Building an open, collaborative, online infrastructure for bioinformatics training

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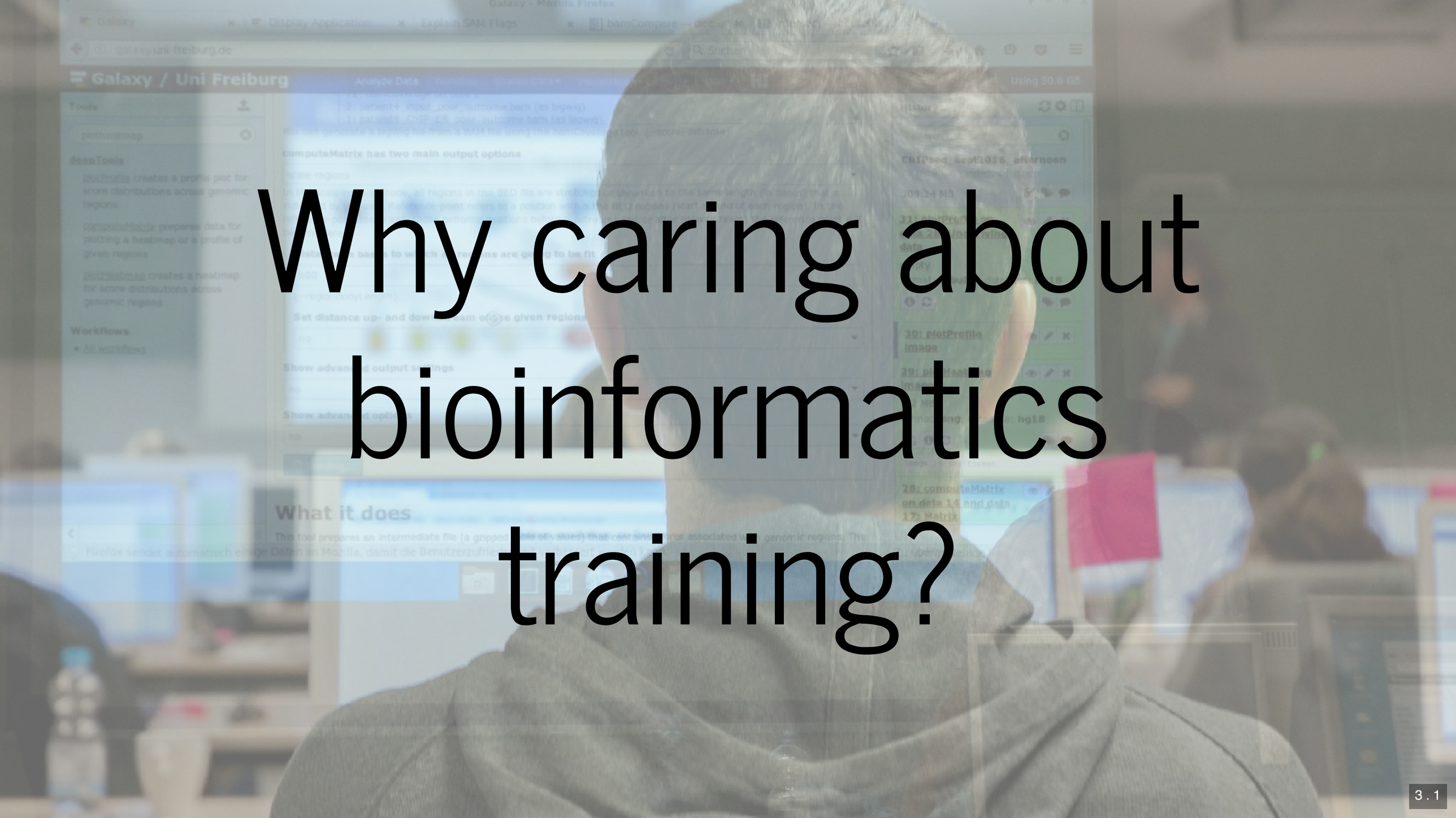
Galaxy Community Conference
June 2017

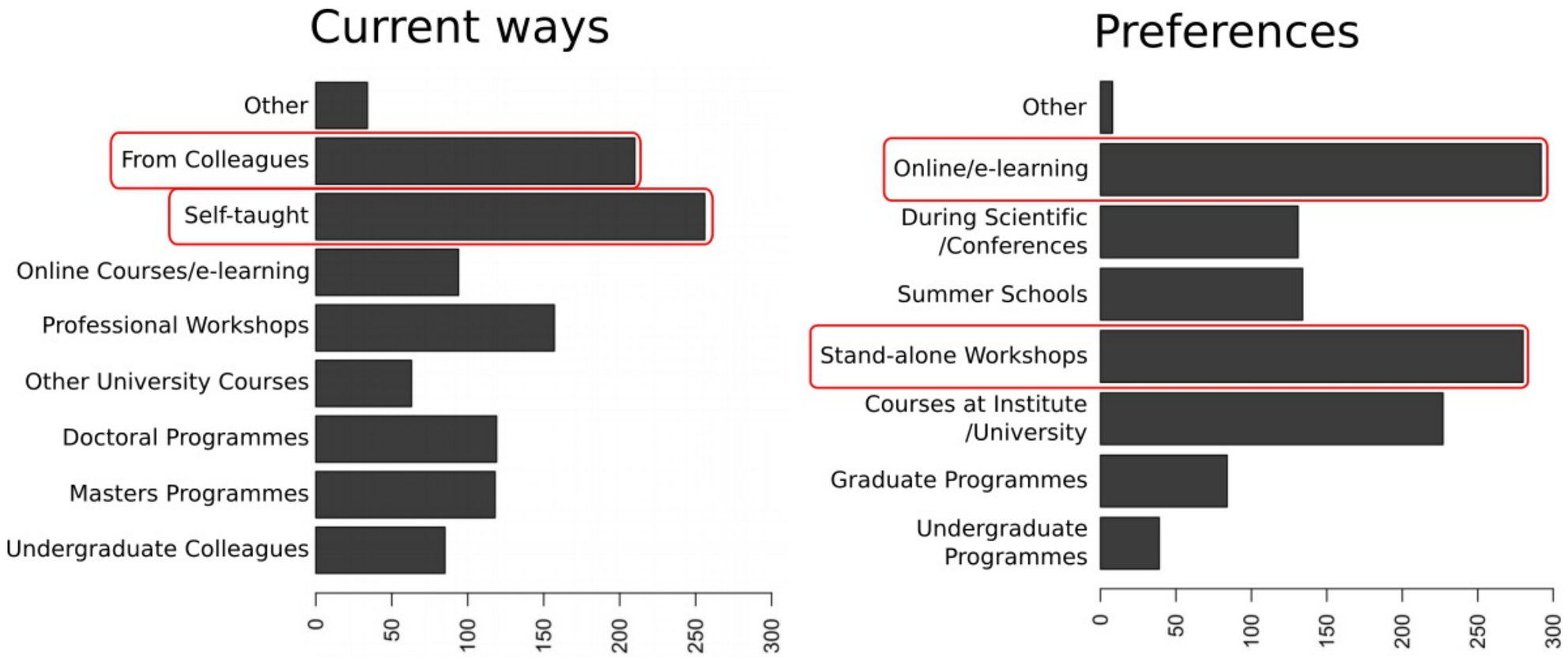

Why caring about bioinformatics training?

