R in Grenoble
DATA CHALLENGES

Magali Richard & Florent Chuffart

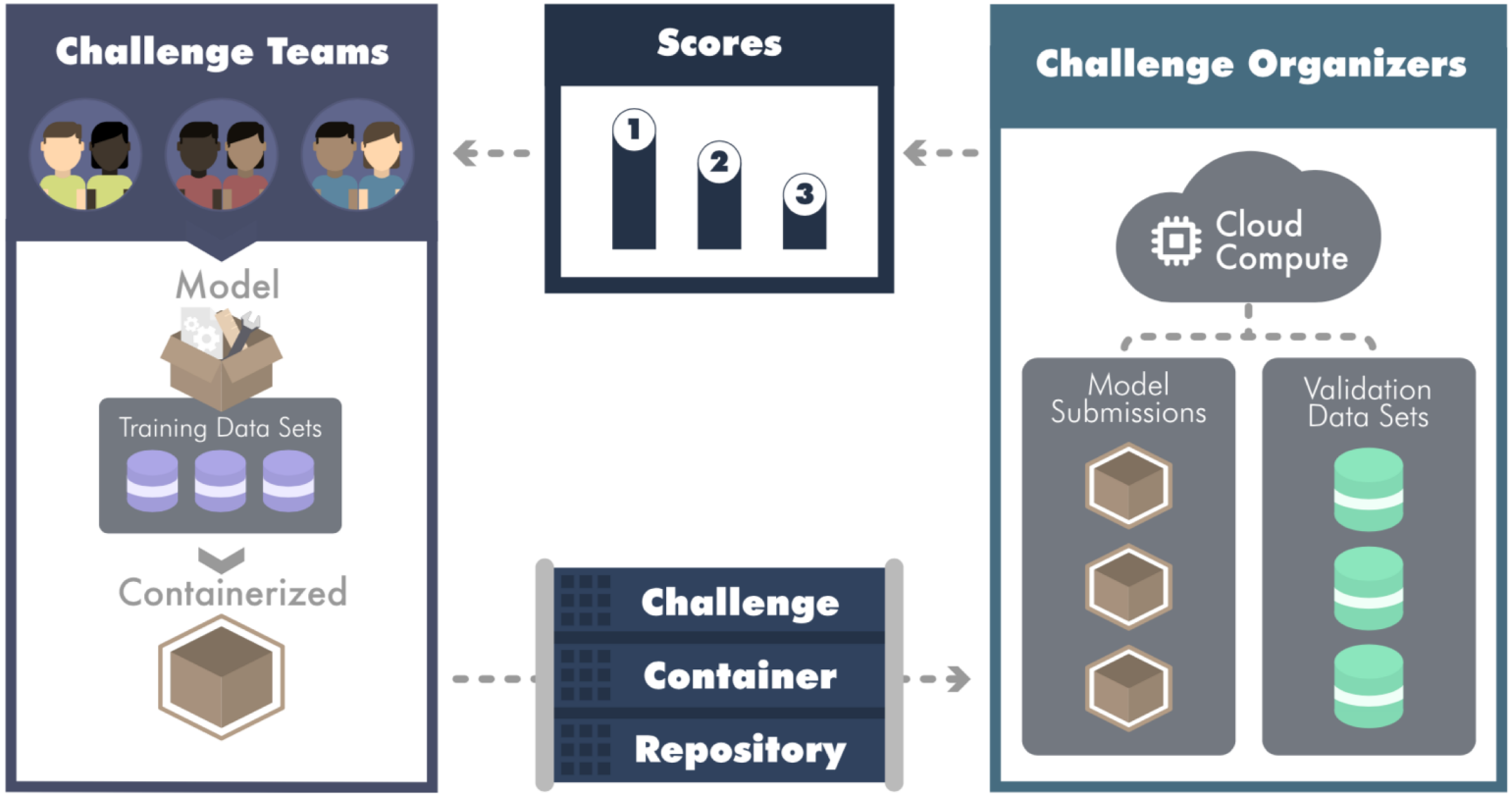
Introduction

Data challenges in class

Data challenges for scientists

Tutorial

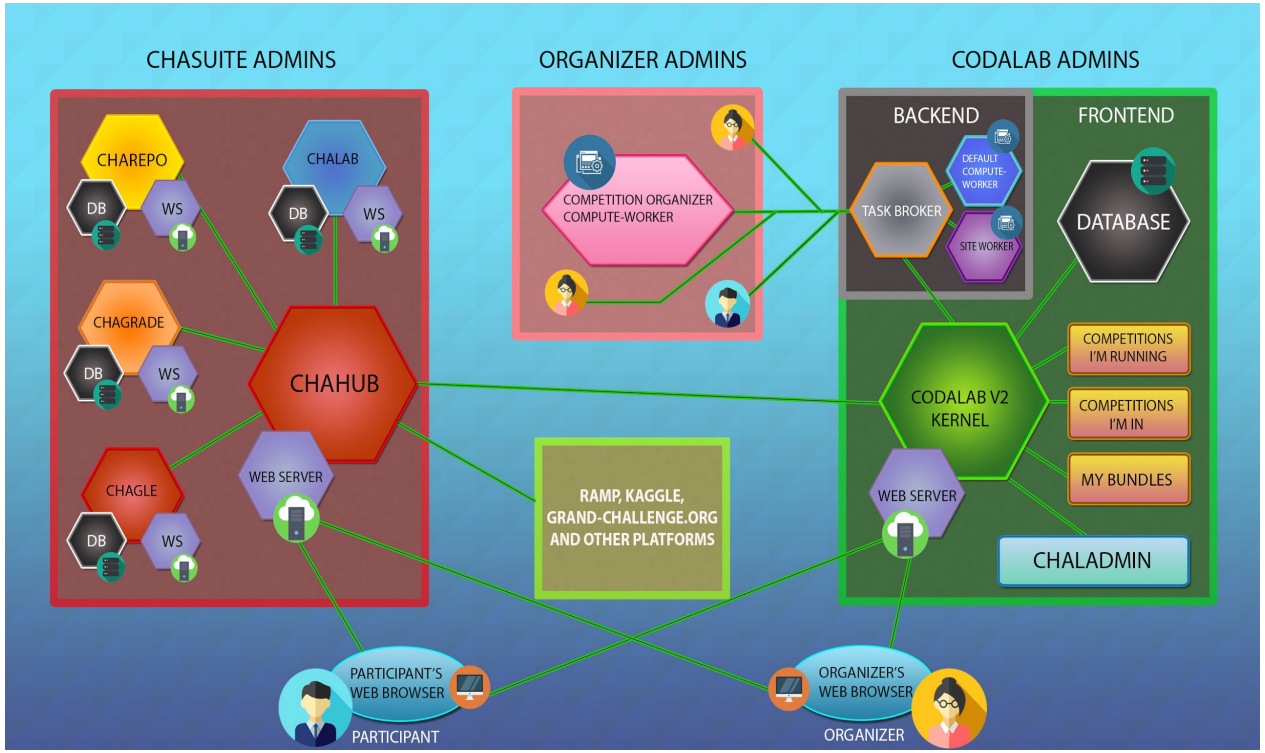
What is a data challenge?



