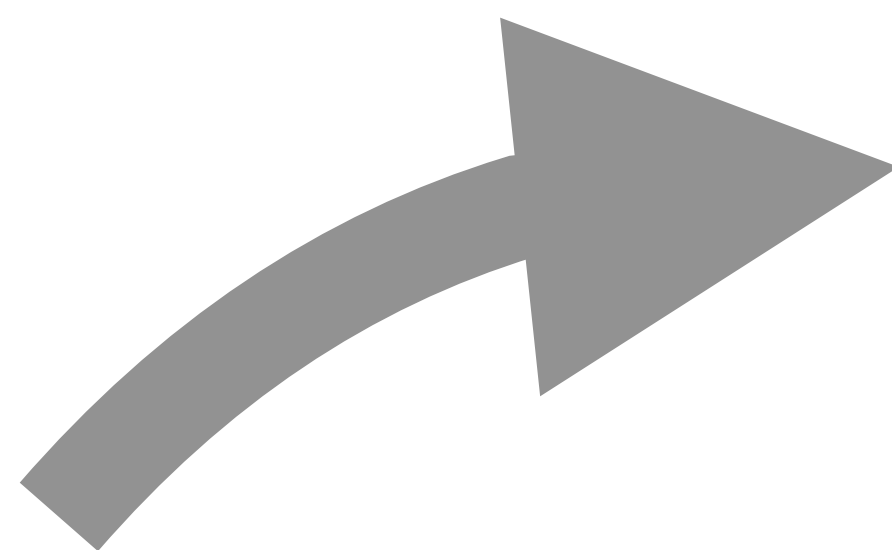# Training and on-boarding in HEP

S. Hageböck, A. Reinsvold Hall, N. Skidmore, G. A. Stewart, G. Benelli, B. Carlson, C. David, J. Davies, W. Deconinck, D. DeMuth, Jr., P. Elmer, R. B. Garg, K. Lieret, **V. Lukashenko**, S. Malik, A. Morris, H. Schellman, J. Veatch, M. Hernandez Villanueva

Based on 2310.07342

newcomer

sees HEP software and jargon

One Eternity Later

spends hours to write a simple command/execute code/etc

sadness and despair
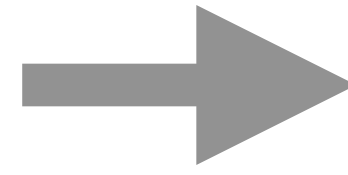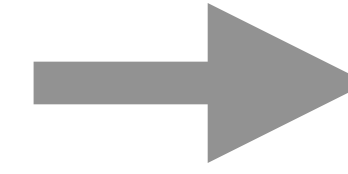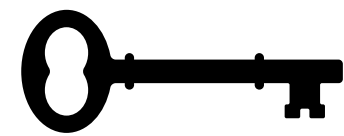
sadness and despair   happy

sadness and despair

Trainings

happy

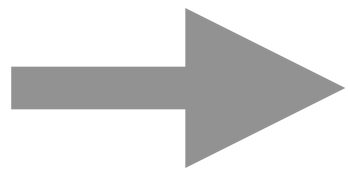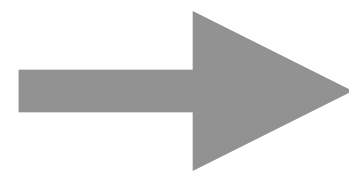What exists? What works? What next?

sadness and despair

Trainings

happy

What exists?

What works?

What next?