Need for bioinformatic training

Bioinformatics has become too central to biology to be left to specialist bioinformaticians

- Explosion of data to analyze
- Access to computational power
- Thousand of possible tools for specialized analyses

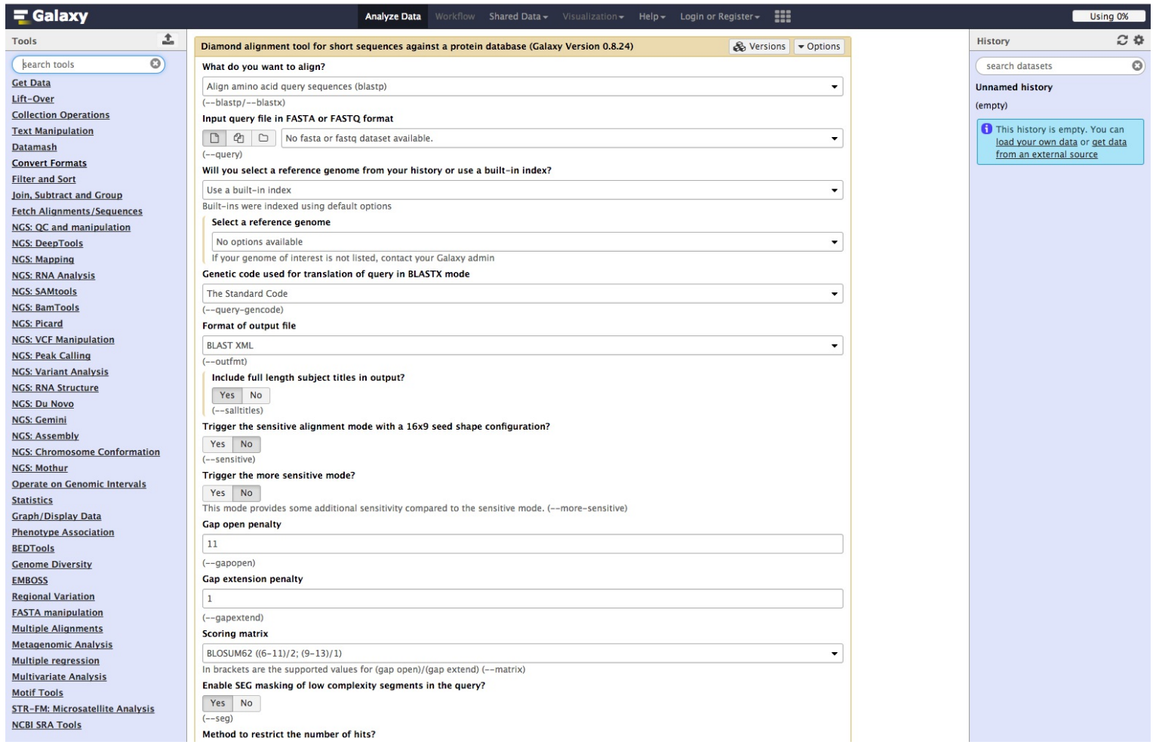
An increasing demand for learning bioinformatics



Graphs of Brazas et al, 2017

Galaxy
a great solution !

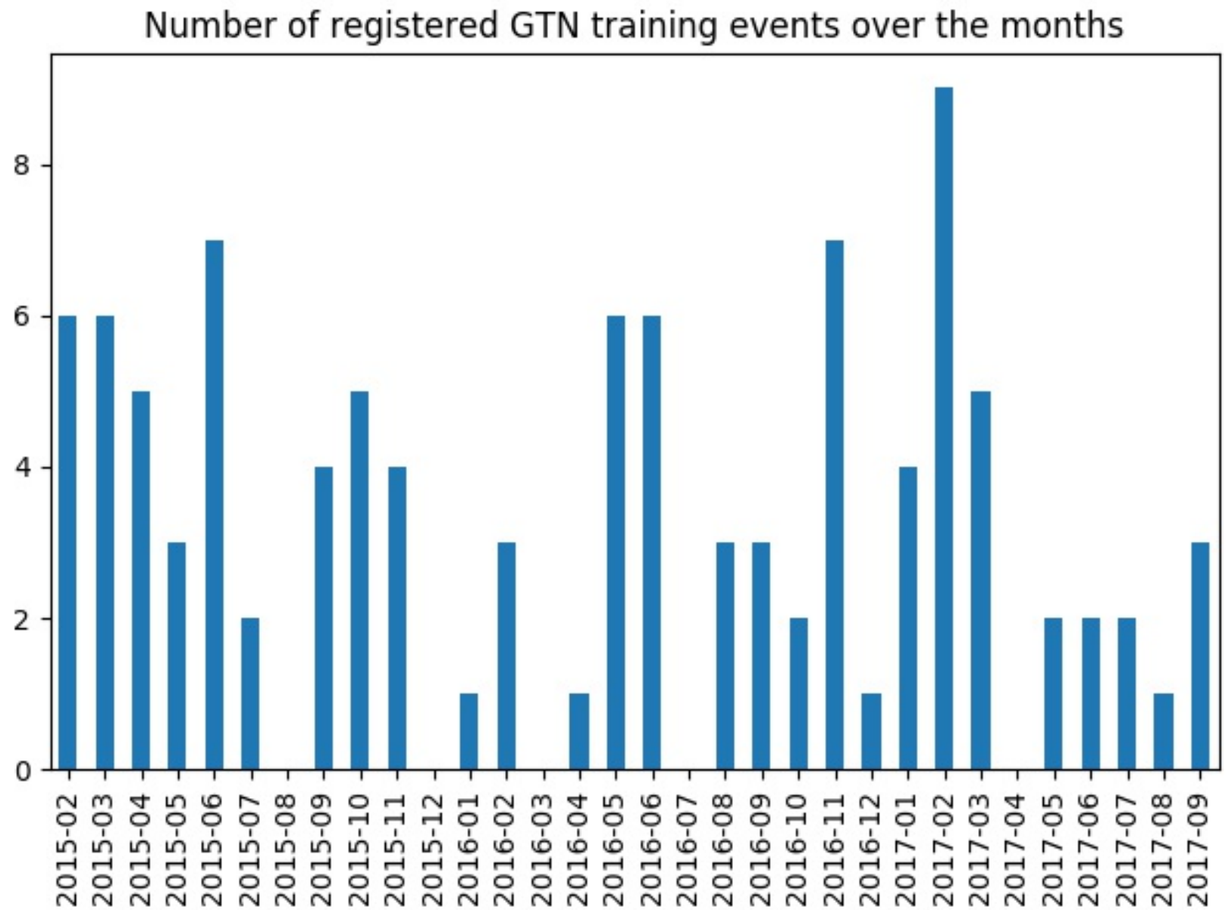
Computational knowledge: Not required!



- Web interface for numerous bioinformatics tools
- Scalable
- No issue with computer configuration during training


Training ressources
Best Practices
Galaxy Training Network
Platform recommendations
Trainer Directory

Quite a lot of events...