Ellrott et al. Genome Biology (2019) 20:195

The challenge platform

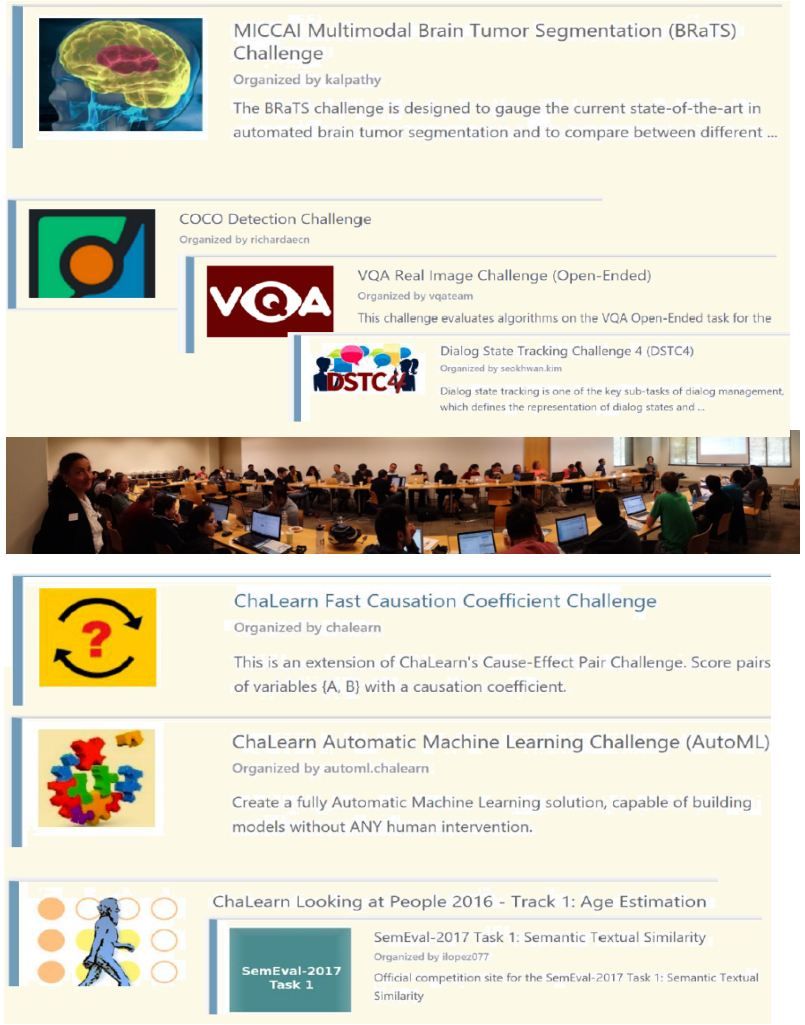
CodaLab



- Enables participants to submit their codes
- Automatically rank the participants

Alexis Arnaud

History



2013: Medical data. Result submission.
COMPETITION BUNDLES

2014: Computer vision, speech, NLP, IR.
MSCOCO: 361 participants.

2015: **CODE SUBMISSION**
AutoML: 687 participants
Hackathons. Coopetitions.

2016: ChaLab Wizard.
USE IN EDUCATION

2017: 480 challenges, 10000 users.
SCALABILITY, REUSABILITY,
DYNAMIC COMPETITIONS
See.4c: EU prize, 2 million Euros

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A novel pedagogic approache

As practical work

Sex Prediction Challenge (sexpred)

Organized by Alexis_Arnaud

The challenge provides the data.frame d of tumoral tissues described by genes expression values, histological and clinical attributes. The ...

Nov 15, 2019-Dec 30, 2019

37 participants

As homework

Histology Prediction Challenge (histpred)

Organized by Alexis_Arnaud

The challenge provides the data.frame d of tumoral tissues described by genes expression values, histological and clinical attributes. The ...

