

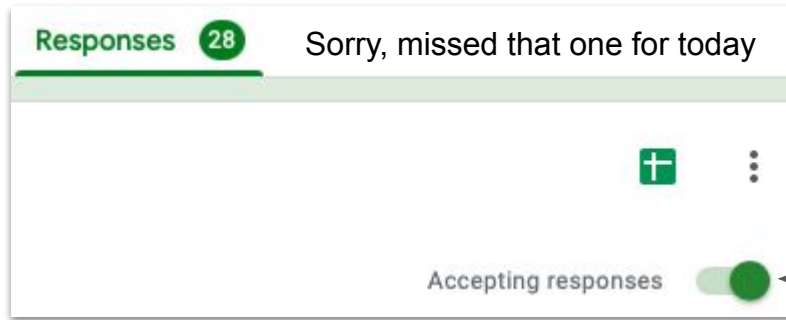
# HSF Survey Feedback

D vom Bruch (CPPM), D Lange (Princeton), A Salzburger (CERN)

HSF Reconstruction/SW Trigger Kick-off  
2021-03-17

# Feedback statistics

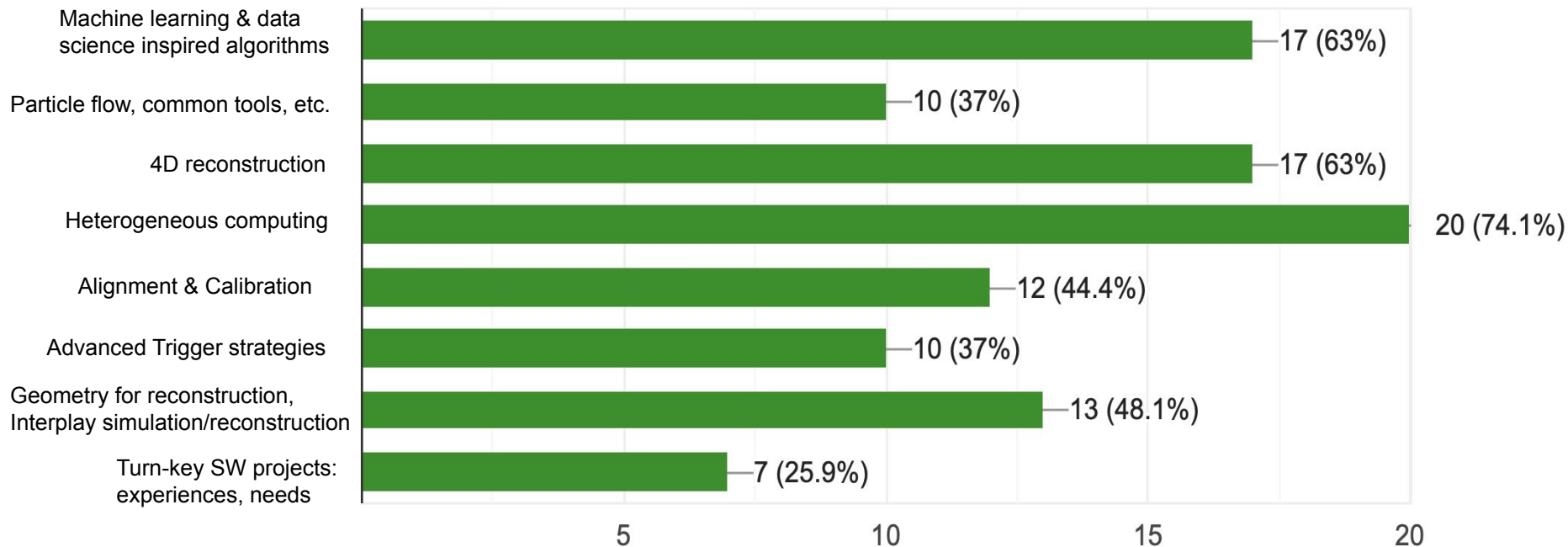
- 27 responses by yesterday (16/03/2021)
  - Form will be kept open for collecting further answers



You can use this for further suggesting topics/talks during the year.

<https://tinyurl.com/yhszyvvm>

# Which topics would you like to see covered by HSF



# Additional comments/topics

5 responses

I wonder why there is no advanced classical reconstruction techniques in the list of topics, like the baseline of ACTS or jet software. Only particle flow is mentioned as a classical technique. Not all modern reconstruction software R&D is either ML or heterogeneous computing, on the contrary.