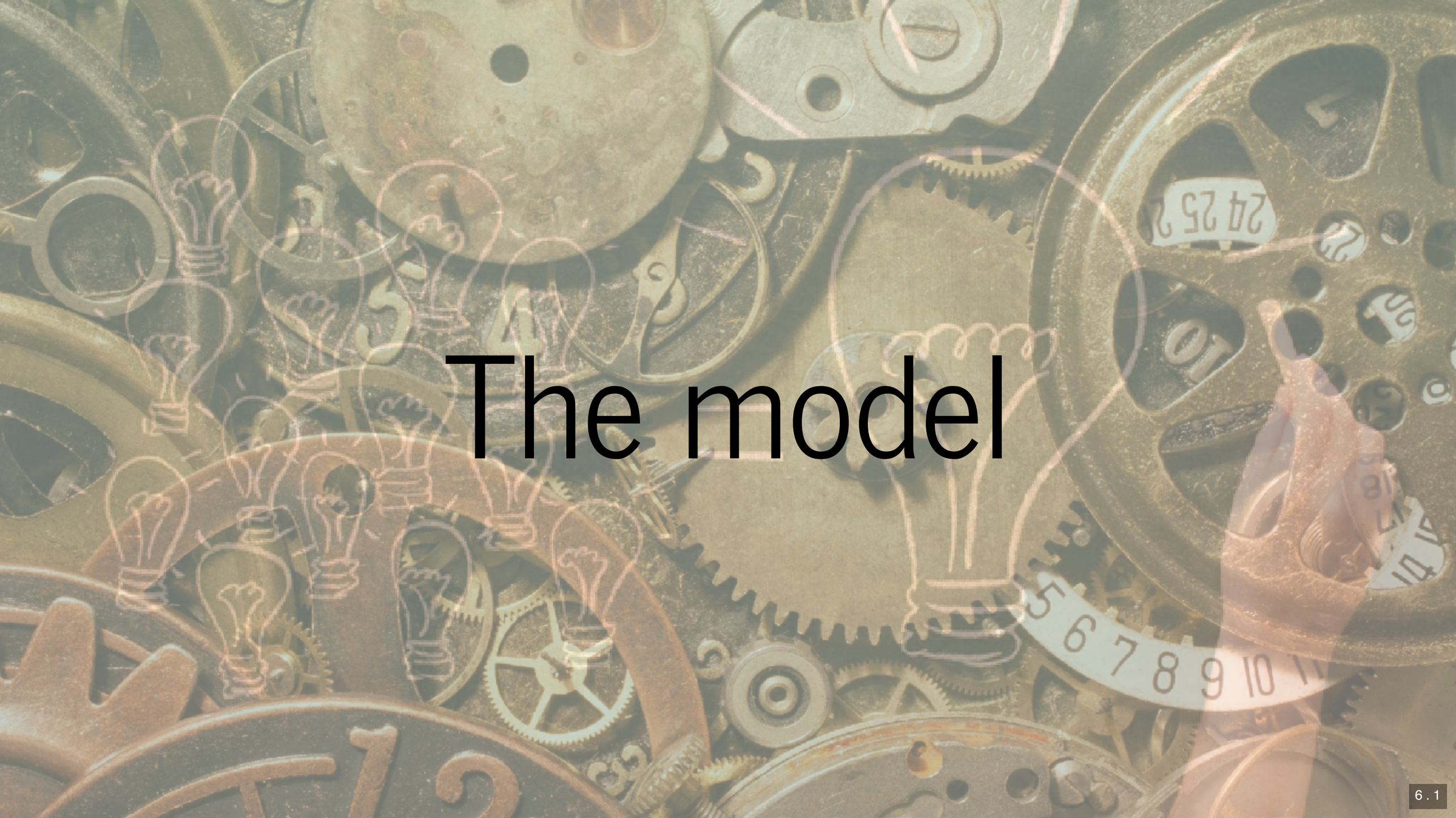
Worldwide!


© Mapbox © OpenStreetMap Improve the underlying map
Canada
Mexico
CU
Venezuela
Colombia
EC
Peru
Brazil
Bolivia
PY
UY
Argentina
CL
South Pacific Ocean
North Atlantic Ocean
South Atlantic Ocean
Scotia Sea
IS
Norwegian
SE
FI
NO
PL
BY
UA
HU
RO
IT
ES
GR
MA
TN
Algeria
Libya
Egypt
MR
Mali
Niger
SN
NG
GH
TD
Sudan
SS
CM
ET
SO
KE
CD
TZ
AO
MZ
BW
South Africa
MG
Russia
Kazakhstan
Mongolia
China
Japan
UZ
KG
TM
TJ
Iran
AF
IQ
SY
KW
Saudi Arabia
OM
RY
PK
NP
BD
MM
LA
TH
VN
PH
Malaysia
Indonesia
LK
MV
Arabian Sea
Indian Ocean
PG
Australia
Tasman Sea
NZ
Mapbox

Building a new **open**, **collaborative** and **FAIR** model for bioinformatics training

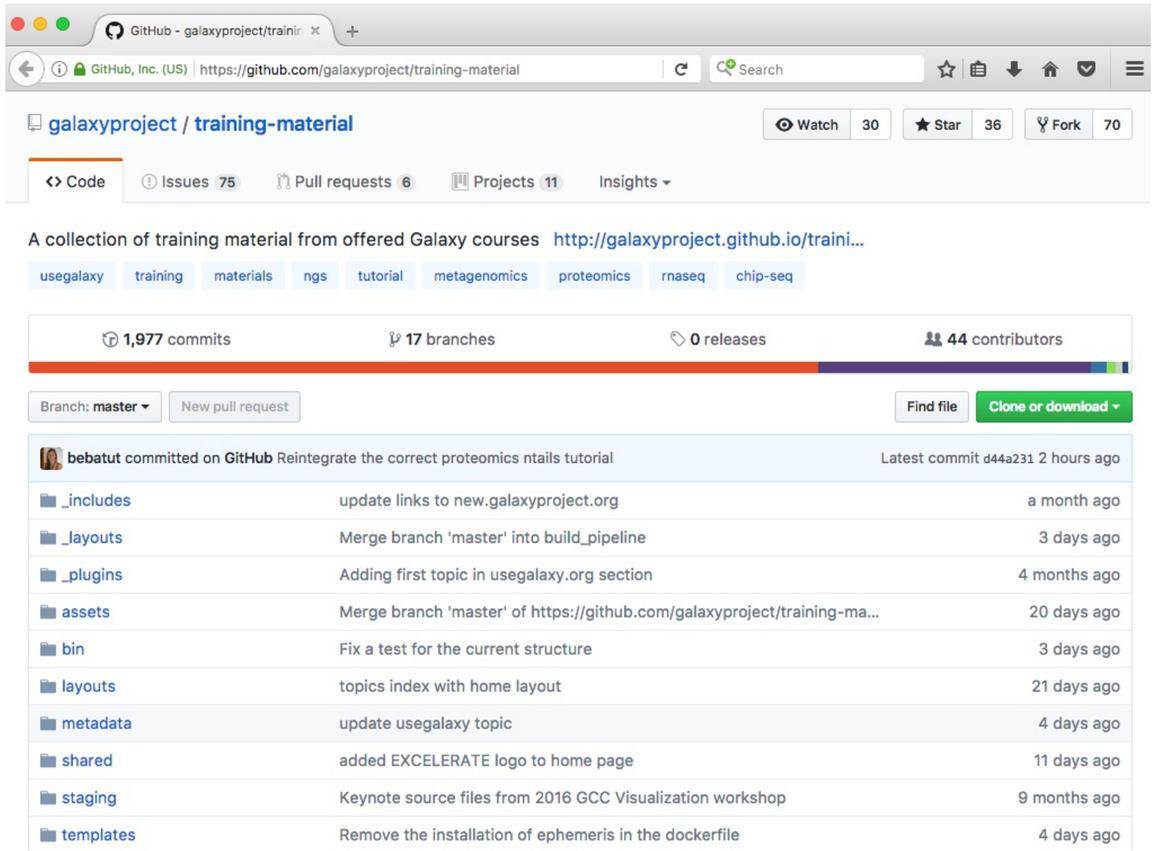
Requirements

- Easy to use
- Support for effective training for
  - Individual users
  - Instructors
- Definition of technological infrastructure
- Limited redundancy



