

Analysis Grand Challenge workshop introduction

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IRIS-HEP AGC workshop 2023

<https://indico.cern.ch/e/agc-workshop-2023>



Welcome!

- **Welcome to our AGC workshop!**
- Thank you for making time for this, we are looking forward to a productive workshop with you all!

What is the Analysis Grand Challenge (AGC)?

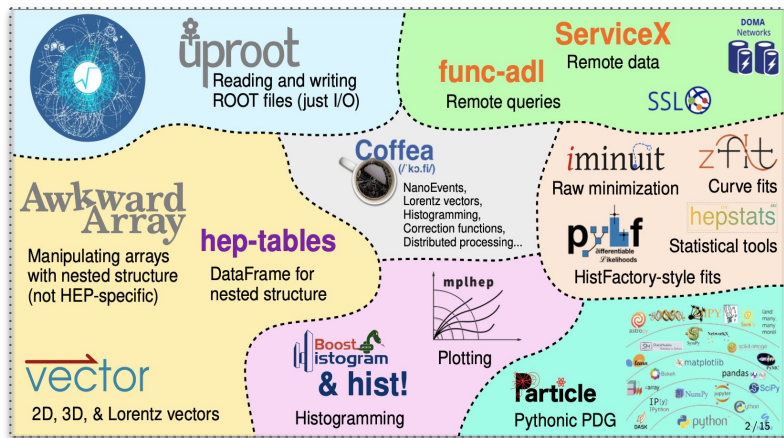
The IRIS-HEP **Analysis Grand Challenge (AGC)** has **two components**:

- Defining a **physics analysis task** of realistic HL-LHC scope & scale
- Developing an **analysis pipeline** that implements this task
 - Finding & addressing performance bottlenecks & usability concerns

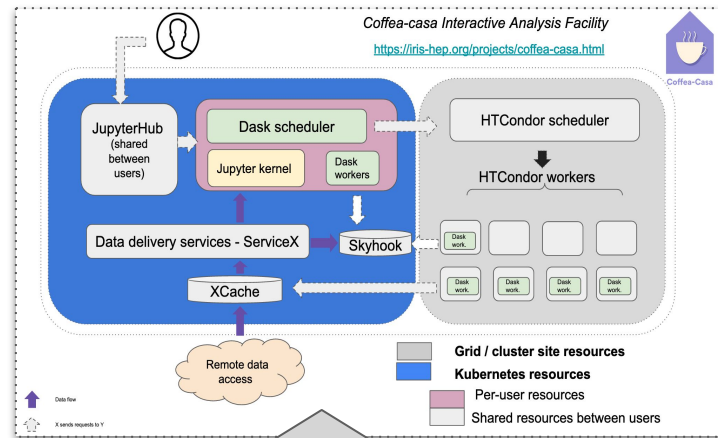
You can (for example) take an analysis task and develop a different implementation, take a pipeline and try it with a new analysis task, or adopt task & implementation and run it on your favorite facility.

What is the Analysis Grand Challenge (AGC)?

Analysis Tools and Services



Analysis Facilities



Analysis Grand Challenge (AGC)

Workshop outline

- **Wednesday**

- Morning: Analysis Systems & demos
- Afternoon: focus on ServiceX

- **Thursday**


- Morning: DOMA & facilities
- Afternoon: facilities & future directions

- **Friday**

- Morning: planning towards an AGC execution event

Local information

DSI building access, coffee breaks & lunch info

- The data science building is open 8:00 – 16:00
 - Please call Matthew Feickert (see email for phone number) if you got locked out
- **Coffee breaks:**  served outside the workshop room
- **Lunch:** not centrally organized
 - Handy map with places of interest and food options: [link](#)

Local information

Workshop dinner & Wi-Fi

- **Workshop dinner** takes place on Thursday, 5th May at 19:00 in restaurant Eno Vino <https://www.enovinodowntown.com/>
 - Restaurant is located at 1 N Webster St, Madison, WI 5370 inside the AC Hotel by Marriott Madison Downtown
- **Wi-Fi:** eduroam is available, otherwise [guest access to UWNet](#)
- Other various pieces of information [on Indico](#)

Towards an AGC execution event

Focus of this workshop

- This workshop is meant to pave the way towards “AGC execution” event
 - Likely to happen September 14 — stay tuned
- **AGC execution** will be a short, half-day event
 - Inviting everyone who is interested to **share setup and present results**
 - Interesting combinations of hardware, network site configurations
 - Any type of “combinatorics” of AGC implementation / components setup
 - Can include performance measurements
 - Chance to showcase your computing resources to physics analysis community :-)

Future plans

Longer term AGC directions

- **IRIS-HEP strategic plan** <https://arxiv.org/abs/2302.01317> describes ideas for the future of the AGC
 - Two new flagship analyses: focus on complexity & scale of data
 - Closer connections to ATLAS & CMS
 - Gradient-based sensitivity optimization of analysis pipeline
 - “Column joining”: enhancing e.g. NanoAOD columns from MiniAOD data
- ... and more! See the strategic plan for details.

Year	Target
2024	<ul style="list-style-type: none">• Define analysis tasks for the top quark mass and di-Higgs measurement.• High-volume analysis done on dataset 20% the scale needed for HL-LHC and completed within 1 hour.• Integrate ML inference service with AGC.
2025	<ul style="list-style-type: none">• High-volume analysis done on dataset 40% the scale needed for HL-LHC and completed within 1 hour.• Demonstrate AOD column extraction workflow
2026	<ul style="list-style-type: none">• High-volume analysis done on dataset 60% the scale needed for HL-LHC and completed within 1 hour.• Demonstrate fully differentiable analysis
2027	<ul style="list-style-type: none">• High-volume analysis done on dataset 80% the scale needed for HL-LHC and completed within 1 hour.
2028	<ul style="list-style-type: none">• High-volume analysis done on dataset 100% the scale needed for HL-LHC and completed within 1 hour.

Communication channels

- **Zoom** details are on the Indico agenda (log in to see link)
 - <https://indico.cern.ch/event/1260431/videoconference/>
- The workshop will be **recorded** and demo contributions/presentations will be made available afterwards
- We have a [Google doc](#) for live notes — please feel free to edit!
- All workshop participants are expected to follow the Code of Conduct
 - <https://indico.cern.ch/event/1260431/page/28971-code-of-conduct>

Thank you!

- To the speakers for preparing all the material
- To the local organizers: Brian Bockelman, Kyle Cranmer, Matt Bialo
- To all of you for attending

Looking forward to having a productive workshop with you!

Stay in touch: analysis-grand-challenge@iris-hep.org (sign-up: [google group](#))