Nov 21, 2019-Dec 30, 2019

37 participants

As final evaluation

Virulence Prediction Challenge (virpred)

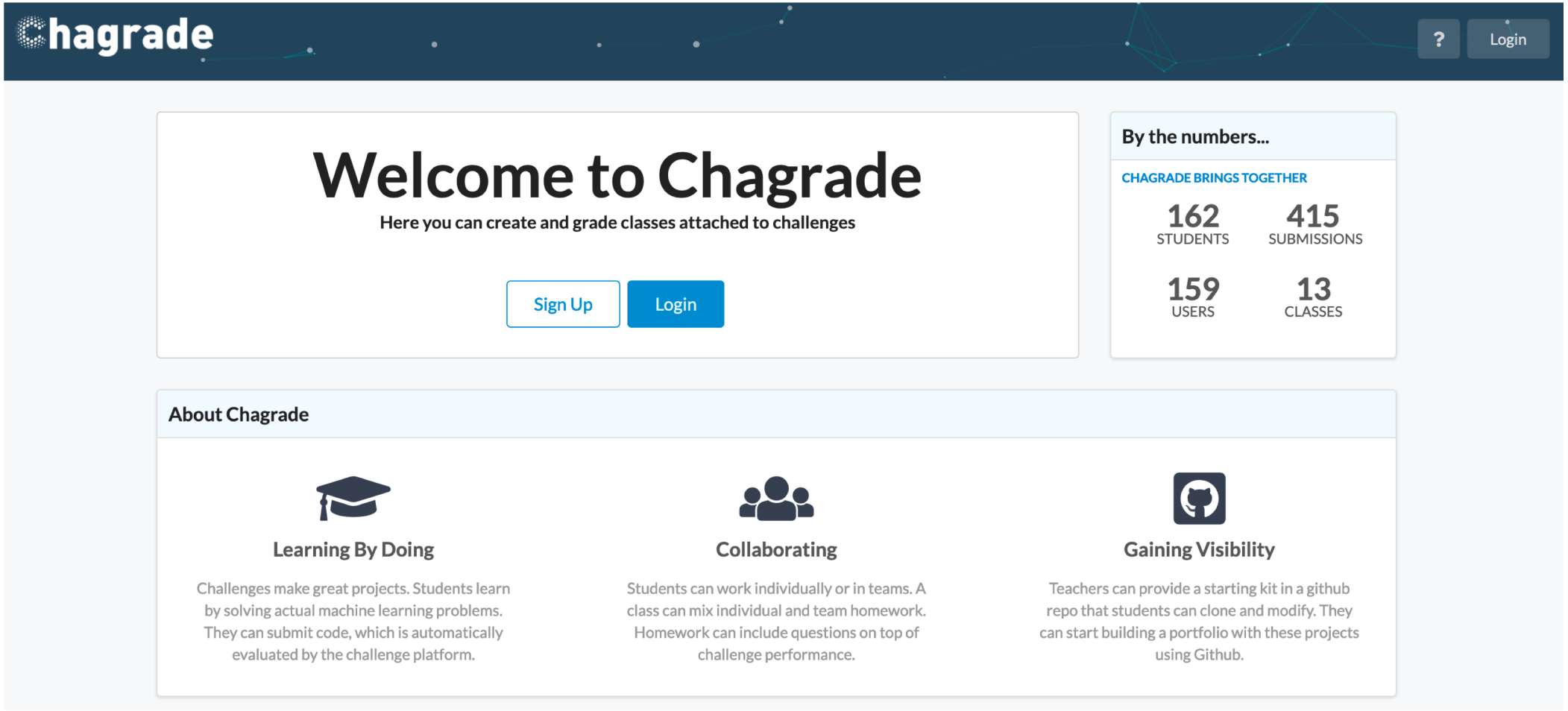
Organized by FlorentC

The challenge provides the data.frame d of tumoral tissues described by genes expression values, histological and clinical attributes. The ...

