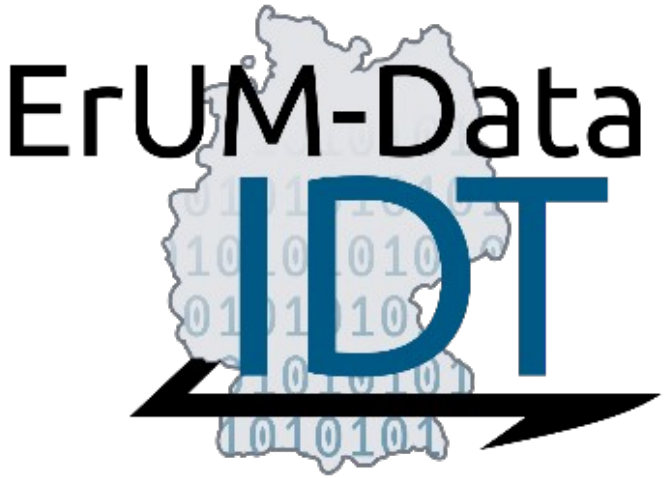
Collaboration Meeting

of the BMBF Verbundprojekt

Innovative Digtale Technologien für die Erforschung von Universum und Materie

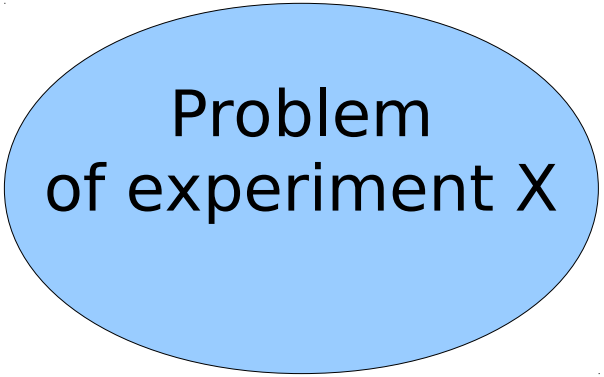


28.03.2019
Aachen

Thomas Kuhr
LMU München

Bundesministerium
für Bildung
und Forschung

What is different in this project?



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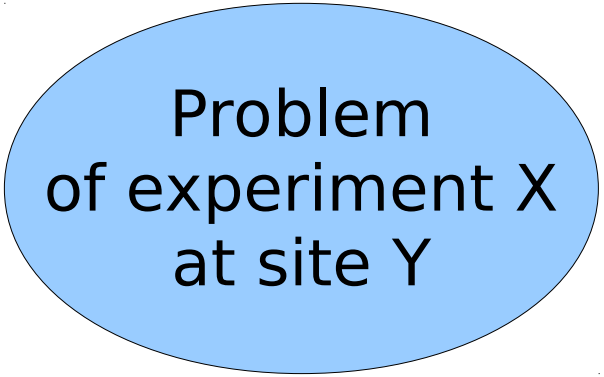
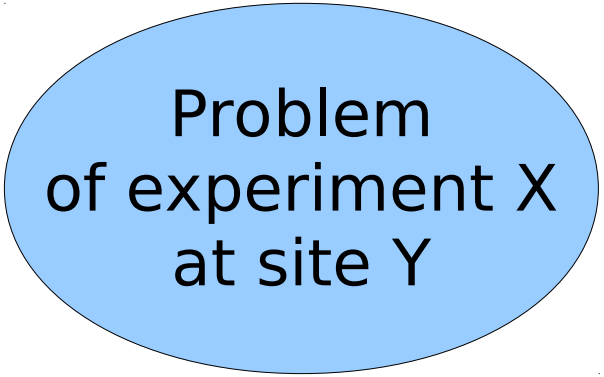


What is different in this project?

Is there already a general solution?
Can we directly use it?
Can we adjust it to solve our problem?



