

# The LHCb Starterkit

High-energy physics software training  
for the 21st century

ICHEP 2016, August 6

Lennaert Bel  
On behalf of the LHCb Collaboration





# HEP a century ago





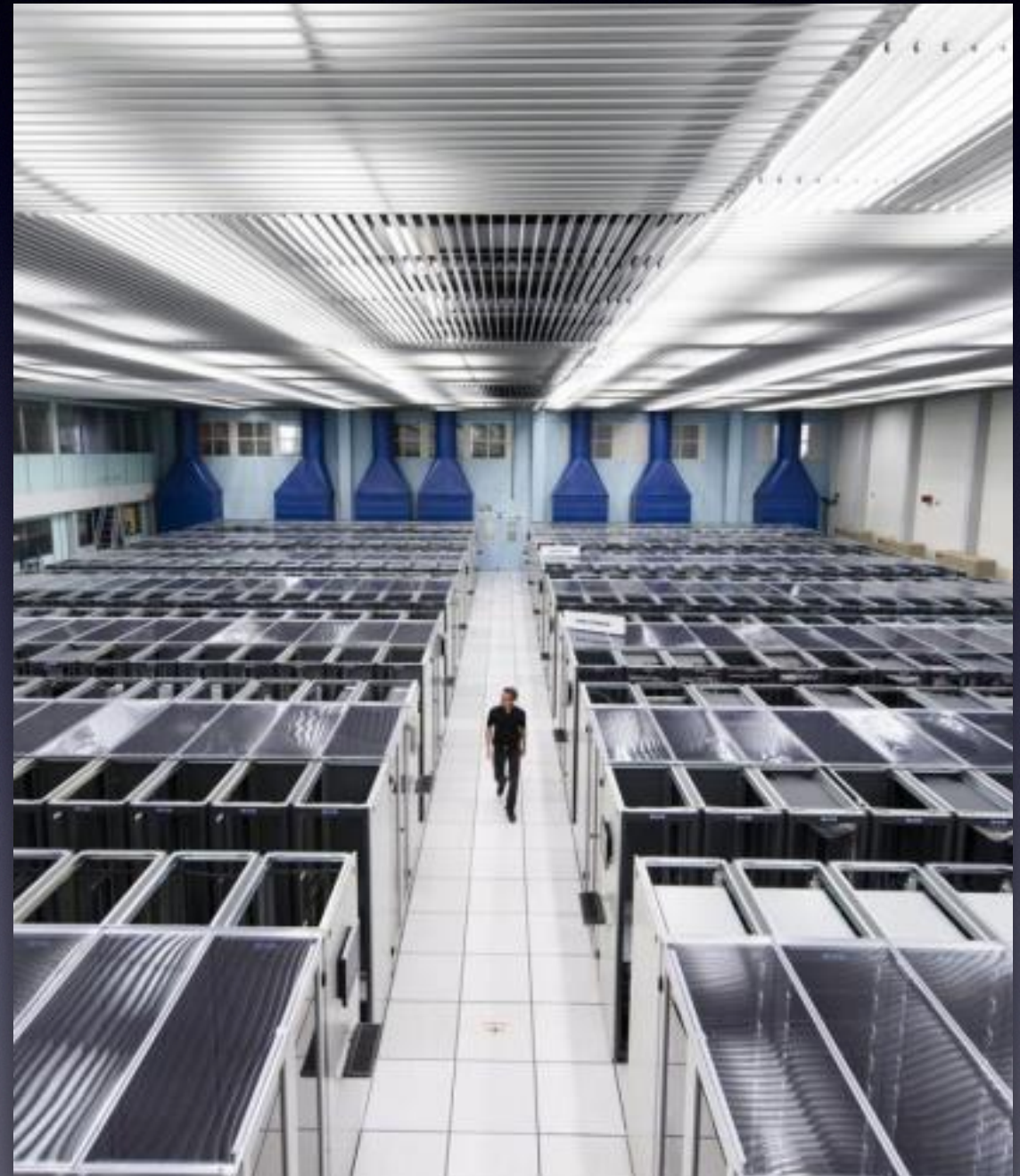
# HEP today





# HEP today

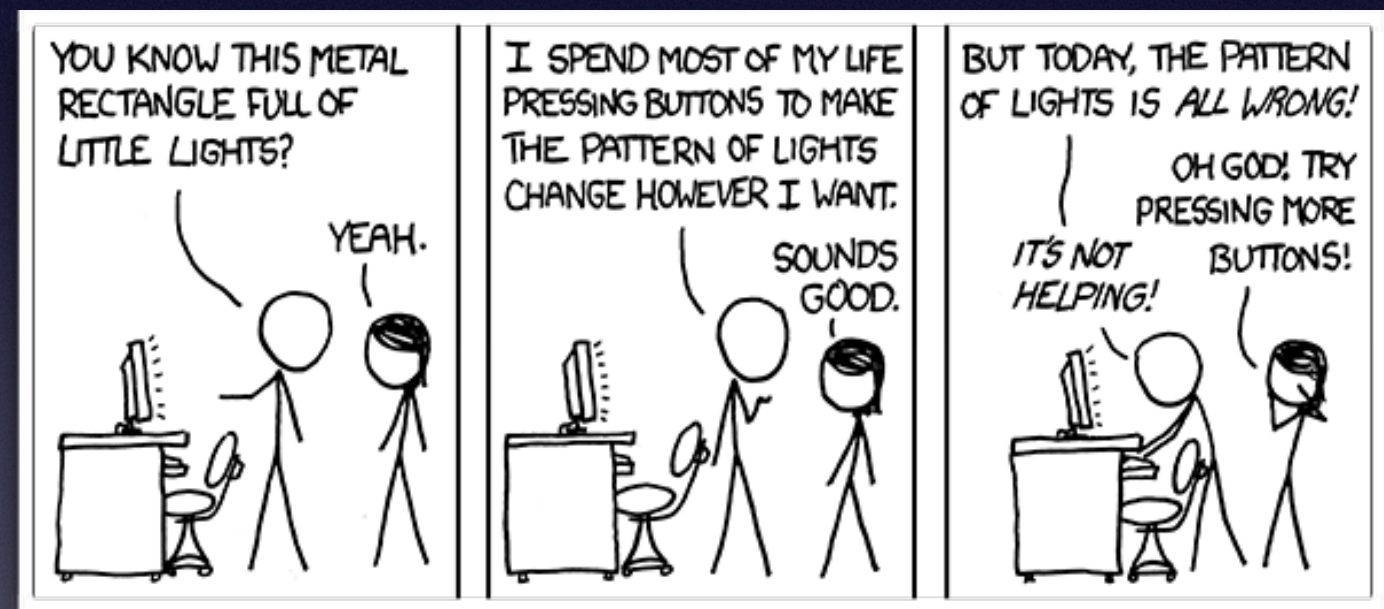
- **Big Data**
  - $O(100 \text{ PB})$
- Massive amounts of **computing power**
- Massive amounts of **software**
  - Immense software **complexity**