Jan 09, 2020-Jan 11, 2020

35 participants

Chagrade: a dedicated tool in codalab



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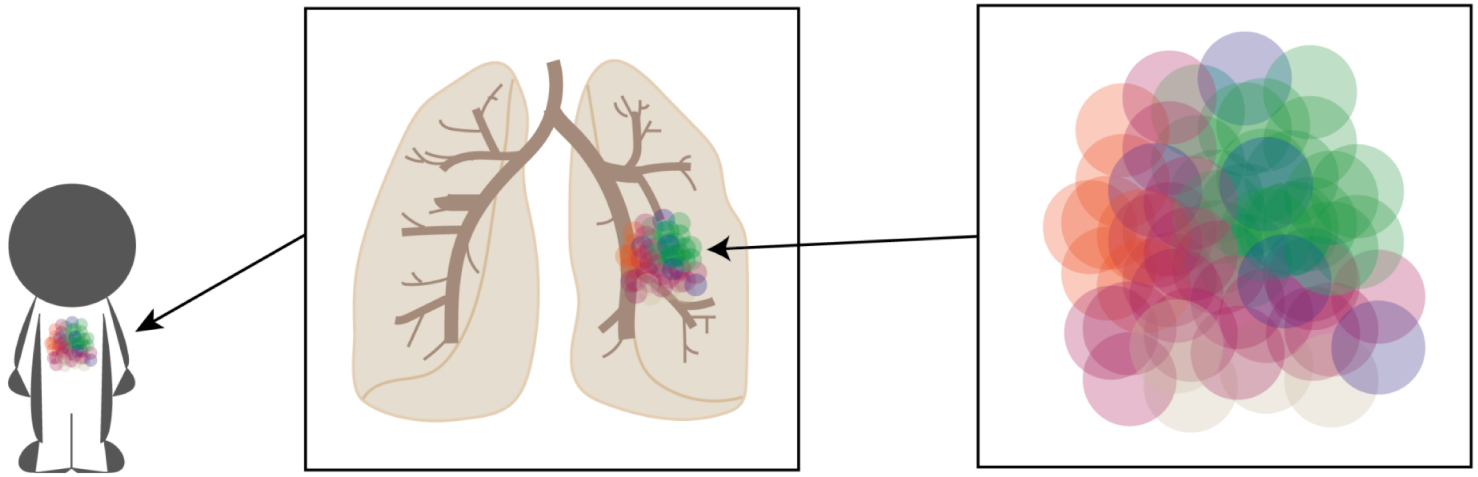
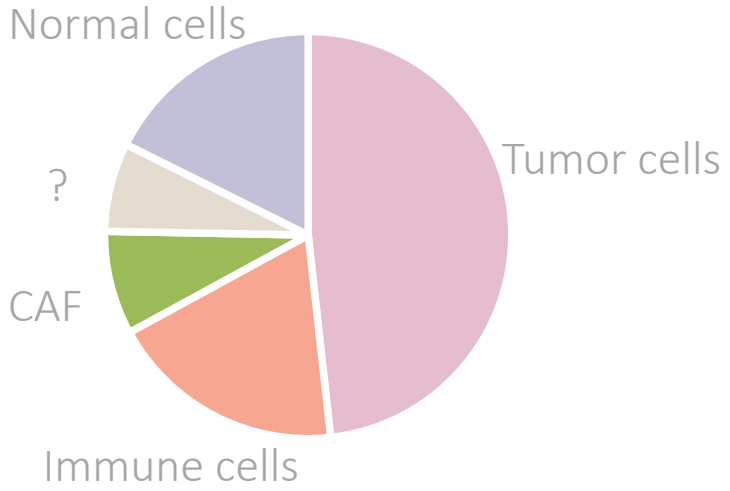
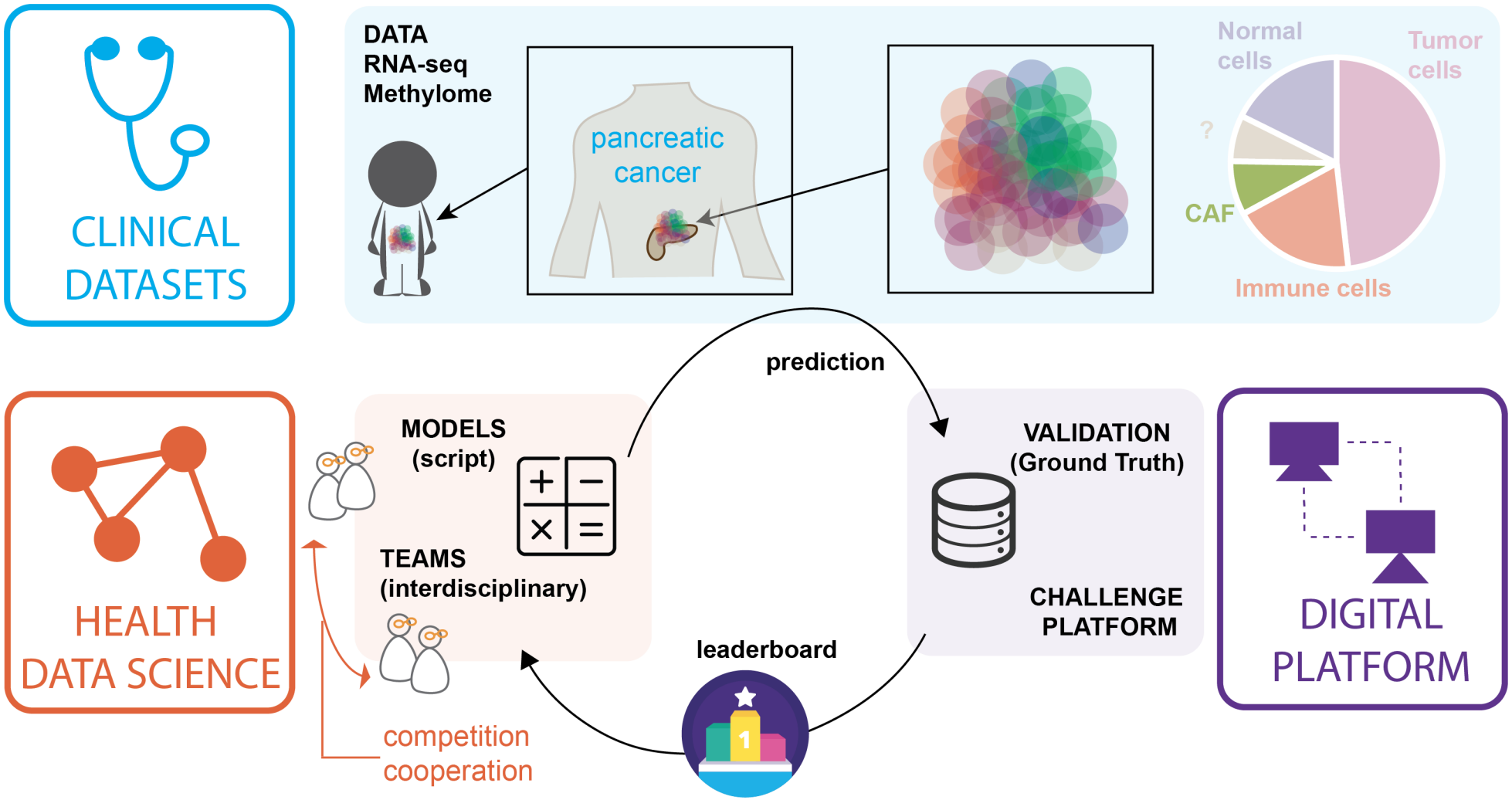
Goal of our data challenge

- **Quantification of tumor heterogeneity**



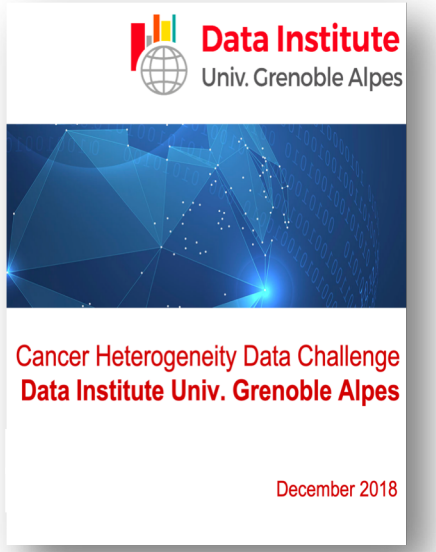


A challenge for scientists



2 editions of the data challenge

1rst edition (2018)



