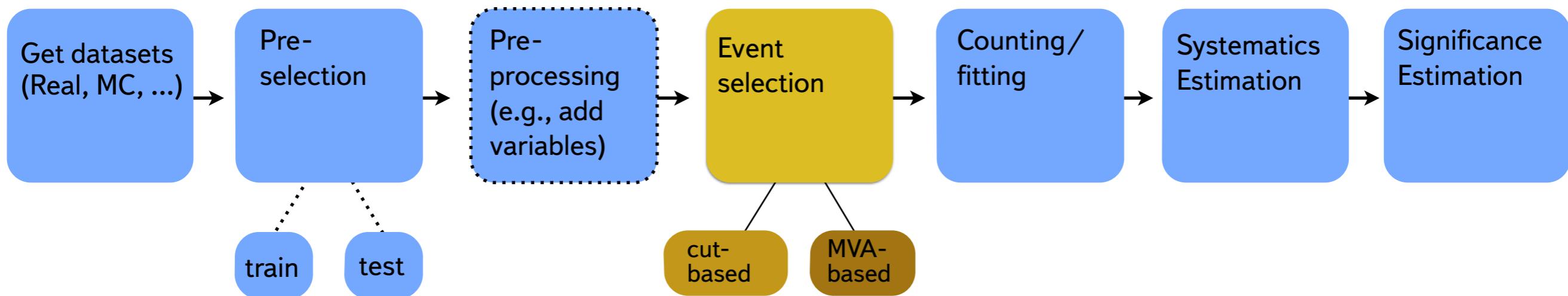# Yandex

Event Filter Tutorial
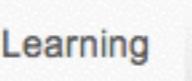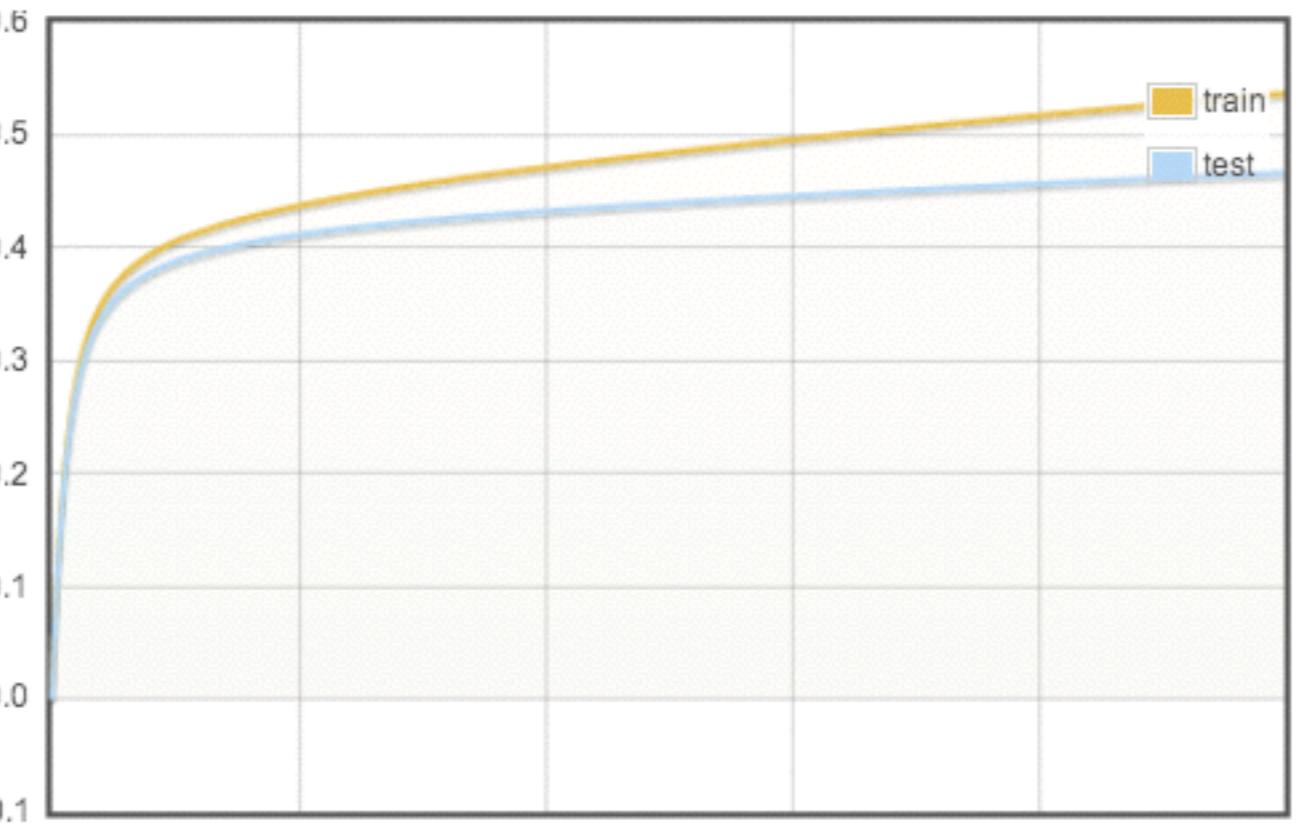
Andrey Ustyuzhanin

