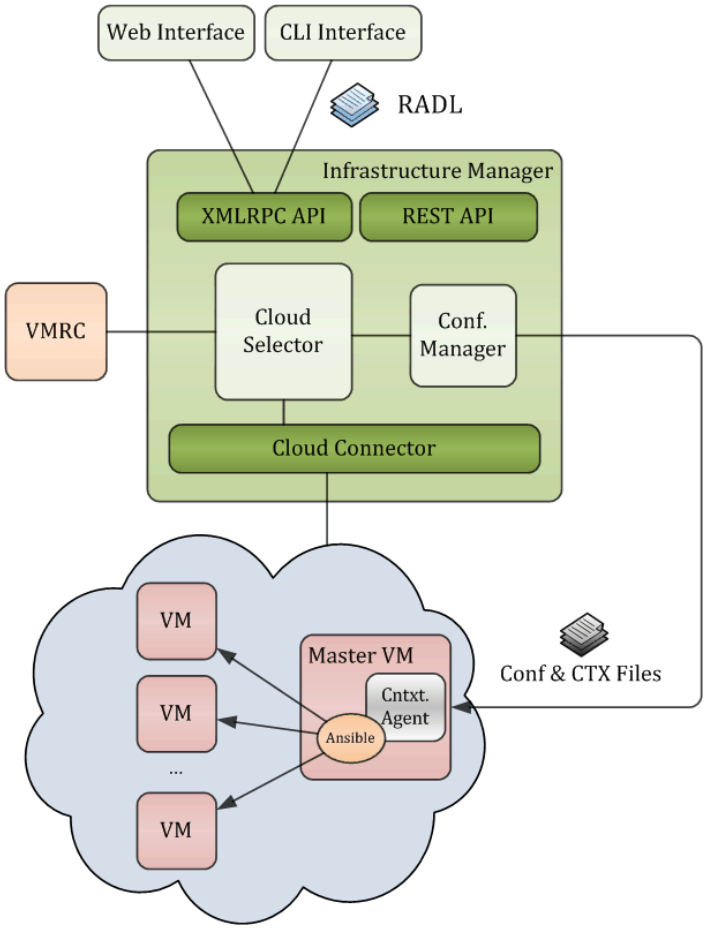


Technologies Used

- Galaxy (galaxyproject.org)
  - Bioinformatics portal that transforms operations into Jobs submitted to a back-end batch queue.
- Infrastructure Manager (IM - www.grycap.upv.es/im)
  - Platform-agnostic, dynamic configuration service that enables re-configuring a cluster.
- Elastic Compute Cloud Clusters (EC3 - www.grycap.upv.es/ec3)
  - Automatic elasticity service based on batch queue length.