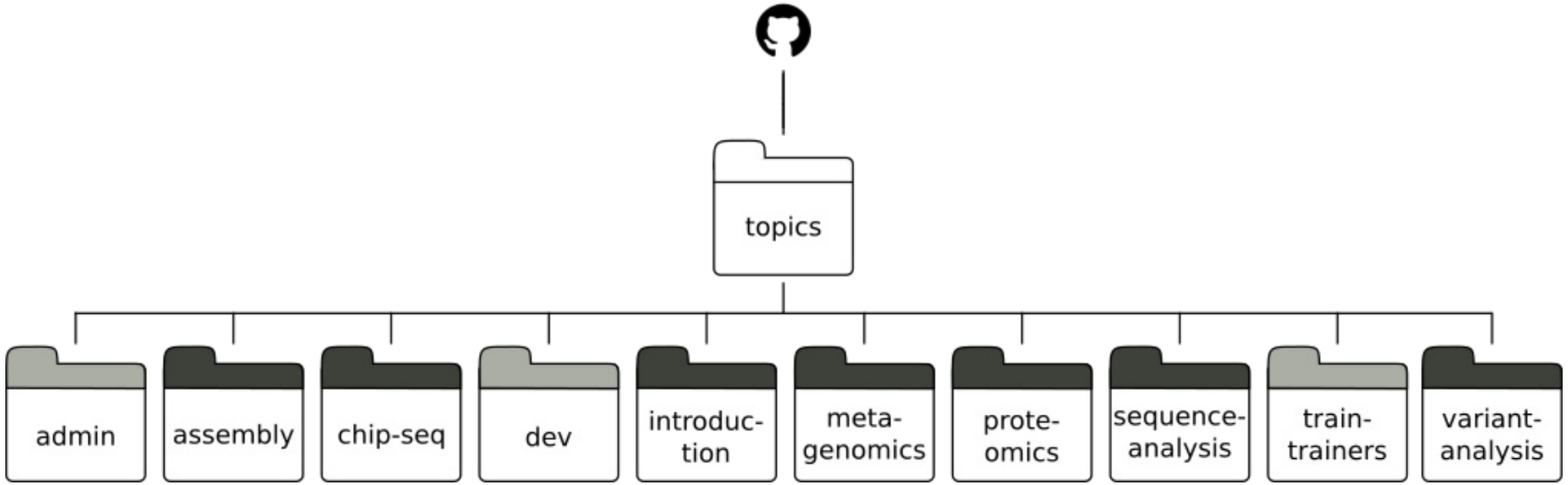
The model

One repository to collect everything

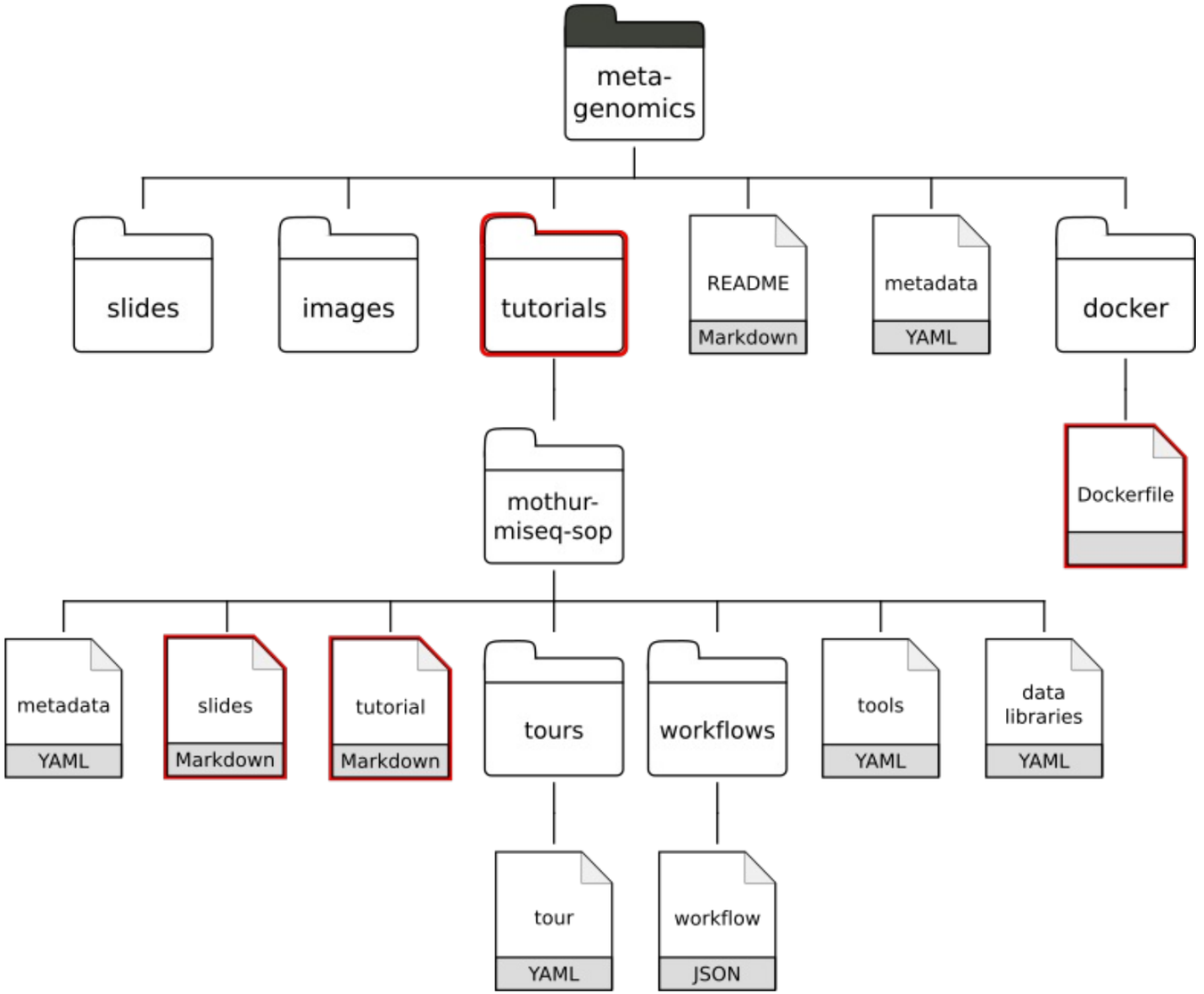


GitHub: galaxyproject/training-material

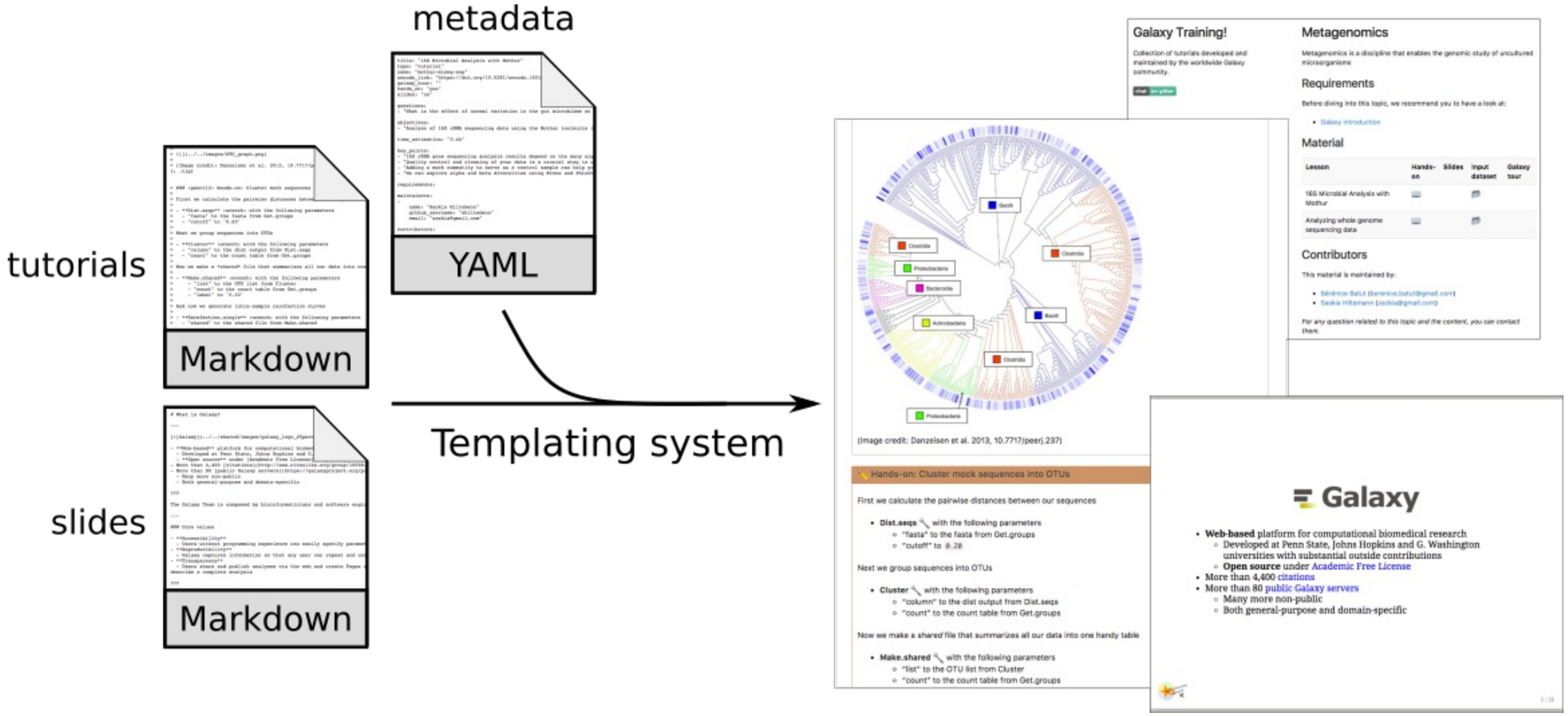