Making HEP algorithms more accessible, i.e. what would we need to change for regular users to be able to run algorithms and not just the experts.

A discussion item about which algorithms do (and don't) profit from being ported to GPUs. I know we've had them before but I think it would be more interesting now that we've gained some experience.

Configuration of trigger applications; how algorithms and control flows are composed to define a particular running scenario.

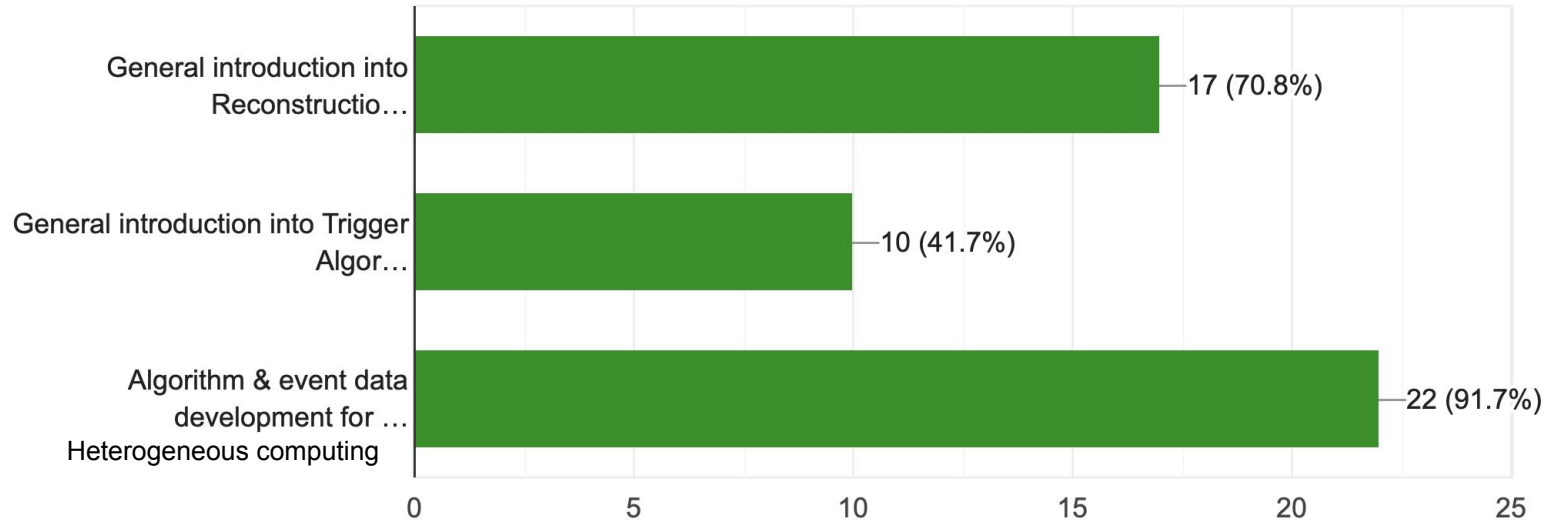
Learning about common software for common problems is certainly good, additional topics: EDMs and design patterns for high performance computing (vectorisation, GPUs, .... ), modern (c++) language/library features to improve HEP software maintainability, quality (and performance)