UNIVERSITÉ Grenoble Alpes

eit Health

- Methylation Data
- One cancer type
- Cell lines

2nd edition (2019)

UNIVERSITÉ Grenoble Alpes

eit Health

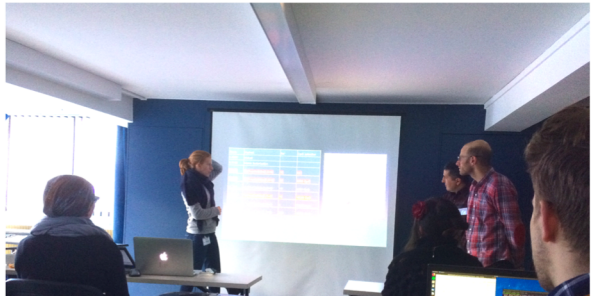
CIT CARTES D'IDENTITÉ DES TUMEURS

LA LIGUE CONTRE LE CANCER

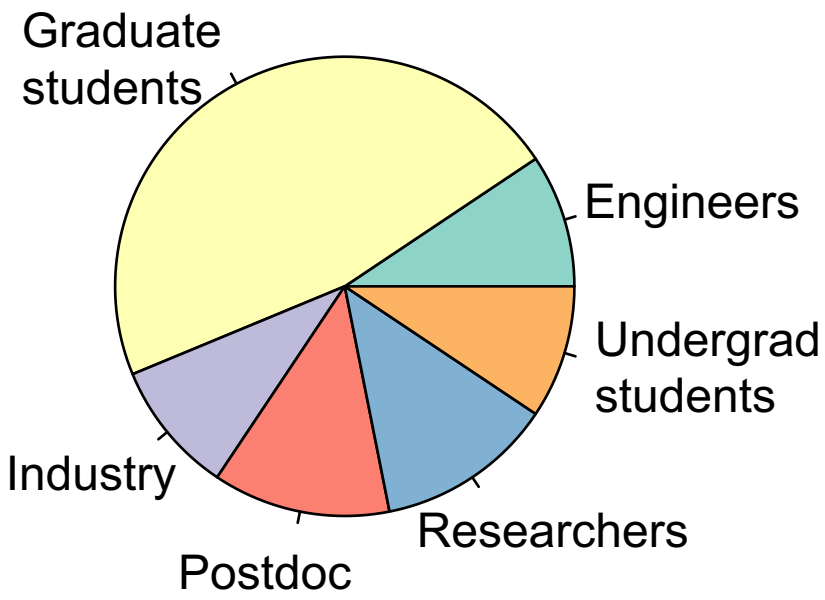
- Methylation and transcriptomic Data
- Several cancer types
- Primary tumors / cell lines

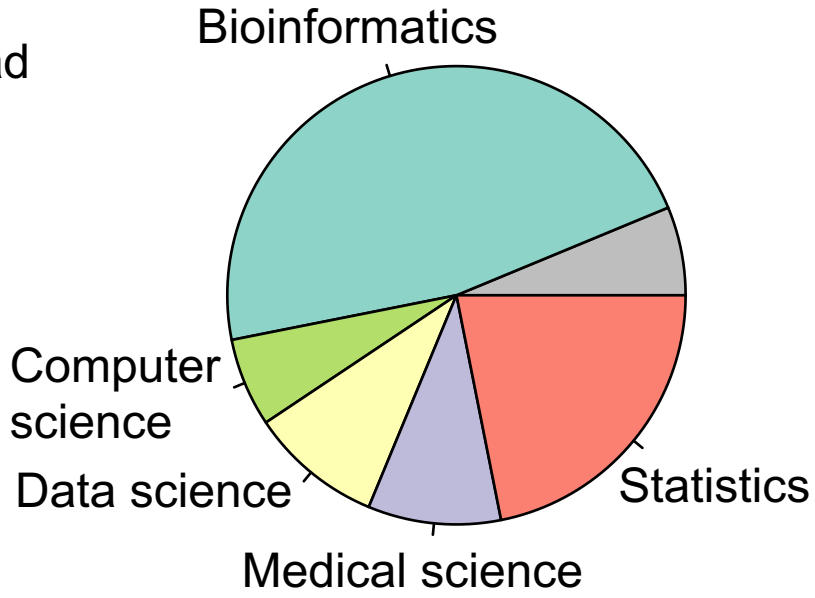
When and where?

- **When**: 25-29 of November 2019
- **Where**: Aussois (CAES CNRS), French Alps

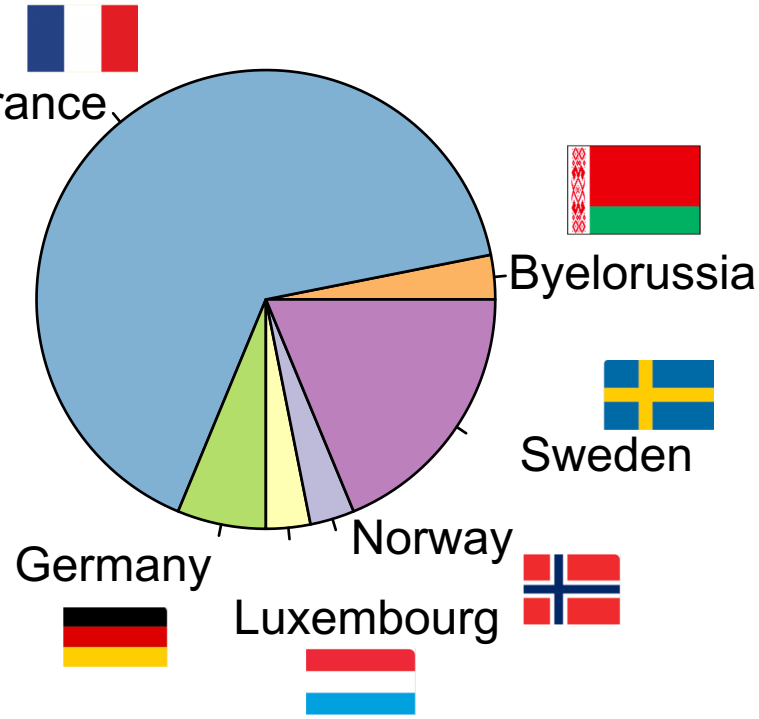


About the participants (n=34)