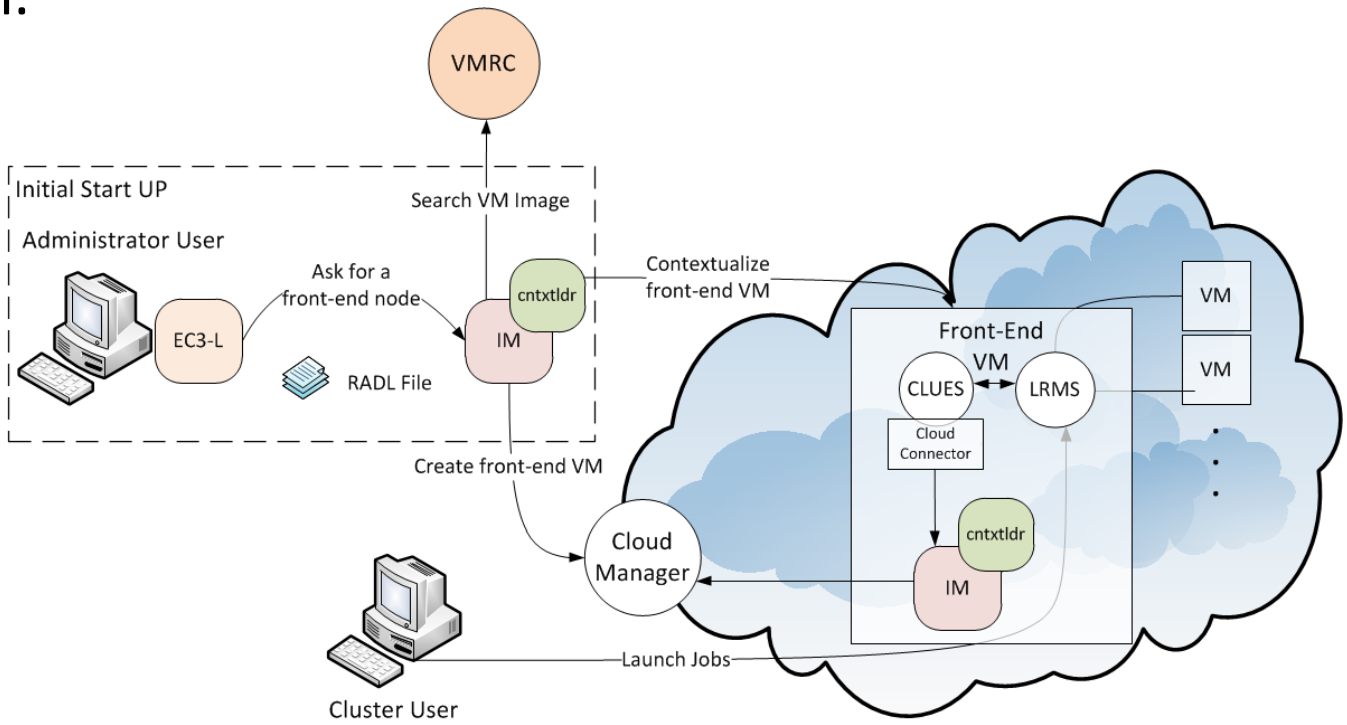
(Re)-Configuration

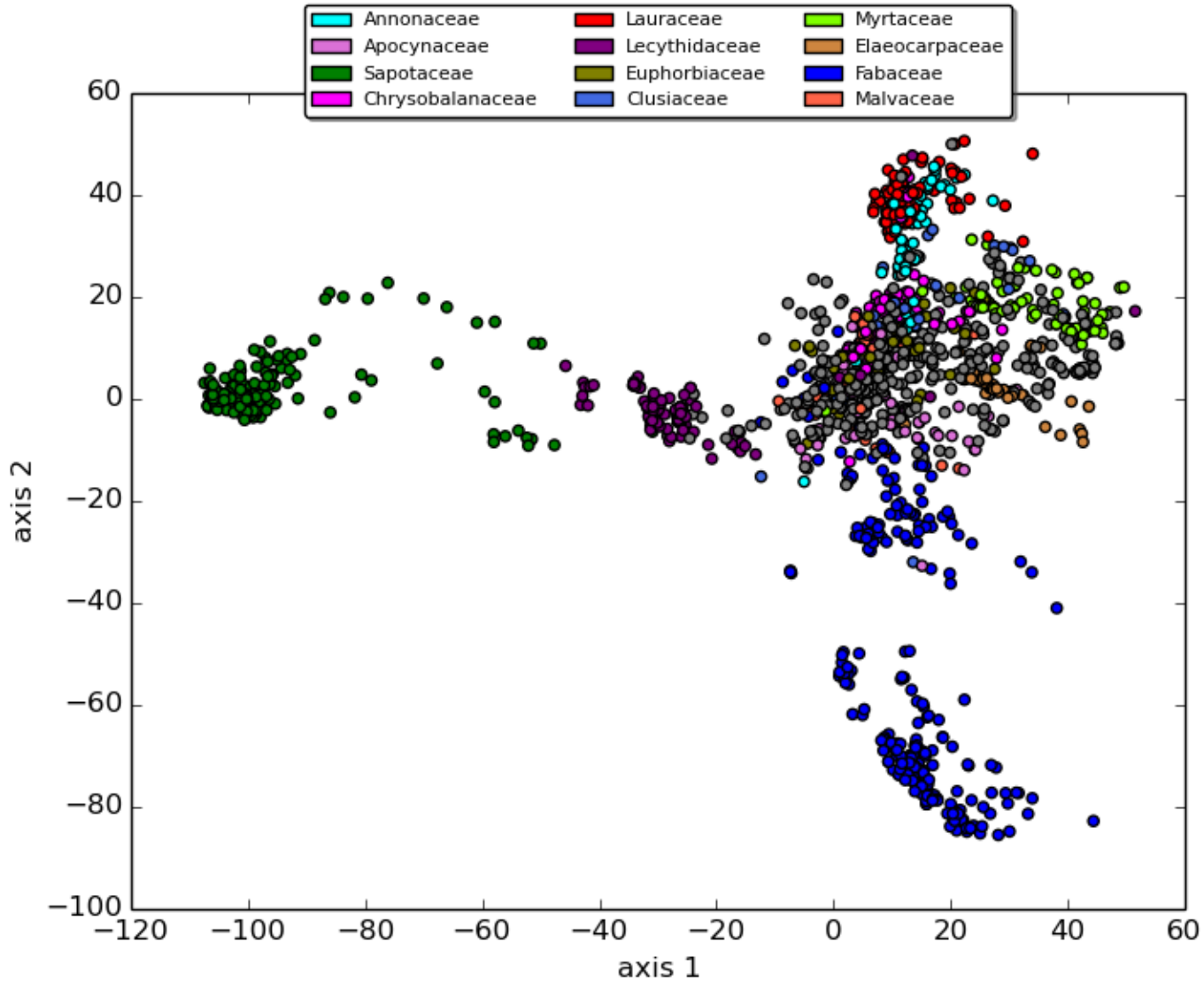
- Infrastructure Manager configures VMs from recipes
  - It can restart a broken configuration or rearrange the changes on an active configuration.
  - It Works with a plethora of CMPs, including OCCI and EGI Federated Cloud.