2310.07342

What exists?   **What works?**   **What next?**
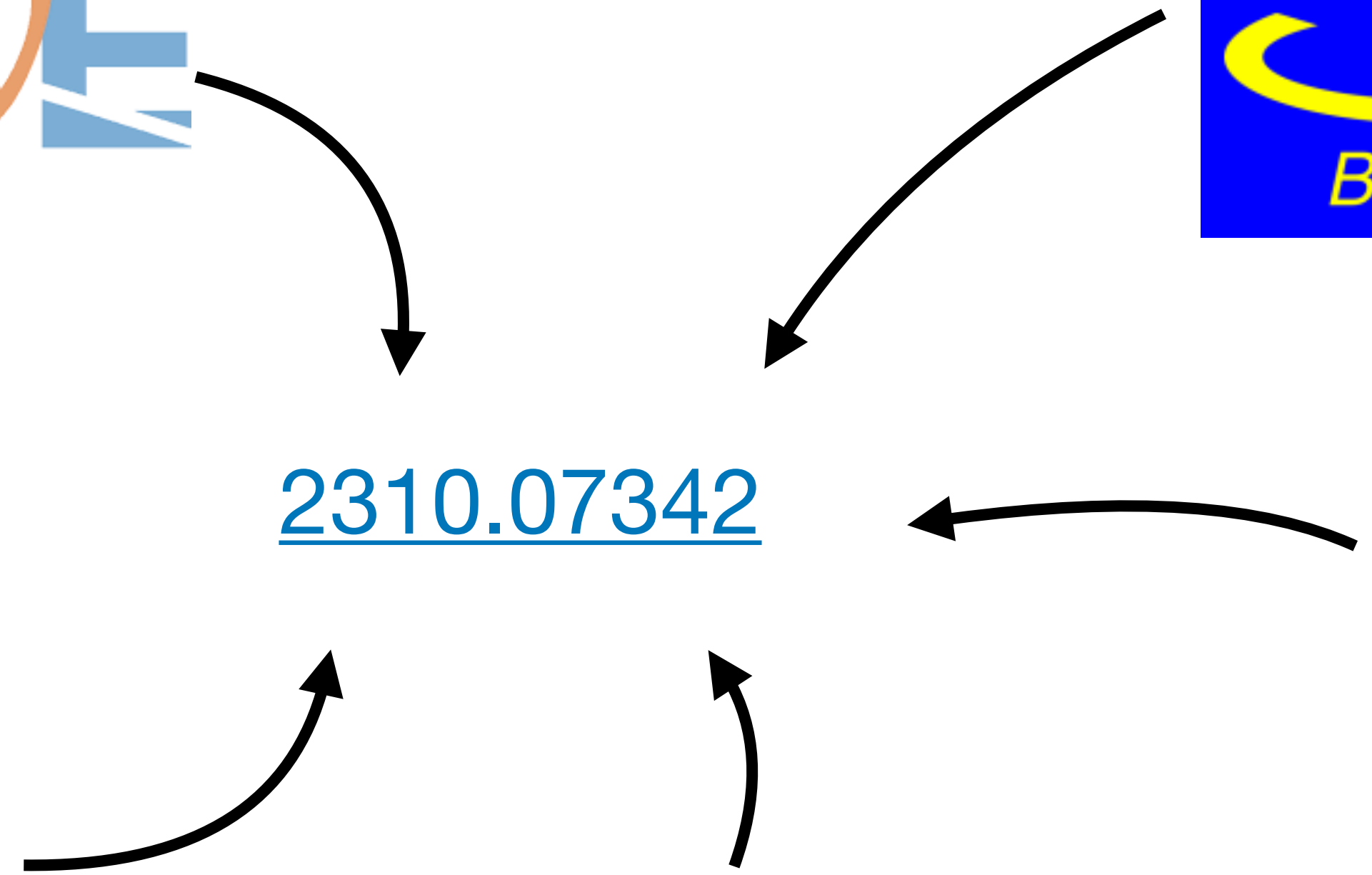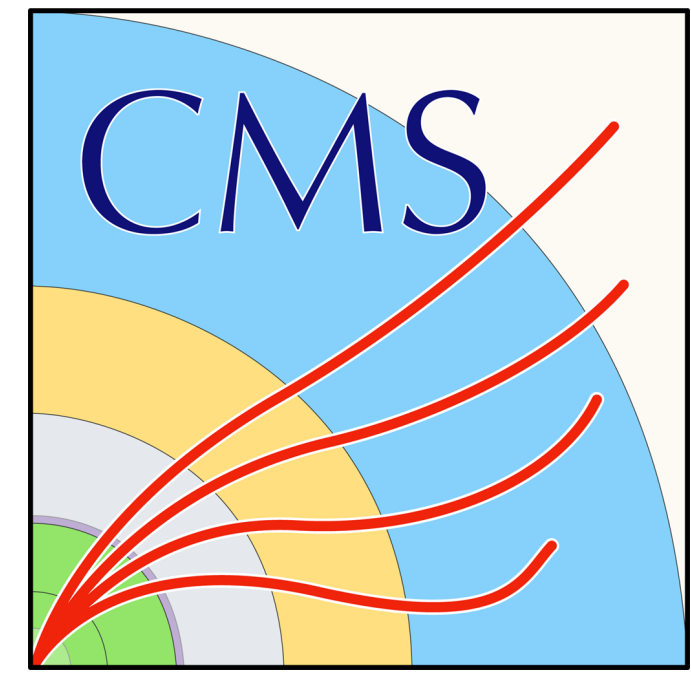
Software trainings: general

Usually includes general tools: bash, git, basics of programming languages

ATLAS Softwaredocs
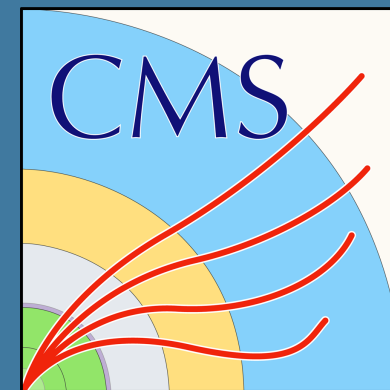
HATS

Training Center

Analysis Essentials

Relies on HSF/IRIS-HEP
+ software carpentry

- Different formats: asynchronous/
web-only/in-person

- Can be part of bigger training, can
be separate

- **Basic trainings should be shared**

- Succes stories: LHCb+ALICE+ShiP

What exists?

What works?

What next?

Software trainings: HEP user specific

Includes anything experiment specific at the user level

Analysis Software Tutorial

CMS Data Analysis School

Starterkit

What exists?

What works?

What next?