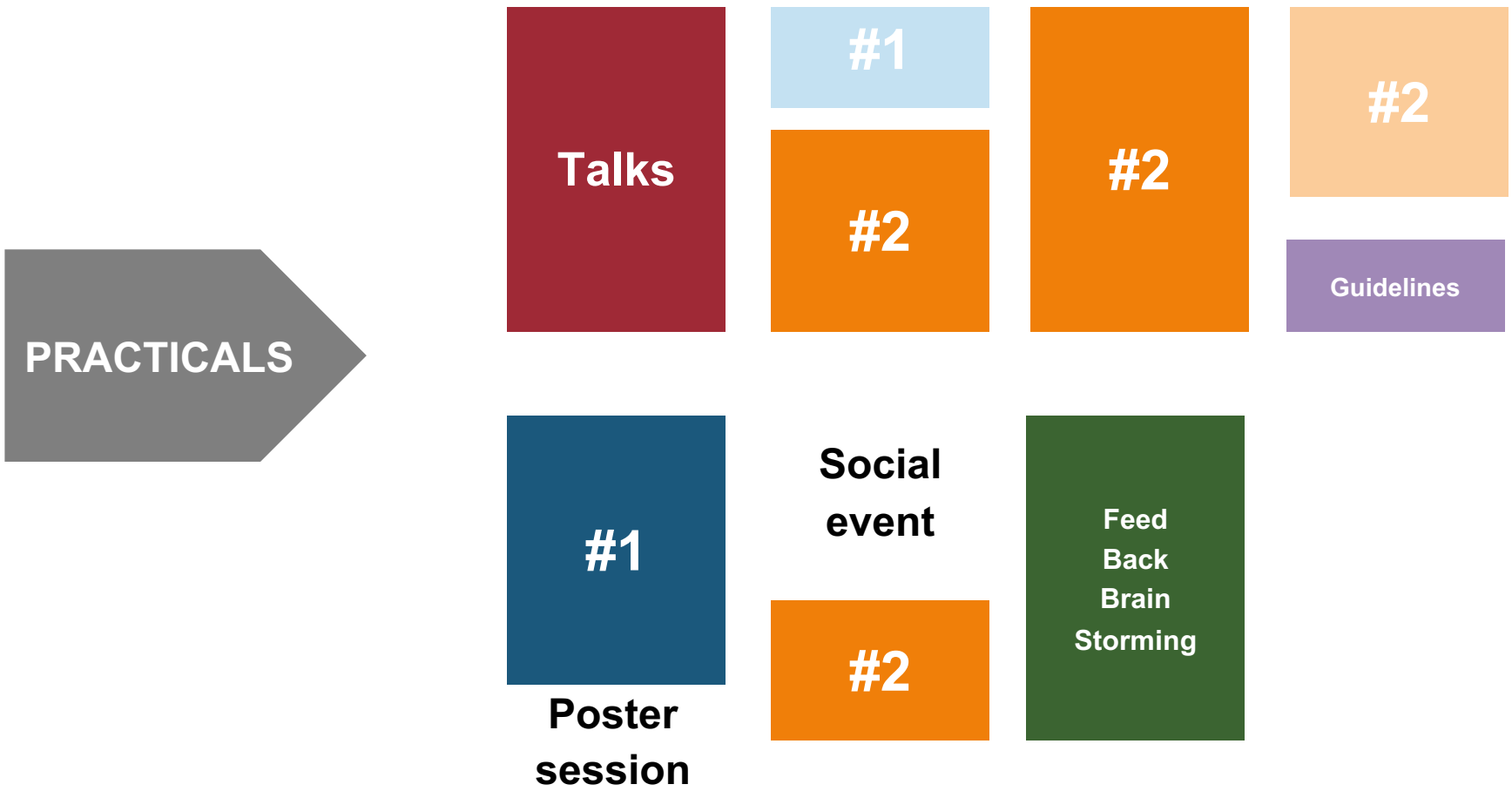


Institut Curie
UGA Grenoble
CRC Cordeliers
INSERM
CEA
Innate Pharma
Verteego
…



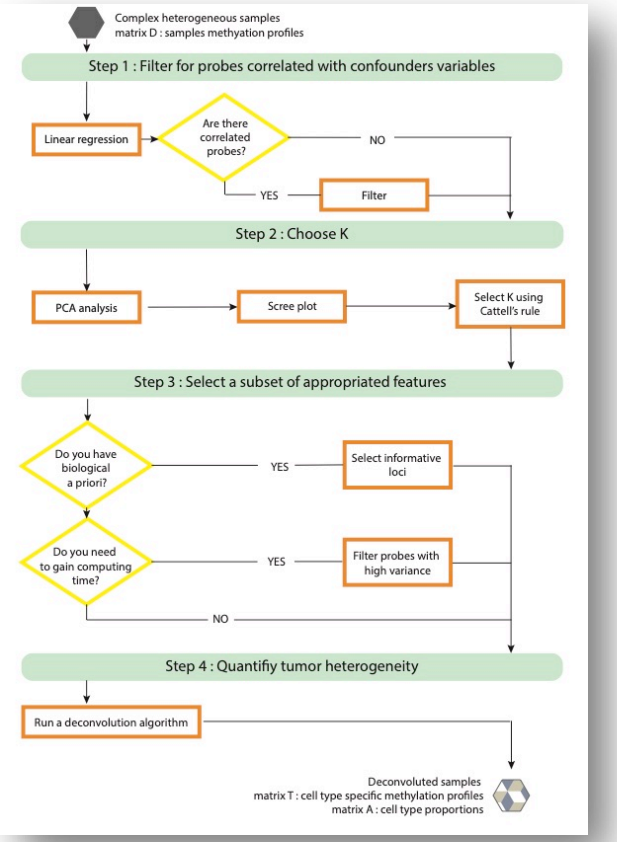
10 teams of 3-4 people

Agenda

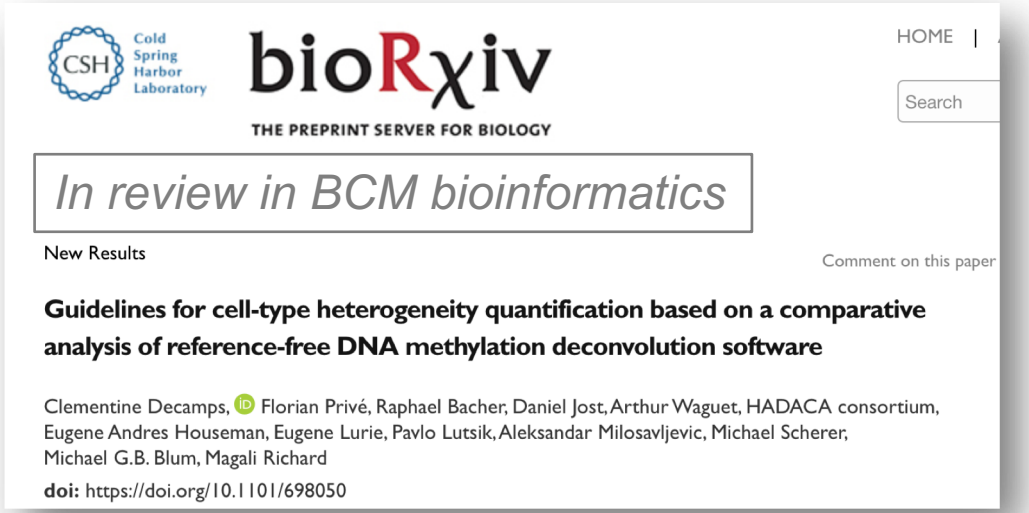

PRACTICALS
Talks
#1
#2
#2
#2
Guidelines
#1
Poster session
Social event
#2
Feed Back Brain Storming