April 10 2014

Quest for sensitivity

Analysis Value Chain

Get datasets (Real, MC, ...) → Pre-selection → Pre-processing (e.g., add variables) → Event selection → Counting/fitting → Systematics Estimation → Significance Estimation

Pre-selection: train, test

Event selection: cut-based, MVA-based

Event Filter (https://volhcb16.cern.ch/)

Analysis complexity

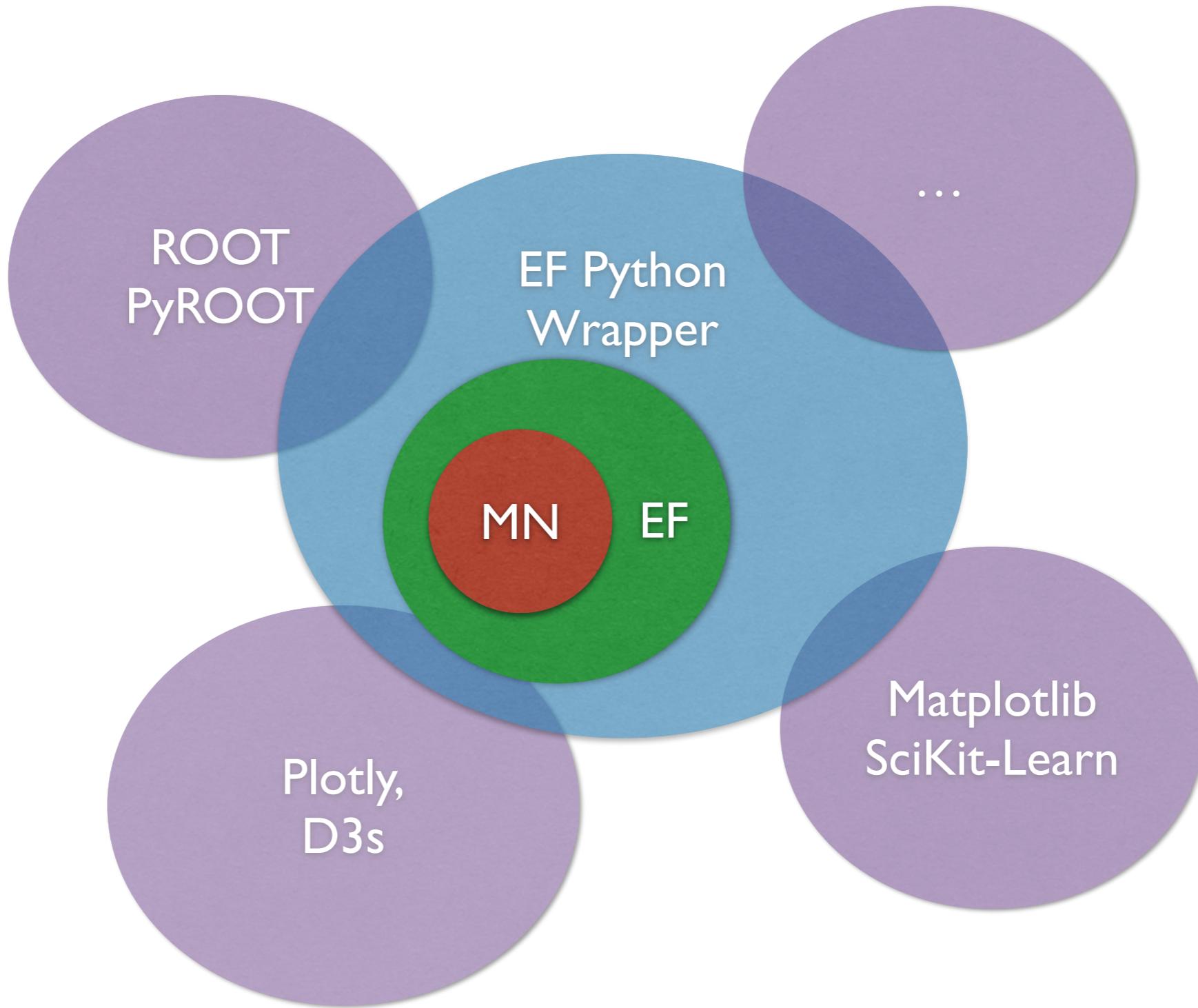Case: $\tau \rightarrow 3\mu$(LHCb)
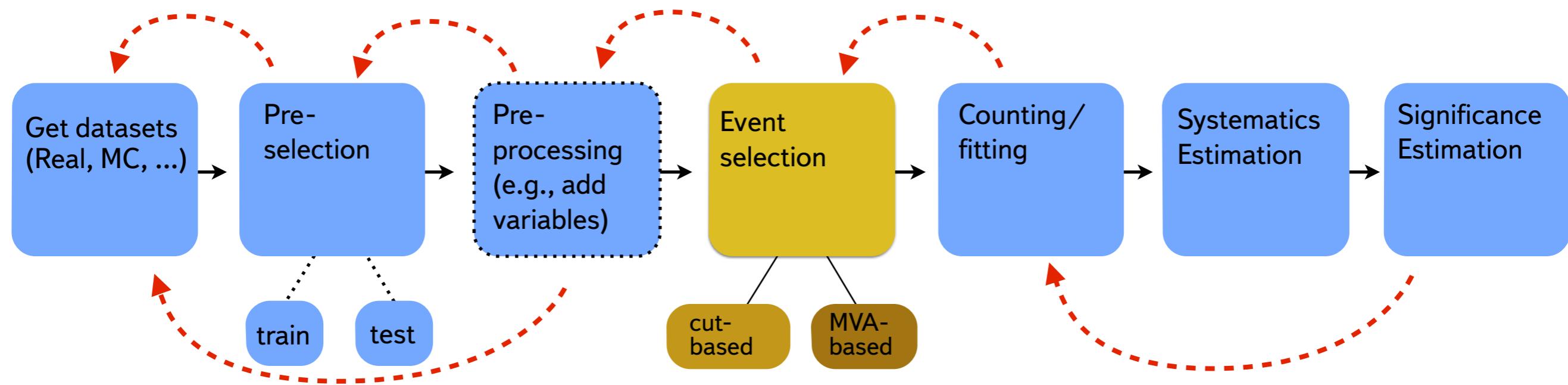
Repeat count: 10^2 10^2 10^3 10^2 10^2 10^2