additional topics

training

common software

# Trainings



# Additional Training topics

C++-17 techniques and best practices for HEP

Advanced C++

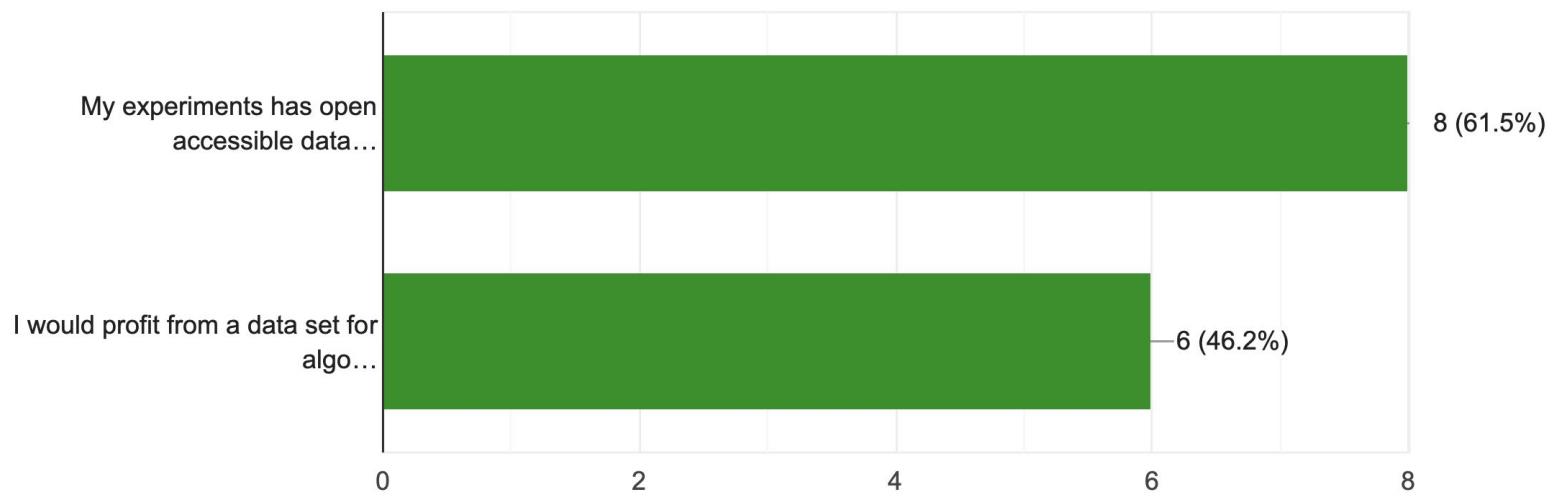
TensorRT

For purely technical trainings, there is a HSF technical training working group

# Datasets for training and R&D

Datasets, e.g. training, R&D datasets (like TrackML), benchmark datasets the HSF could try to provide

13 responses



# Datasets for training and R&D

Some specific datasets could profit of for R&D

2 responses

Simulated data with HL-LHC conditions

HL-LHC (or HL-LHC-inspired) detector simulation datasets with full truth information



# Heterogeneous computing/algorithms in Reconstruction

Widest resonance amongst the answers, covering

- Presentations
  - Learn about existing implementations, discuss appearances
- Training
  - How to write code for/towards usage on heterogeneous hardware
  - Best practices
  - (New) industry standards
- Interaction with other HSF groups (e.g. Frameworks)
  - Interplay with framework

# Heterogeneous computing/algorithms in Reconstruction

Widest resonance amongst the answers, covering

- Presentations

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- Training

- How to write code for/to
- Best practices
- (New) industry standards

- Interaction with other HSF

- Interplay with framework

We propose to organize a **mini workshop** on this topic.

**Tentative format:** virtual, 2-half days

- first day: presentational, discussion
- second day: training, feedback discussions

Eventually co-organised with training & framework WG.

Time slot, format to be decided.

# Machine learning (assisted) reconstruction

Second most popular item

- Active field of research at the moment
  - see upcoming vCHEP, etc.
- Training
  - actual training on ML/DS packages probably out of scope for Reconstruction WG
- Technical question of bringing R&D back into production code
  - Certainly overlap with other WGs

# Machine learning (assisted) reconstruction

Second most popular item

- Active field of research at the moment
  - see upcoming vCHEP, etc.

- Training

- actual training on ML/D  
Reconstruction WG

- Technical question of bringing

- Certainly overlap with

We propose to organize **1-hour topical WG** meetings, where we invite contributions on this topic during this year.

Aim to give a forum broader than at conferences, that allows for in-depth presentations and discussions.

These would be part of the regular WG meetings, and could be covered in future in a similar mini workshop as for the heterogeneous computing aspect.

# Topical meetings

Additional topics prominently mentioned:

- 4D reconstruction
  - Preparing for timing detectors
- Classical algorithms
  - Training aspect: can we collect sources for newcomers to learn not only about the software but also the concept underneath?
- Common Software
  - Turn-key SW packages & experiences
    - E.g. detector design, physics studies for future detectors
  - Overview of Common Software packages and their usage

# Topical meetings

Additional topics prominently mentioned:

- 4D reconstruction
  - Preparing for timing detectors
- Classical algorithms
  - Training aspect: can we use existing software but also the code
- Common Software
  - Turn-key SW packages  
E.g. detector design
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Common SW:

- What about a survey of common HEP software and their users/clients?