Valorization of the first edition

➢ Guidelines



➢ Article



➢ R package *medepir*

https://rdrr.io/github/bcm-uga/medepir/man/medepir-package.html

M Richard, C Decamps , F Privé, M Blum

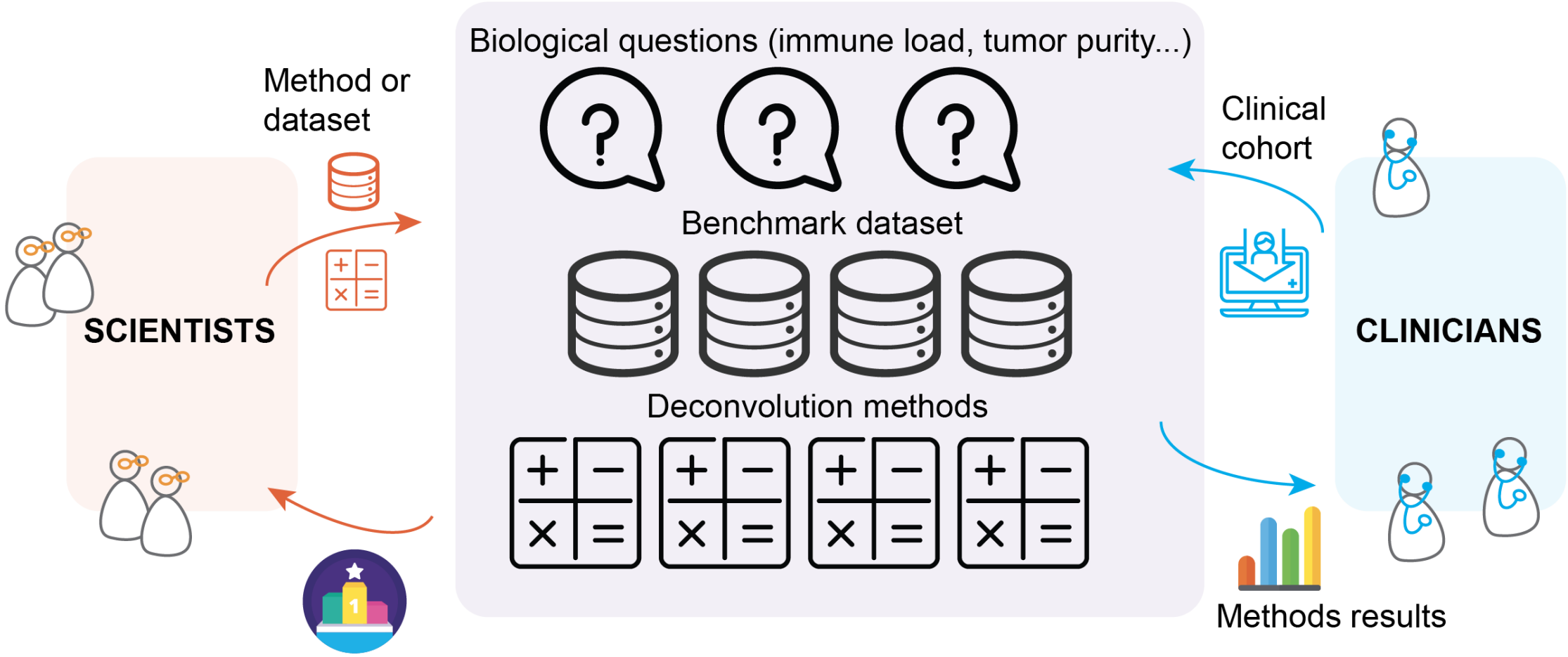
➢ Blog posts

Health data challenges organization: feedback, comments and recommendations.