Topics for different targeted users



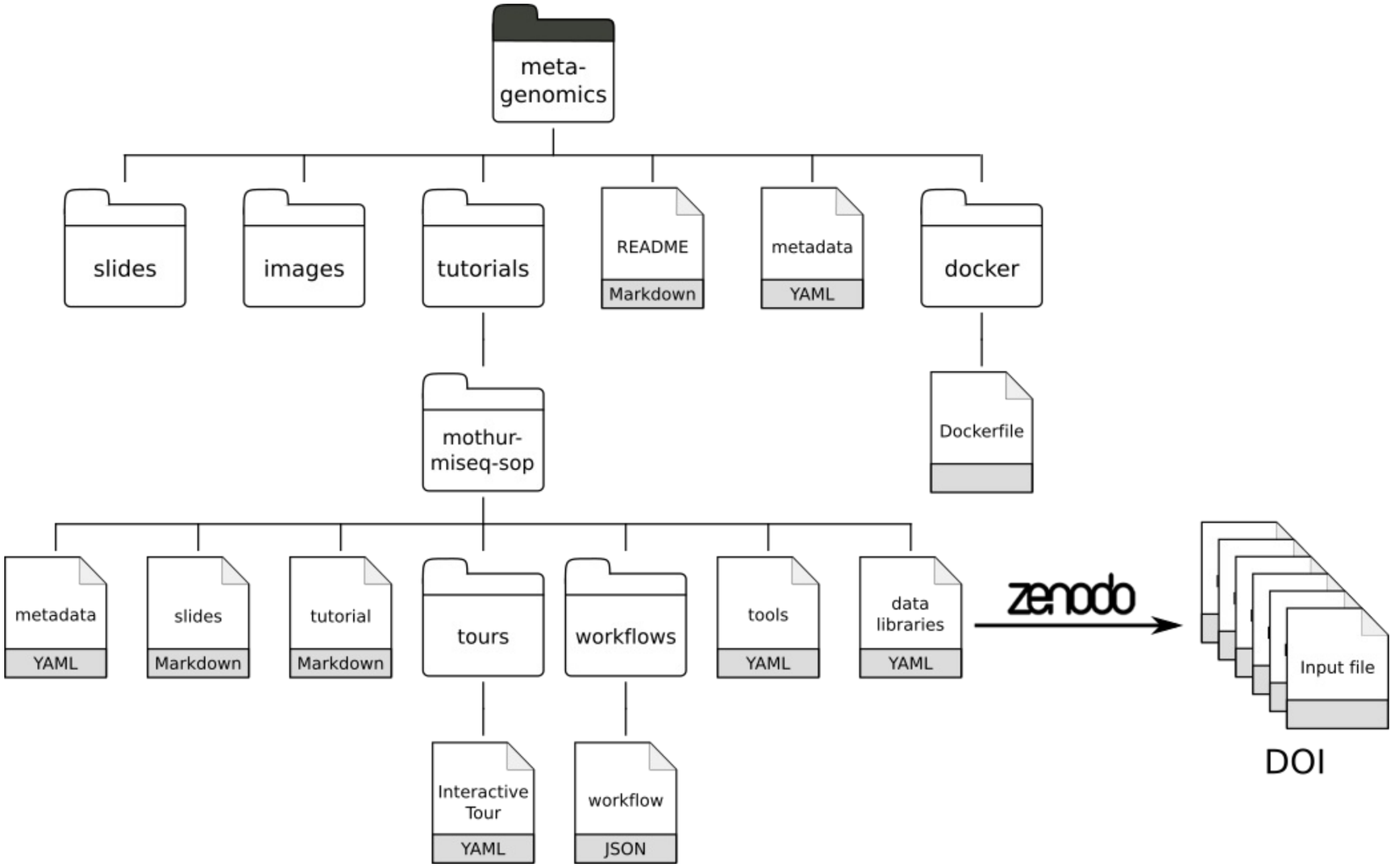
Similar structure, content and formats



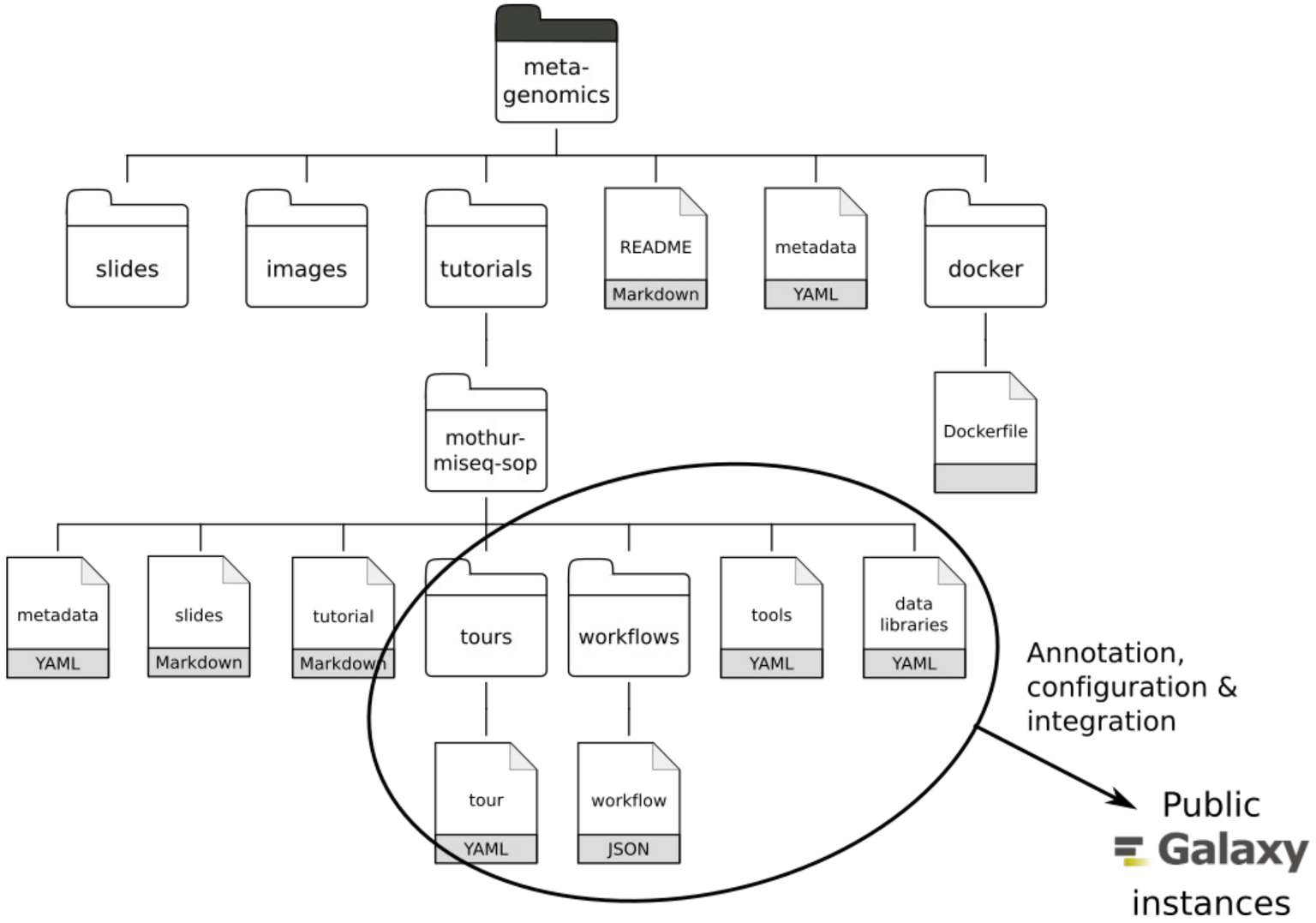
Separation between content and formatting