Elastic Compute Cloud Cluster

•EC3 (Elastic Cloud Computing Cluster) leverages CLUES to create elastic virtual clusters in the Cloud.
•It also uses Infrastructure Manager (IM) for the reconfiguration.
•It provides
•automatic
•elasticity
•based on
•the batch
•queue
•workload.





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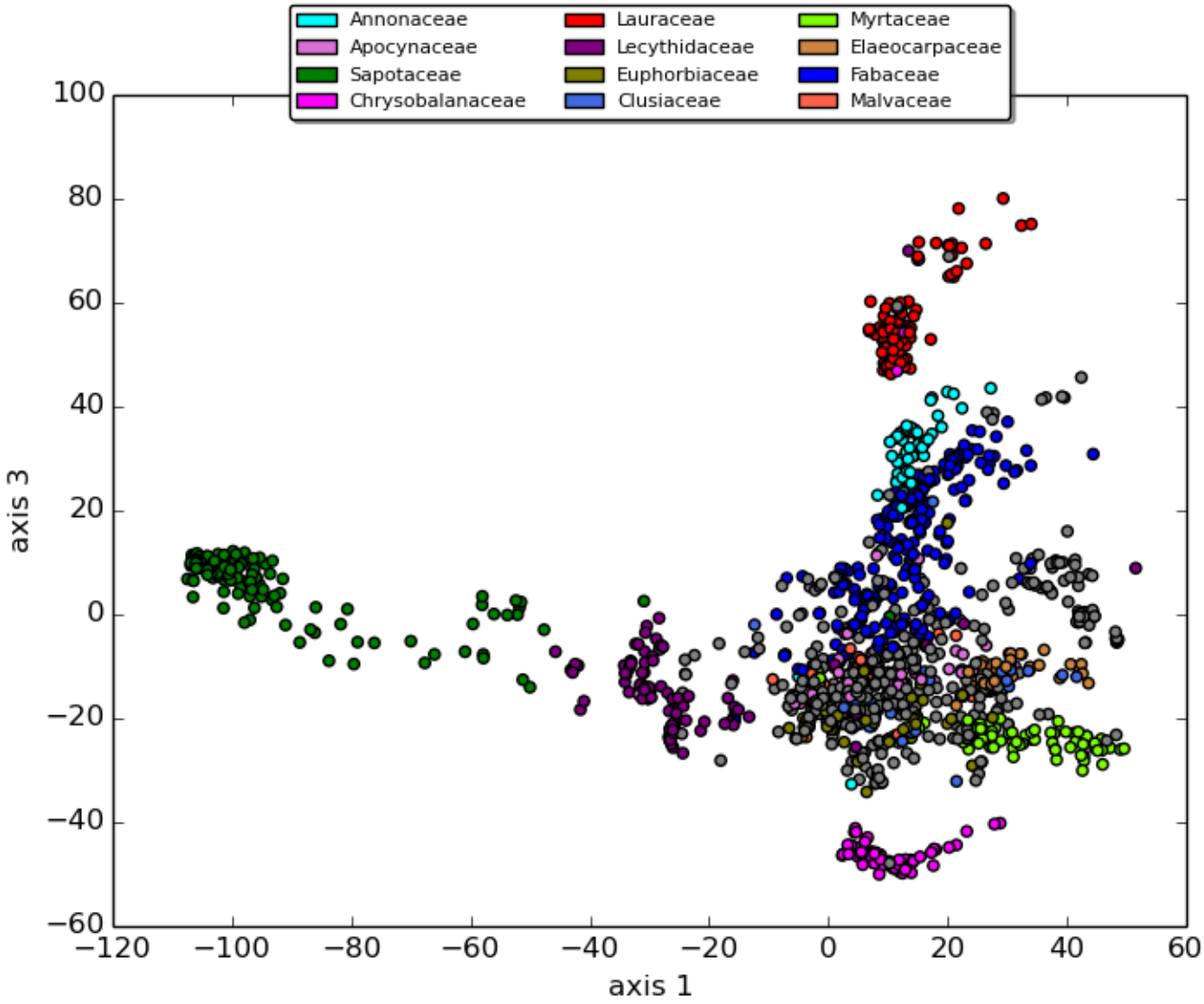

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