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Is there already a solution for
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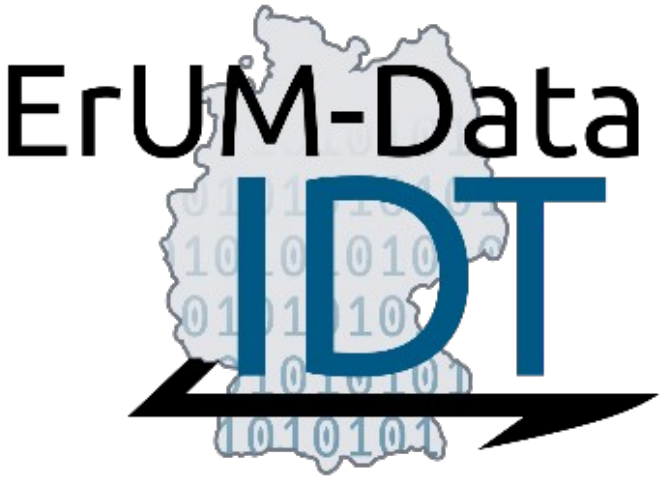
Can we implement a solution that
also solves the problem for
→ experiment X’ / site Y’
→ all experiments / sites in Germany
→ whole international communities

How to disseminate or solutions?

Present them to others

- Among us
- Inside experiments
- At conferences, workshops (→ CHEP)
- Schools
- HSF
- WLCG
- AKPIK
- …

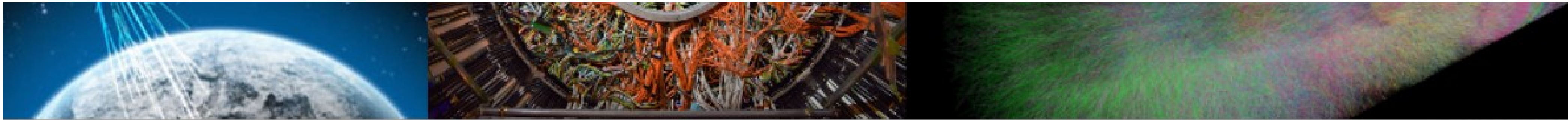


- Easy to find, install, and use
- Good documentation and support
- …

Collaborative Services

Collaborative Services

- Mailing lists
- Chat?
- Indico
- Remote meetings
- Web page
- Code repository
- Issue tracking
- Wiki
- Data repository



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print

Research areas

A: Developments for the provision of technologies for the use of heterogeneous computing resources

Coordinators: Kilian Schwarz, Manuel Giffels

We need more input

B: Application and test of virtualized software components in the environment of heterogeneous computing resources

Coordinator: Christian Zeitnitz

C: Deep Learning, Gain of knowledge by substantiated data-driven methods

Coordinator: Martin Erdman

D: Event reconstruction: Cost- and energy-efficient use of computing resources

Coordniator: Florian Bernlochner

Universität-Hamburg

Information from all partners

Universität Hamburg

University of Hamburg is contributing to research area C with two projects. First, we investigate improved algorithms that combine tracking and calorimeter measurements from LHC detectors with timing information for improved precision, especially in the presence of a large number of simultaneous proton-proton collisions (pile-up). For this we develop neural network architectures that scale well and combine data from different sources. Secondly, we work to gain a clearer understanding of the decision process of deep neural networks in a physics context. Here we combine insight from physical variables with the latent space representation of data inside neural networks. Beyond these topics, the groups at UHH also work on other application of machine learning to particle physics, such as the development of better high-level tagging algorithms as well as model independent searches for new physics.

Criteria

- Required / nice to have features
- Ease of use
- Availability / scalability
- Acceptance / preferences by us / community
- Community specific / general solution
- Documentation / training material
- Learning curve / existing knowledge
- Long term support
- Maintenance effort / cost

Remote Meetings

- SpeakApp
  - Browser based
  - Integration of slides
  - 3€ per hour
- Vidyo
- LRZ Meet (jitsi)
- DFNconf?
- ...

Software Development Tools

In alphabetic order:

- Atlassian Tools (bitbucket, jira, confluence, bamboo) at DESY
- Github
- Gitlab at CERN
- Vispa
- ...