Authors: Elise Amblard, Yuna Blum, Jane Merlevede, Magali Richard

In preparation

From data challenges to benchmarks



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On line tutorial by Alexis Arnaud

Codalab › Bundle_generation › **Details**

Bundle_generation
Project ID: 5596

Star 0 | Fork 0 | Clone

11 Commits | **1** Branch | **0** Tags | **748 KB** Files

README.md

To create a Codalab competition, you have to generate a zip file with the required files inside and upload the archive on the Codalab platform. The *R* script `Bundle_generator_-_cmd.Rmd` allows you to automatically create a valid bundle by using the *R* terminal to ask you some questions in order to personalize the competition.

Generate a Codalab bundle

In a *R* terminal, run the following command : `rmarkdown::render(input = "Bundle_generator_-_cmd.Rmd", envir = new.env( ) )`

You can also generate a toy bundle, with the parameters by default, with *Rscript* : `Rsript -e 'rmarkdown::render(input = "Bundle_generator_-_cmd.Rmd", envir = new.env( ) )'`

Test the Codalab bundle

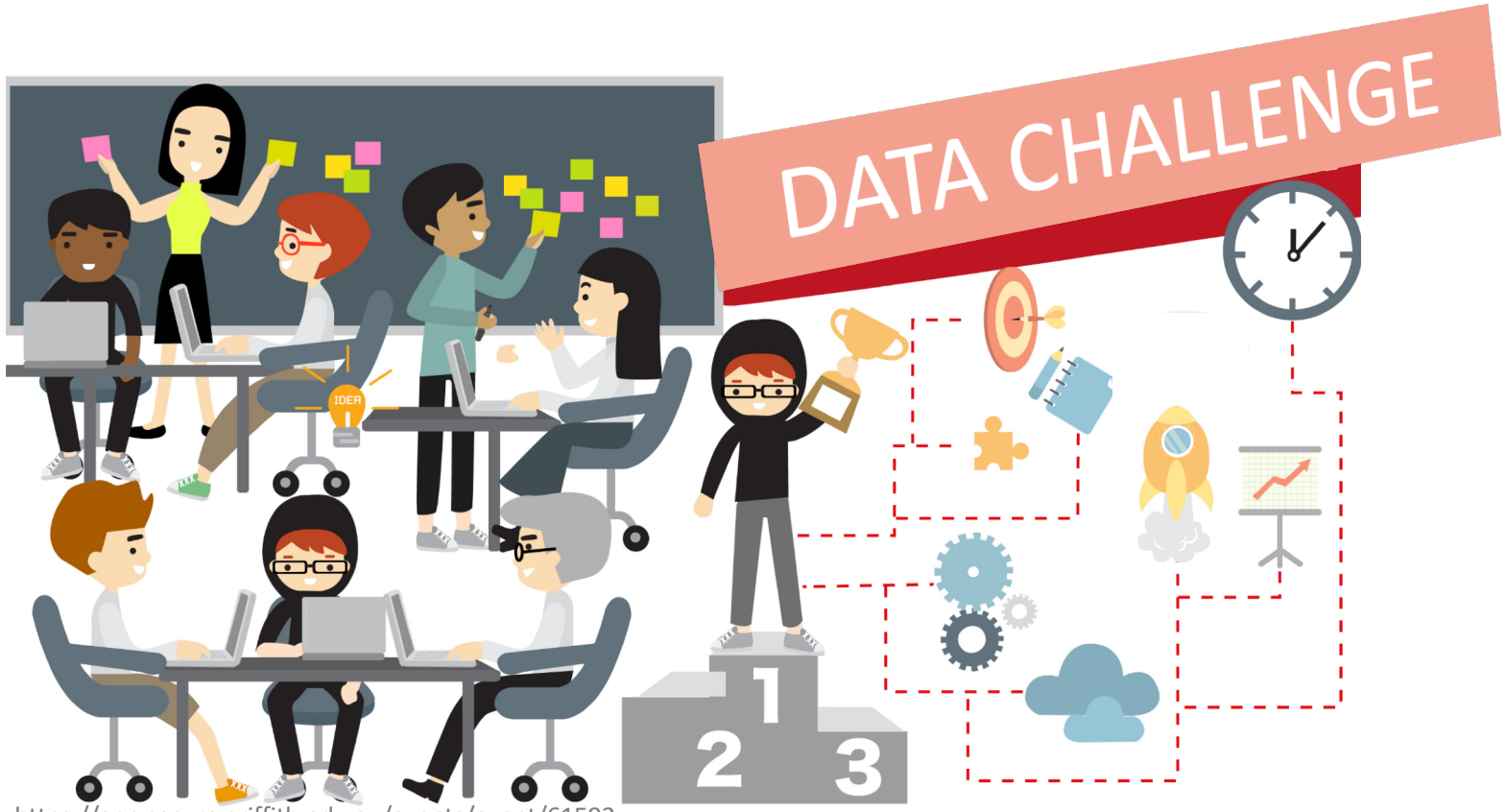
In a *R* terminal, run the following command : `rmarkdown::render(input = "Bundle_test.Rmd", envir = new.env( ) )`

[WIP] Render a web site to previsualize the competition

It gives you the possibility to visualize your competition with a minimalist website which looks like the Codalab platform.
`rmarkdown::render_site(input = "Web_page_generator.Rmd", envir = new.env( ) )`

It’s up to you now!

Thank you for your attention !



https://app.secure.griffith.edu.au/events/event/61593