Software trainings: HEP user specific

Includes anything experiment specific at the user level
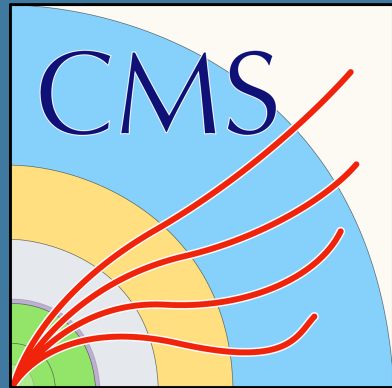

Online Textbooks

Dune Basic Training

3. Beginners' tutorials

This online textbook aims to help new Belle II members to get started with the software by following through a series of hands-on lessons.

ⓘ **We want YOU to contribute to this book! ▼**

💡 **Tip**

Just as there are many versions of the Belle II software, there are many versions of this documentation to match it. After all, if a new feature is added in our software, we also want to have the documentation for it.

basf2 light-2403-persian documentation

Search the docs ...

1. What's New
2. Installation and Setup
3. **Beginners' tutorials**

DUNE Computing Training January 2023

This tutorial will teach you the basics of DUNE Computing. It is split into four parts that you can attend independently (we advise newcomers to follow the whole event though).

Each part will have a little introduction followed by hands-on sessions in breakout rooms. Here mentors will answer your questions and provide technical support.

☀ **Prerequisites**

Command line experience is necessary for this training. We recommend the participants to go through The Unix Shell, if new to the command line (also known as terminal or shell).

By the end of this workshop, participants will know how to:

- Utilize data volumes at FNAL.
- Understand good data management practices.
- Provide a basic overview of art and LArSoft to a new researcher.
- Develop configuration files to control batch jobs.
- Monitor jobs submitted to the grid.

📌 **Getting Started**

First step: follow the directions in the "Setup" to arrived prepared for this event. Follow the instructions; we give you an easy exercise to make sure you are good to go.

You will need a valid FNAL or CERN account to be able to do the tutorial and be on the DUNE Collaboration member list. If you do not, contact your team leader.

Home   Code of Conduct   Setup   Episodes ▾   Extras ▾   License   Improve this page ✏

Search...

What exists?

What works?

What next?

Software trainings: HEP user specific

Includes anything experiment specific at the user level

Similarities:

- 1 week hybrid/in-person event

- Includes introduction to collaboration

- Based on real analysis examples (even if loosely)

Differences:

- Regularity: from annual (LHCb) to 5 times a year (ATLAS)

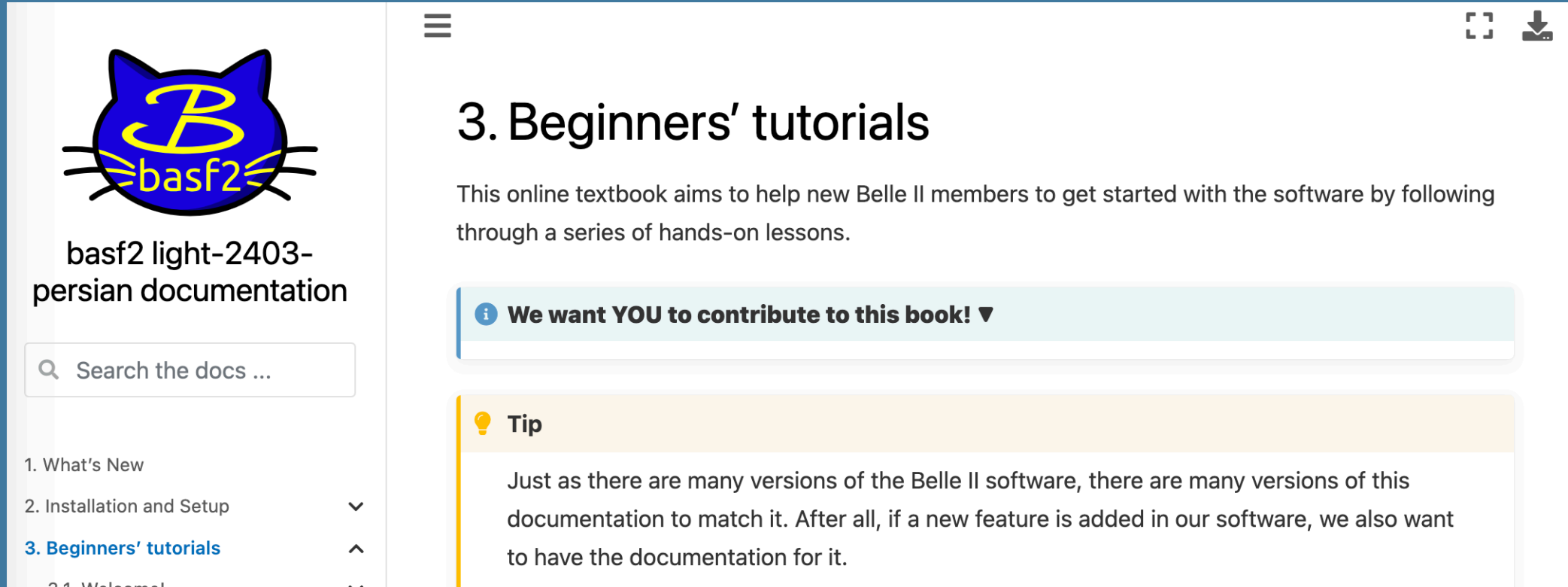- Location: from CERN-only (LHCb) to worldwide