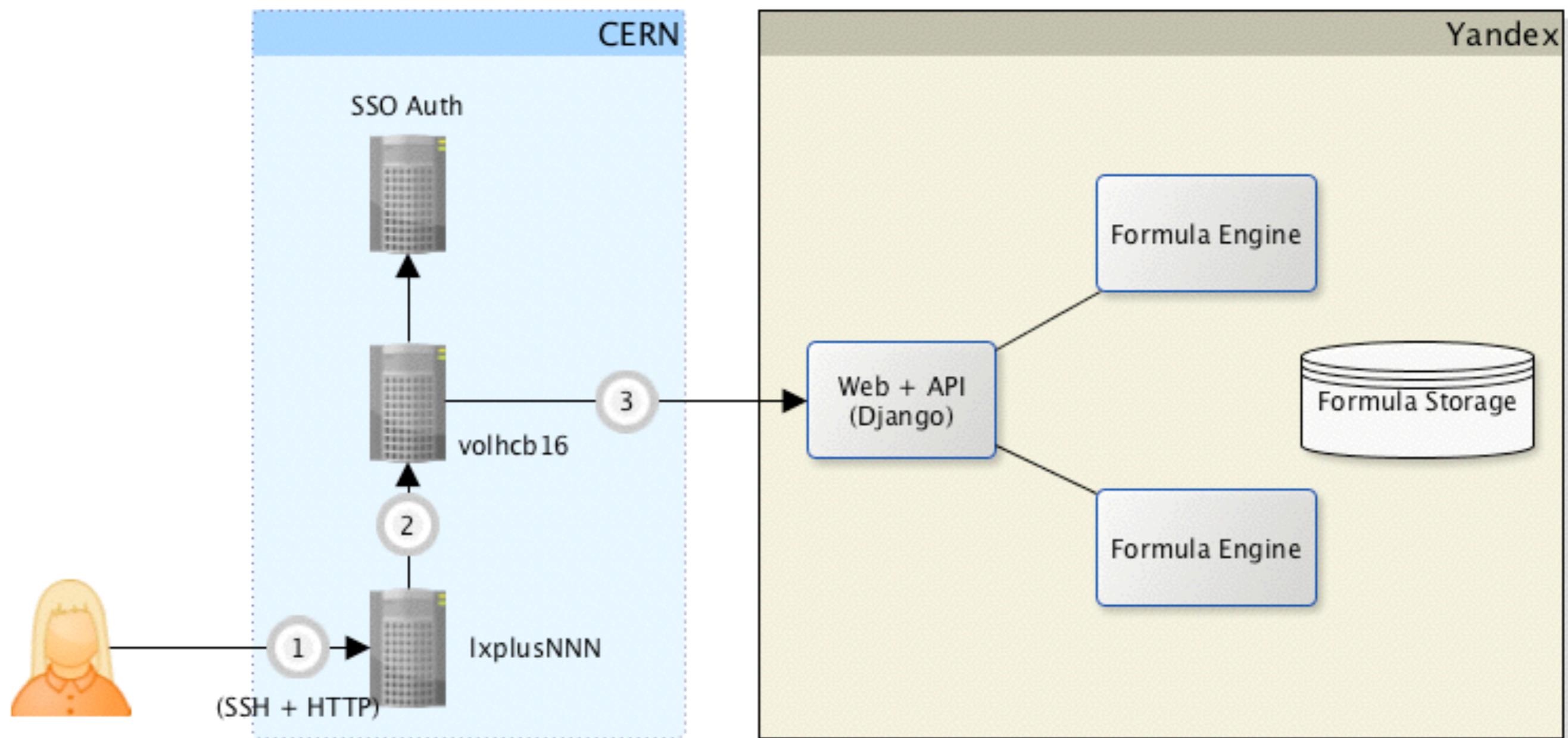
Trained models: ~1500

Requires dedicated framework!

Landscape

EventFilter deploy landscape

EventFilter IPython wrapper howto:
http://bit.ly/1ktUS4e

HowTo setup

- Prerequisites
  - SSH client, lxplus account and webbrowser with internet connection
- Running Event Filter in IPython Notebook
  - login to lxplus with port forwarding:

    ssh -L 8888:localhost:8888 lxplus.cern.ch

  - create environment:

    ```
    git clone https://:@git.cern.ch/kerberos/event_filter_tutorial
    cd event_filter_tutorial
    ```

  - run

    ```
    ./run_filter_tutorial.sh
    ```

  - open URL http://127.0.0.1:8888/ in your browser.
- Inside IPython Notebook Dashboard

  ….

HowTo outline

› Introduction into IPython

› Event Filter

› TMVA

› Model Comparison

› SciKit-Learn classifiers

› uBoost

› other ...

Conclusion

〉 EventFilter development is based on real analysis needs

〉 Prototype for a broader Framework

〉 Open-source, supposed to be fun

〉 Welcome to join! (cases? wrappers?)

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