Citable data & Credit



Definition of the technical infrastructure



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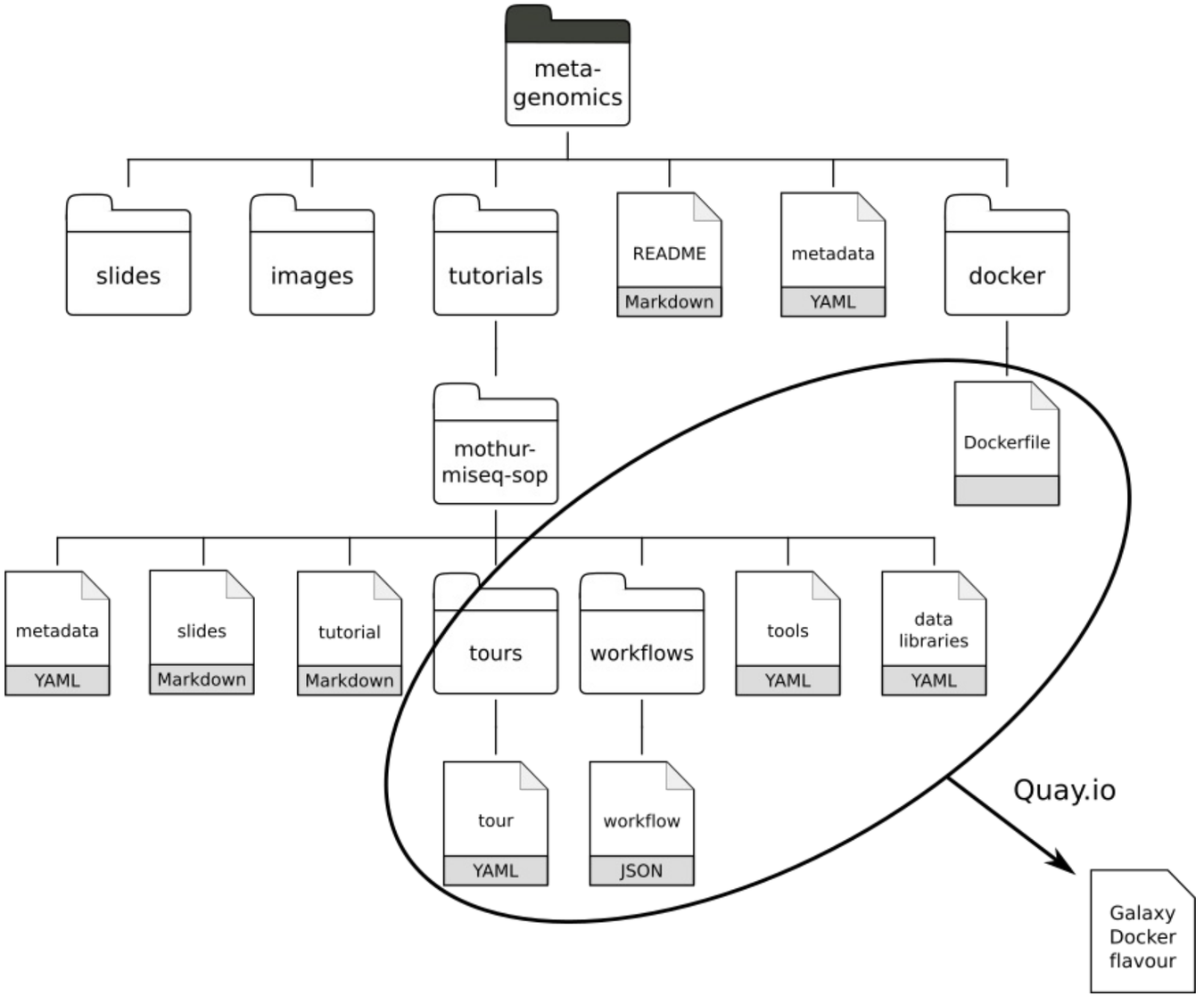


Findable Accessible Interoperable Reusable

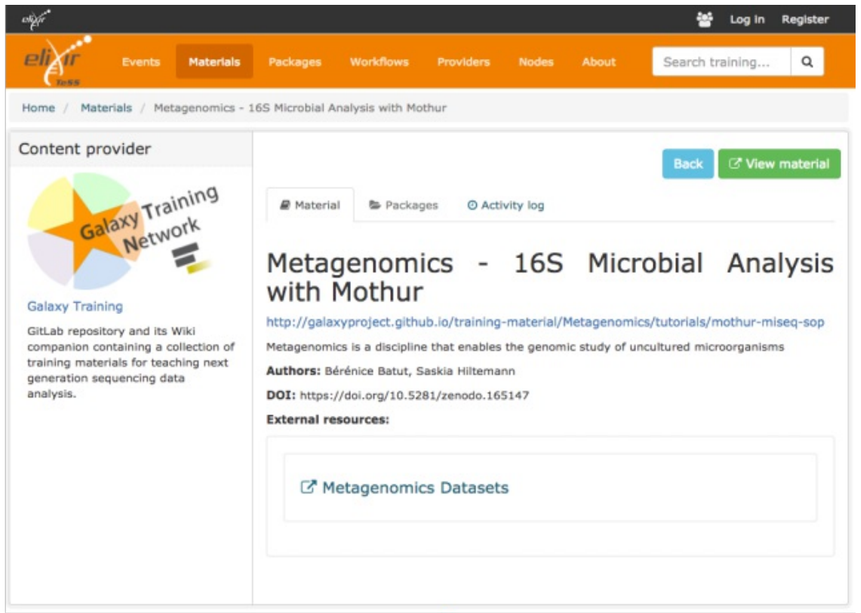



model

Findable

metadata

Automatically added



TeSS: elixir Training Portal

http://tess.elixir-europe.org/

Accessible

- Online

  http://galaxyproject.github.io/training-material/

- Technical support
  - Self-training boxes with Galaxy Docker flavor
  - Annotated public Galaxy instances