What exists? **What works?** **What next?**

Software trainings: HEP user specific

Includes anything experiment specific at the user level
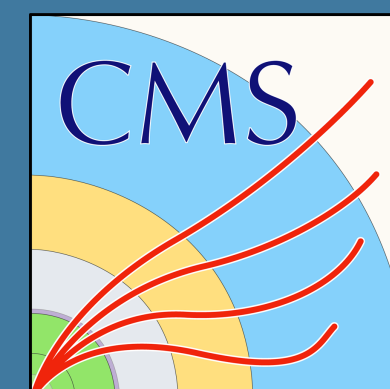

<u>Online Textbooks</u>

- Asynchronous

- An all-in-one solution for documentation and training material

- Units tests and continuous integration of the material

- Future experiment, so users are "promoted" to developers

- 2-3 times a year, various formats

- Keep a live google doc for documenting purposes
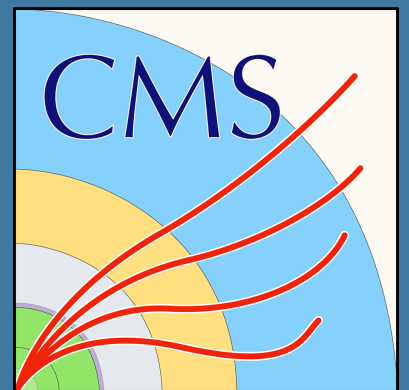
What exists?

What works?

What next?

Software trainings: developer in making

Includes anything that one needs to know to start contributing to HEP software

+

CERN C++ course

Cern School of Computing

and many more
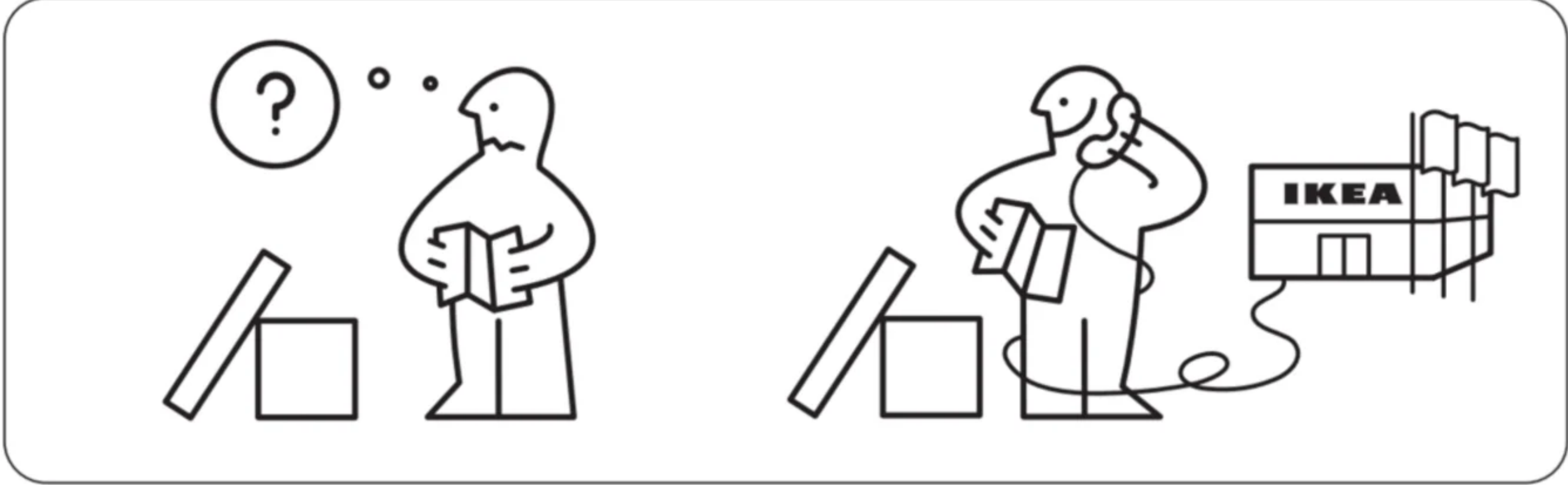
=

What exists? **What works?** **What next?**

Software trainings: developer in making

Includes anything that one needs to know to start contributing to HEP software

- Typically given in a form of advanced or specialised tutorial, like CMS POG School