# The issue

- We're trained to be **physicists**
- We're asked to do **programming**
- We need **training**

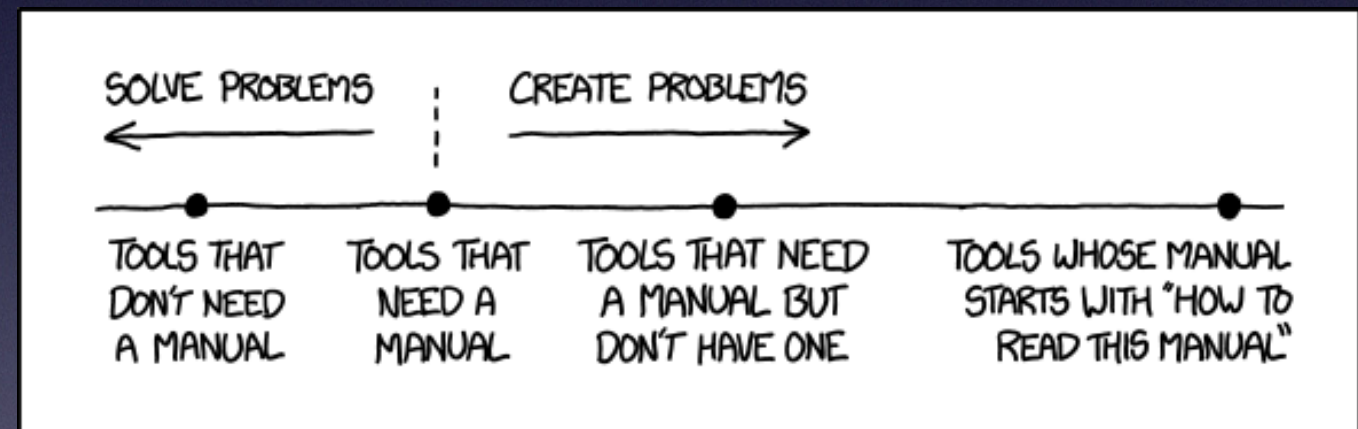


Source: [xkcd.com/722](http://xkcd.com/722)



# The issue

- Current situation
  - Broken **tutorials**
  - Outdated/incomplete **documentation**
- **Hours** are wasted
- **Experts** repeating answers to **trivial** questions



Source: [xkcd.com/1343](http://xkcd.com/1343)



# The solution

- The **Starterkit** team provides...
  - Online **tutorials**
  - Interactive **workshops**
- Goals
  - Improve software **literacy**
  - Teach **good practices**
  - **Socialisation** amongst collaboration members






# The tutorials


- Freely **accessible**  
GitHub-hosted **webpages**
- **Easy** to follow
- Regularly **updated**,  
**collaboratively**
- Inspired by well-established  
**Software Carpentry**:  
[software-carpentry.org](https://software-carpentry.org)

## LHCb Starterkit




Starterkit is a group of physicists who want to improve the working lives of young researchers working on the LHCb experiment.

We create and organise workshops that cover topics ranging from basic programming skills, such as using Bash and Python, up to in-depth explorations of the LHCb software.



### Always feeling stuck?

The goal of Starterkit is to demystify the LHCb software. If you've ever felt like you're not sure why you're writing the code you're writing, or not sure what code you even need to write, we can help you.



### From the bottom up

We start from the very basics, each lesson building on the last. Once you understand the details and how things fit together, you have the power to learn more on your own.



# The Starterkit

- General **tools**, basics of **LHCb software**
- **Interactive, hands-on** approach
- **40** participants
  - Out of **~80** new students each year
  - Targeted at **new** collaboration **members**
- **4** days
- **12** instructors





# The Impactkit

- **Focused** training
- Covers typical **use cases**
- **20** participants
- **3** days
- Concluded with a **hackathon**





# The workshops

- Social aspect: **networking**





# The organisation

- Organised mostly by and for **PhD students**
  - **Non-permanent** staff, requires good **knowledge transfer**
- Held at **CERN**, using existing **infrastructure**
- Typically **once a year**
- No **collaboration expenses**





# Conclusion

- Starterkit initiative huge **success**
- Participant feedback overwhelmingly **positive**
- Material freely **available**:  
[lhcb.github.io/starterkit/](https://lhcb.github.io/starterkit/)
- Get **in touch**!  
[lhcb.starterkit@cern.ch](mailto:lhcb.starterkit@cern.ch)