Interoperable

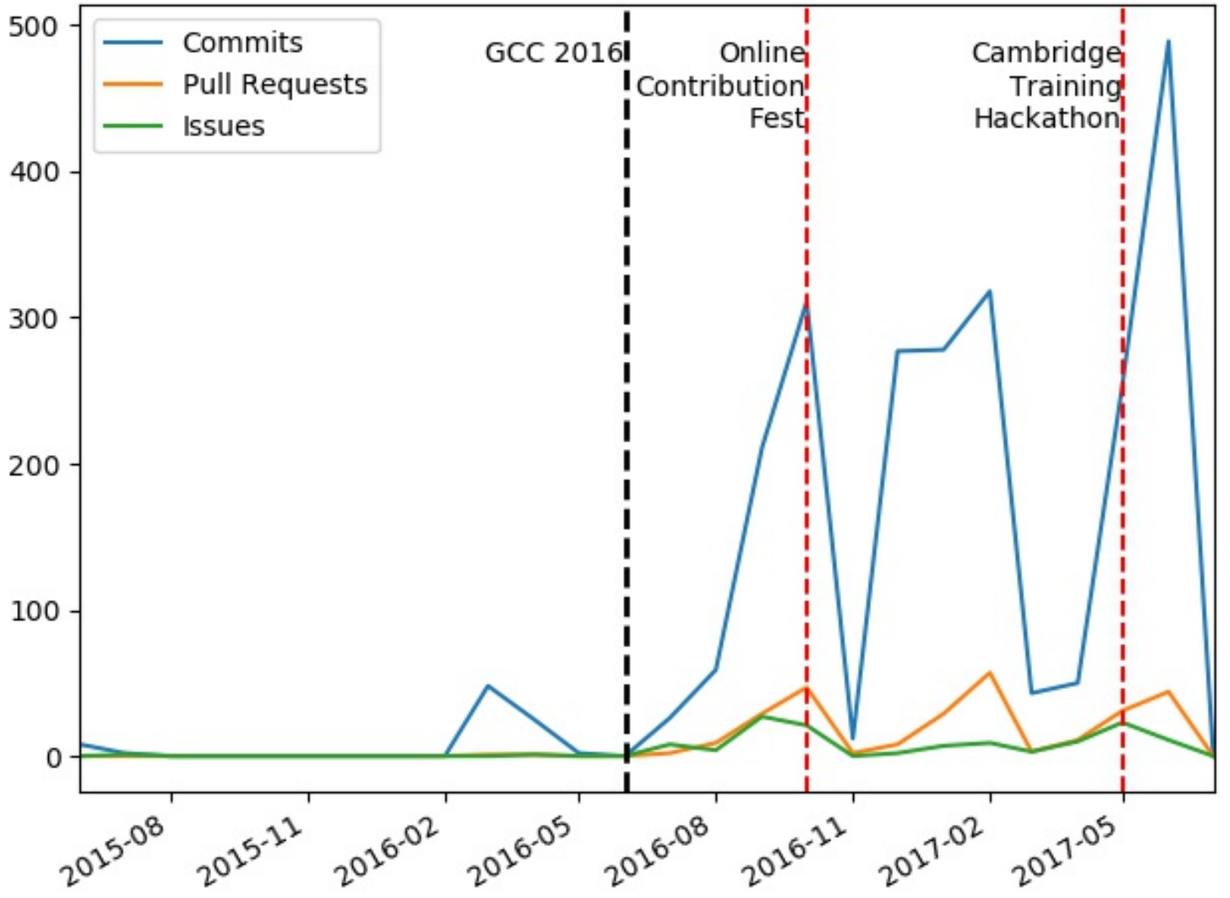
- Metadata description in YAML and integrating EDAM ontology
- Content for different targets (workshops and self-training)
- Technical support for different platforms

Reusable & Open

- CC BY 4.0 license
- DOI for the input datasets
- Open development process on GitHub & via Gitter
- Open education movement