- Often assume previous knowledge

- **Harder to maintain: require experts to teach and assist**

Furniture

HEP experiment
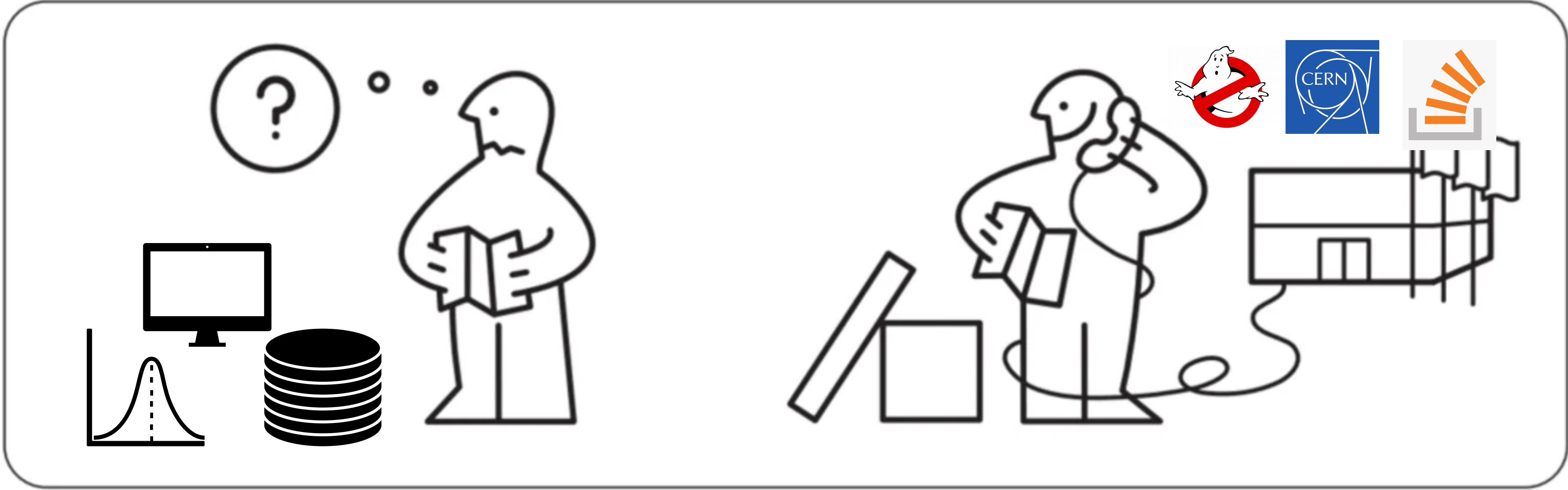
What exists?

What works?

What next?

"Social" training: how to make sure newcomers are not lost

Includes anything that one needs to know to find help/contact right people

How does collaboration work?

Where to find help?

How to ask questions?

What the hell is ODIN?

Who is who?

What exists?

What works?
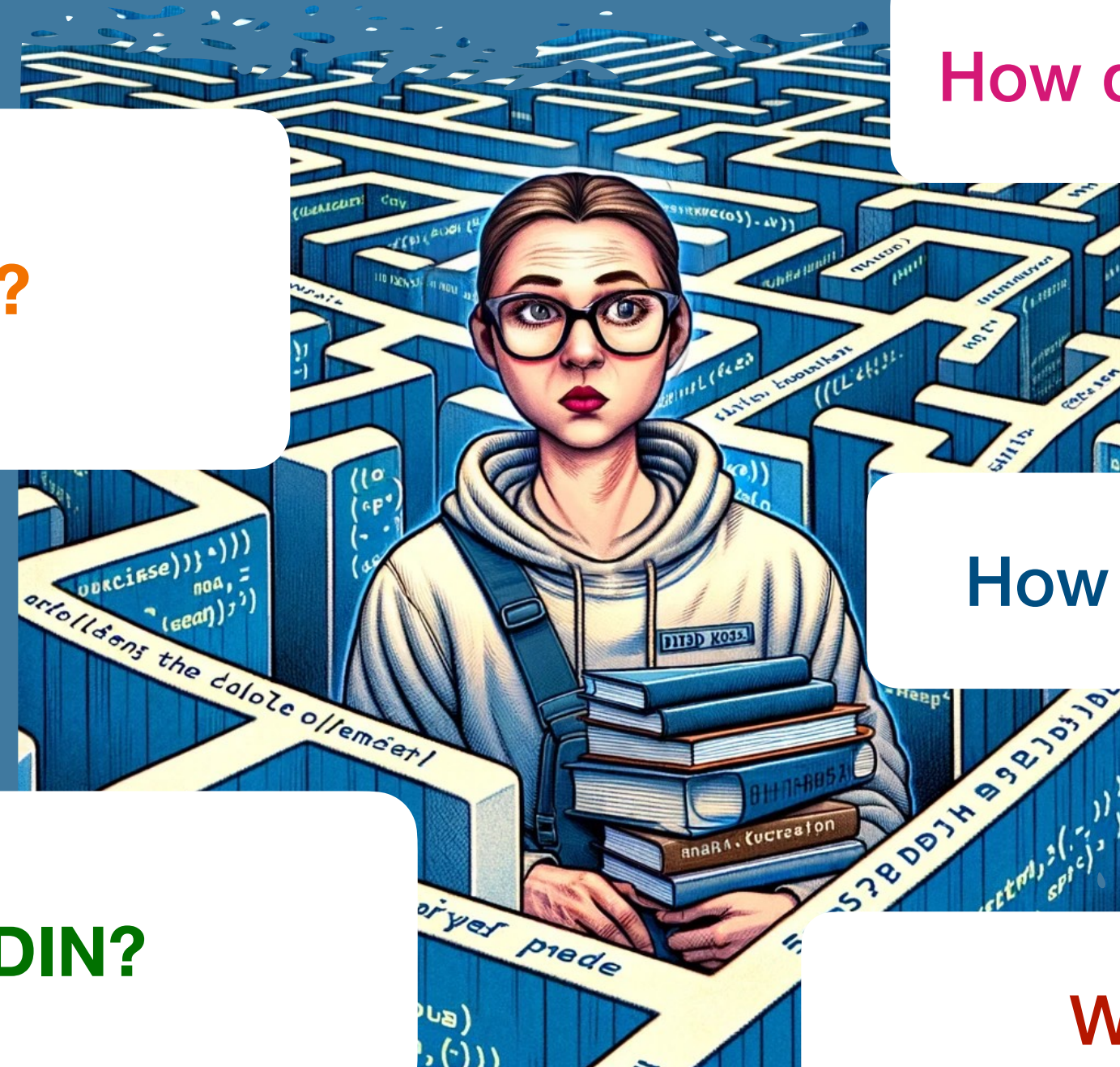
What next?