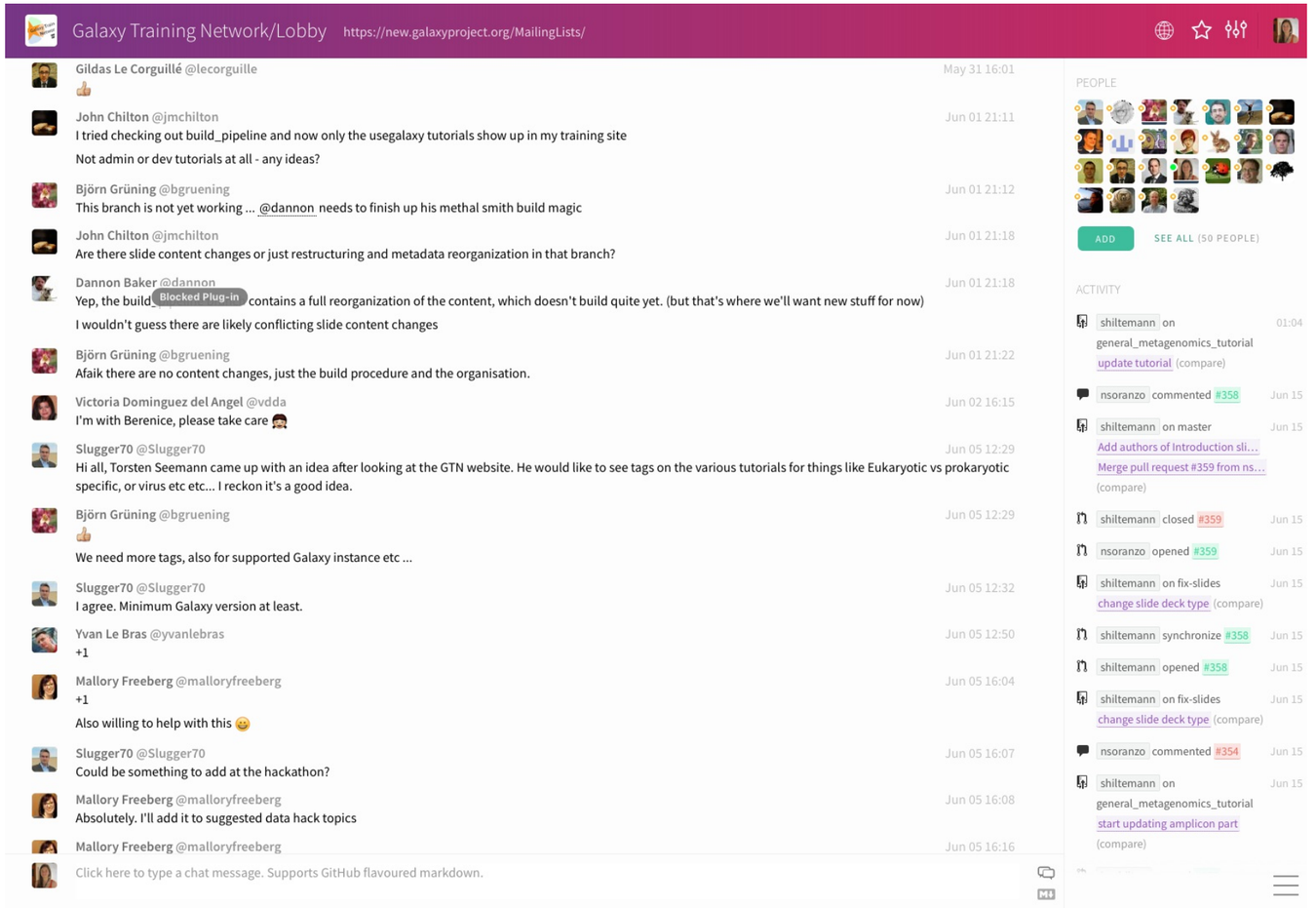

Community effort

Numerous contributions



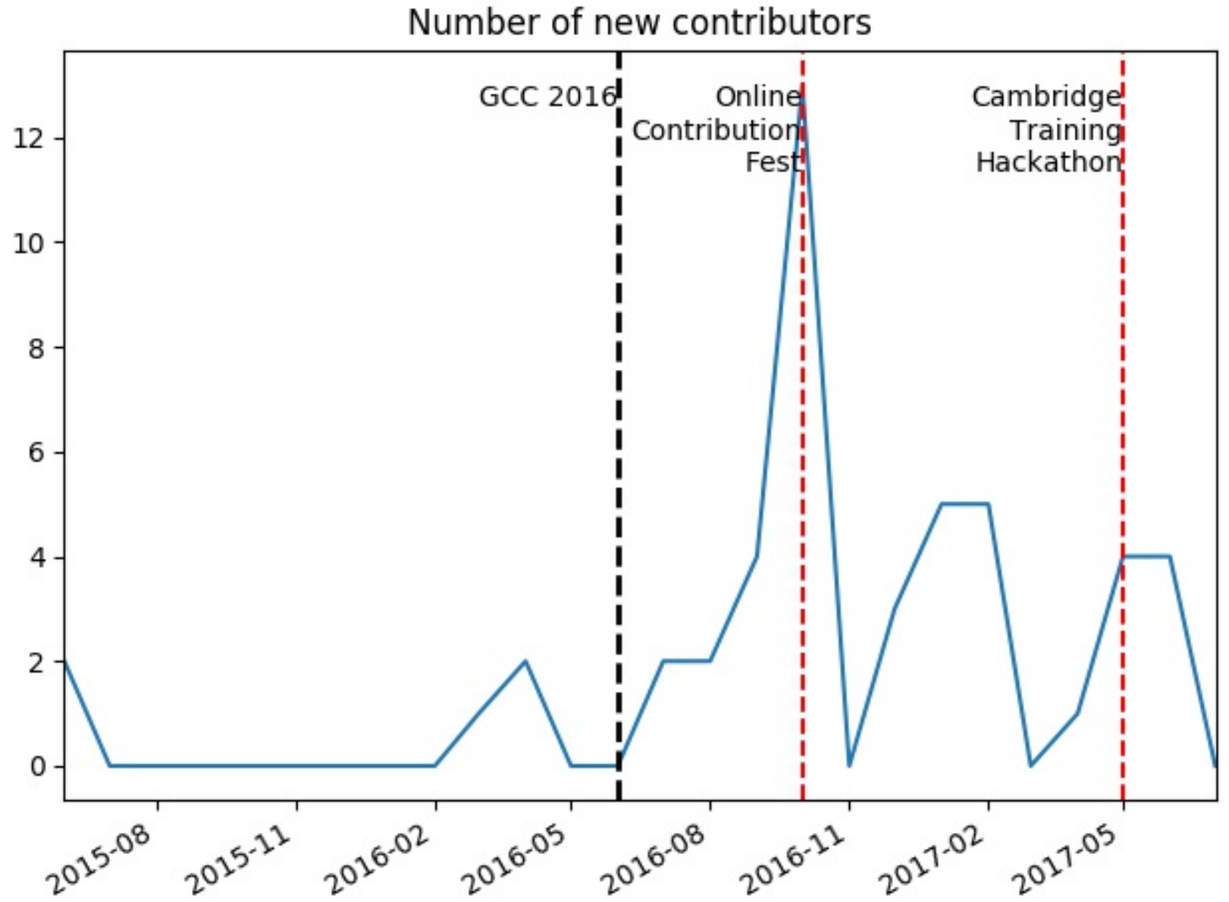
And 2 successful hackathons!

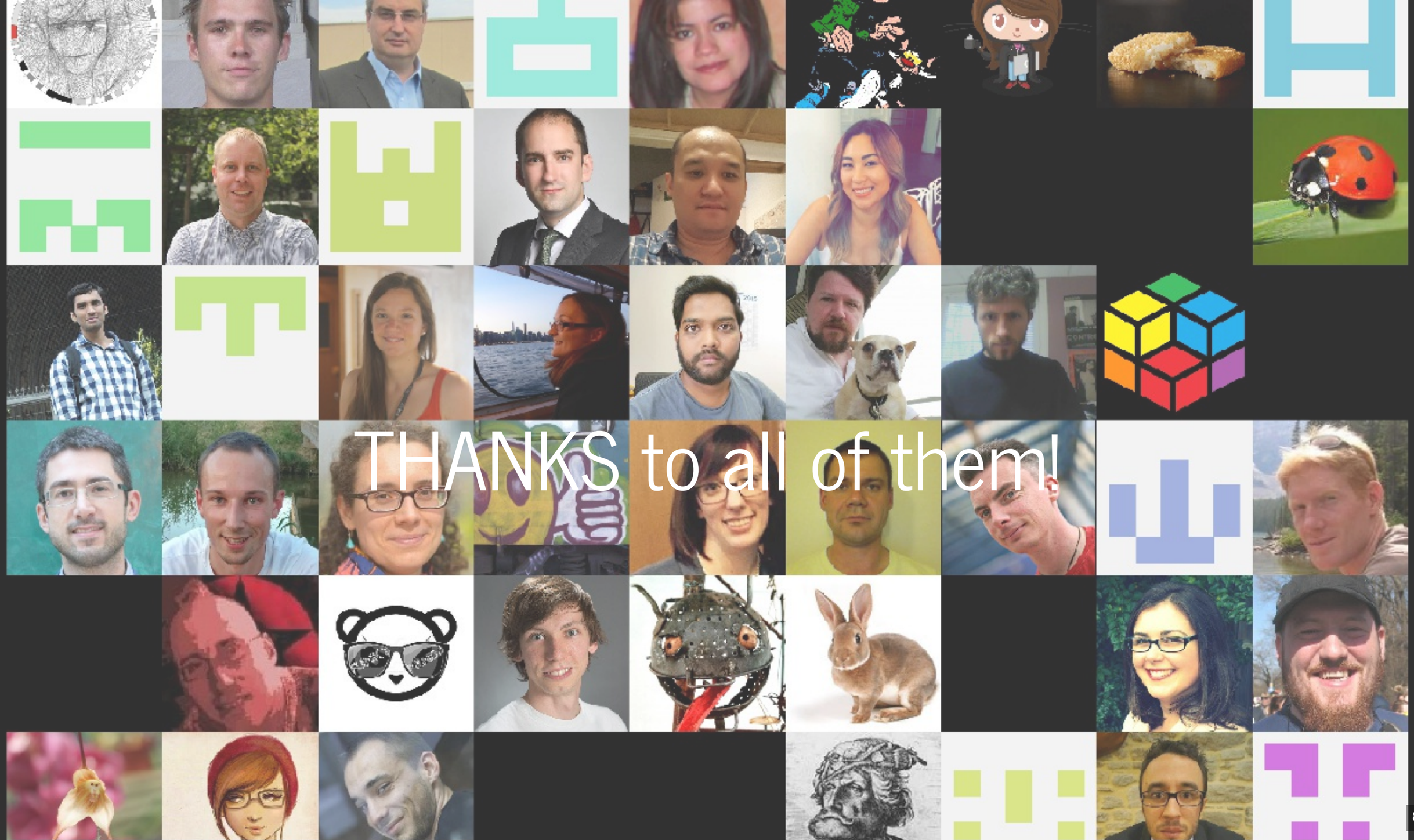
Numerous discussions



Gitter: Galaxy-Training-Network/Lobby

A constantly growing community




THANKS to all of them!