"Social" training: how to make sure newcomers are not lost

How does collaboration work?

Who is who?

Introductory events:

Spokesperson, PC, Secretariat,

Early Career and Diversity

Where to find help?

What the hell is ODIN?

Slack/Mattermost Channels/

Specialised websites/ mailing lists

Glossary

How to ask questions?

LHCb Starterkit lesson

Templates on websites
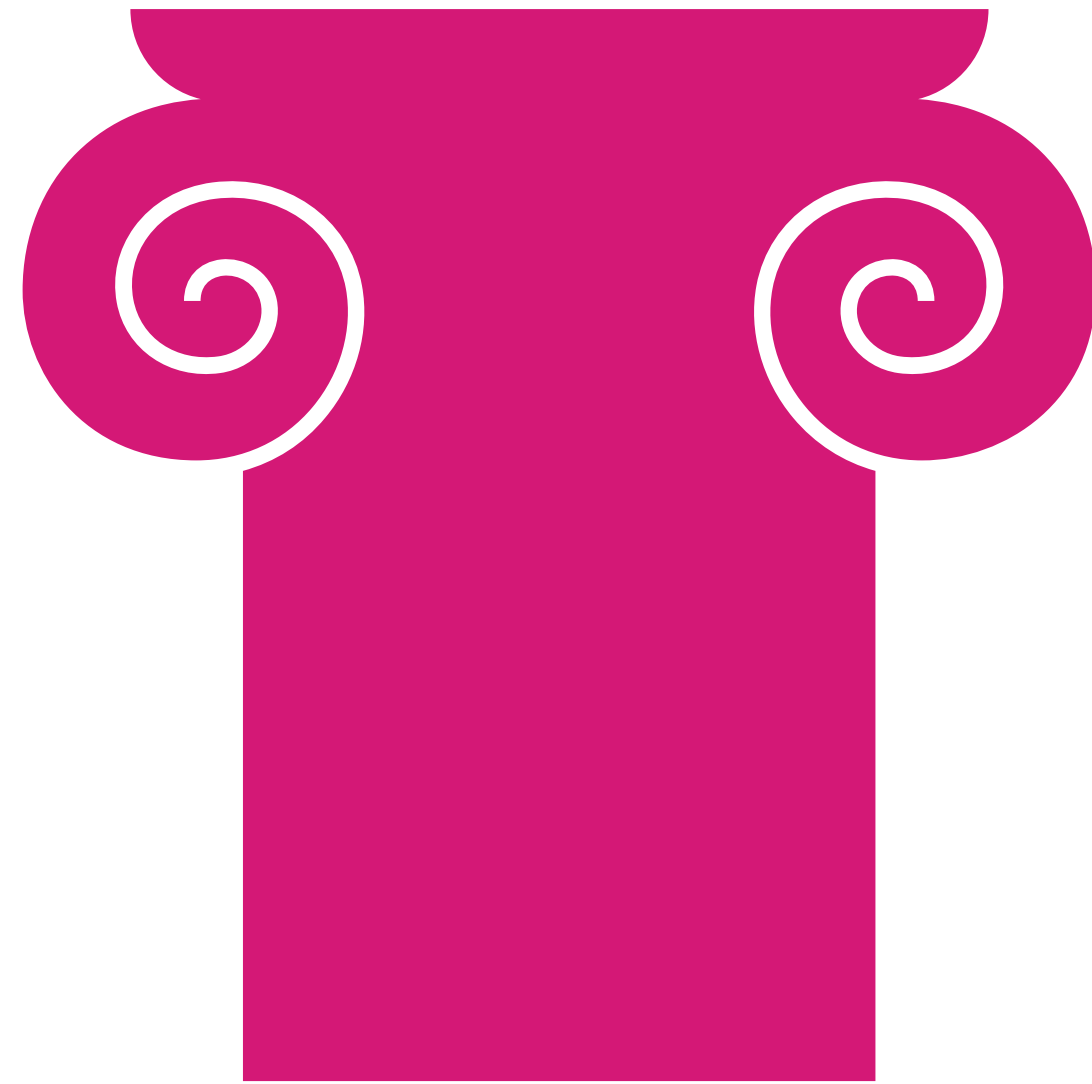
Well covered

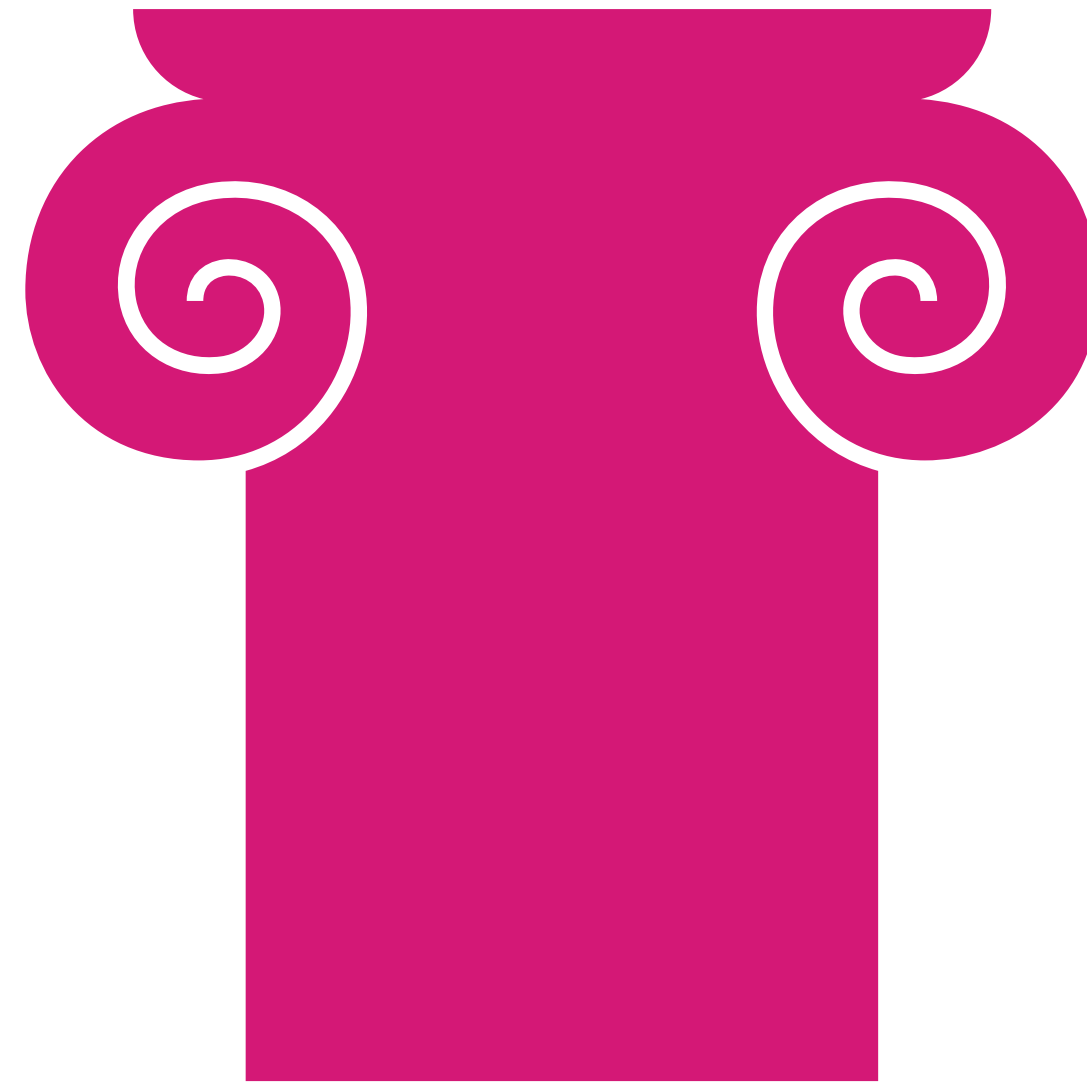**Less covered**

What works?

Three pillars

Successful training

Teaching techniques+ participant positive experience

Maintanance Development
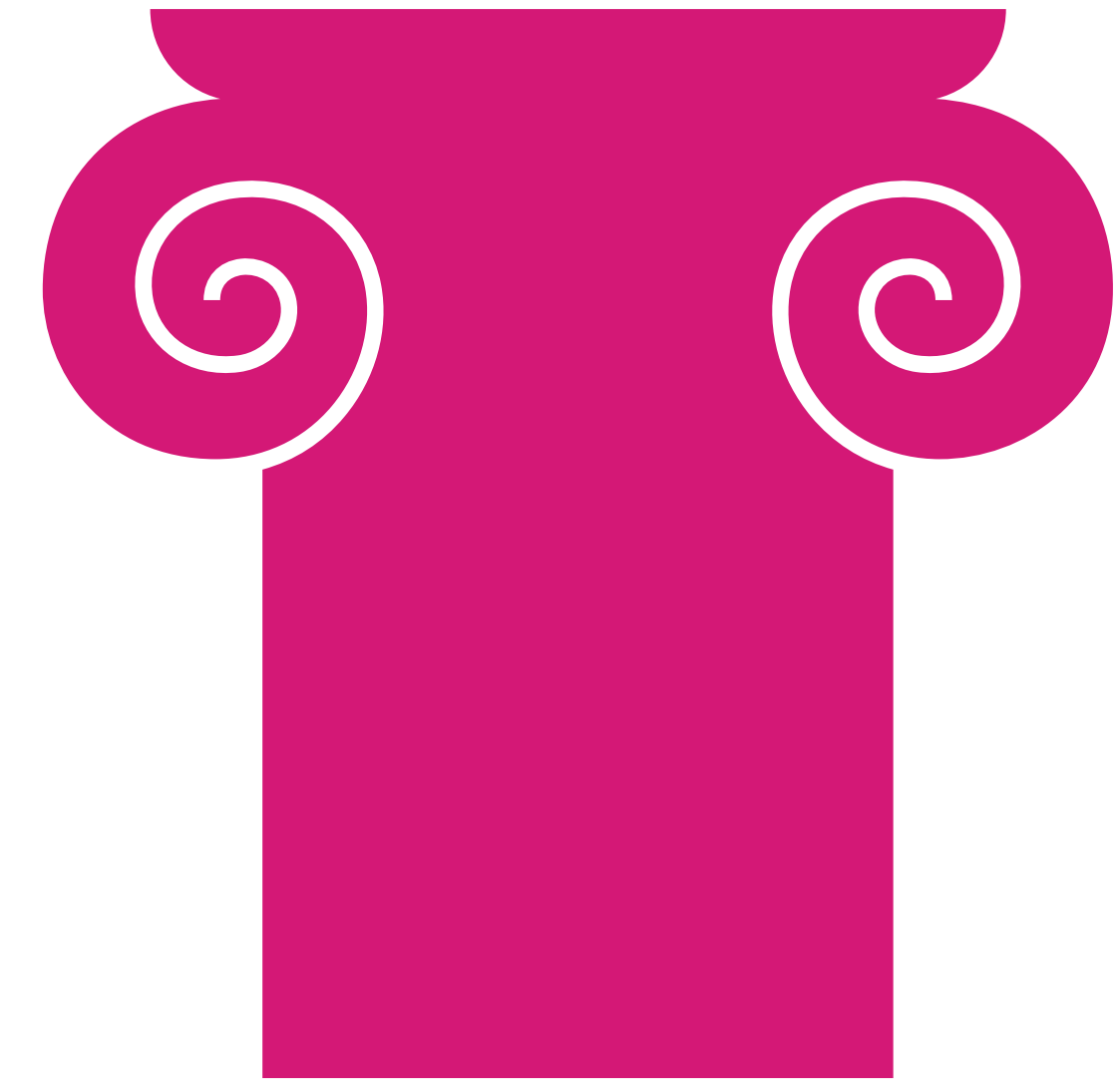
Community Involvement

Teaching techniques and participant experience

Glossary

Dune ABC

Real examples

LQ analysis ATLAS

Newbies support channels

"starterkit" mattermost channel LHCb

Networking!

Split participants in teams
Meet "big bosses"

Interactive!

Teams CMS/ATLAS
Quizes

It should be fun and low-threshold

Peer-to-peer approach
Avoid jargon

Feedback

Survey pre- and post-training
CMS pre-exercises

Accessibility

Asynchronous training Bell II
Availability of materials after training

■ Choice of material

■ Choice of training form   ■ Teaching   ■ Feedback

Maintenance and Development

1. Regularity: someone checks commands every X months

2. Training vs documentation: training modules might replace documentation (not necessary good)

3. Automatic updates: Belle II implemented unit test and CI of training triggered by software release

4. Unification: joining forces helps : LHCb + ShiP + ALICE

4. Modularity: independent lessons are easier to maintain

5. Author recognition: both within and outside collaboration

What exists?

What works?

What next?

Community involvement

CMS DAS

First LHCb Starterkit

HSF trainings

Community involvement

- Predominantly volunteer based
- 3R:
  Recognition, Recognition and again Recognition
  for everyone involved!
- Efficiency matters: the less people needed
  the easier is to maintain
- **Self-motivating** community

This is me

LHCb Starterkit 2019

What next?

What exists?

What works?

What next?

Challenges

Person power & recognition

Maintenance

Networking + Accessibility

Recommendations for the future experiment

1. Be accessible : remote or self-study

2. Help newcomers to network

3. Introduce your collaboration

4. Have pre-workshop checklist with setup

5. Be humble and have participants fill in post-survey to improve

6. Adopt active learning

8. Have enough instructors

9. Update material all year round

10. Reward and motivate others

11. Seniors should participate too

12. Use available trainings where possible

13. Modularize material

14. Give participants support channels for after-event

Take home messages ✉

- **Training is crucial** for the sustainable field

- Both **teaching and learning should be fun** and in the low-threshold environment

- 3R: **Recognition, Recognition and again Recognition**

- **Many trainings are already there** - no need to reinvent the wheel!

wants to collect trainings in one point of entry

New HSF Training Center

HSF Training Center

Training and educational material for

CALL

New HSF Training Center

Please contact us if you have a training that would be beneficial to the community.

Any format goes: slides, Jupyter notebooks, GitHub books, sphinx etc.

We provide support to convert whatever you have into the sustainable training available through training centre to anyone! + you get field-wide recognition

HEP Software Foundation

HSF Training WG

Contribute

Public meetings every Monday at 16:00 CET

indico

Alexander Moreno Briceño

Holly Szumila-Vance

Jim Pivarski

Lera Lukashenko