

# RAL-PPD DUNE – DAQ and RS&DC Highlights



# RAL-PPD DUNE Group



Current staff	DAQ + RS&DC
Claire	Group Lead
Alessandro	DAQ Consortium Lead
Morgan	Group Lead
Chris	RS&DC
Ivana	DAQ
Raja	RS&DC (leaving)
Previous members from PPD	
Dave	Ex-PPD Director
Kostas	DAQ FPGA
Fergus	LHCb
Antonis	LHCb
New/Previous Guests	
Claudia	new
Shyam	new
Klaudia	completed
Francisco	completed

What we do

What went well this year

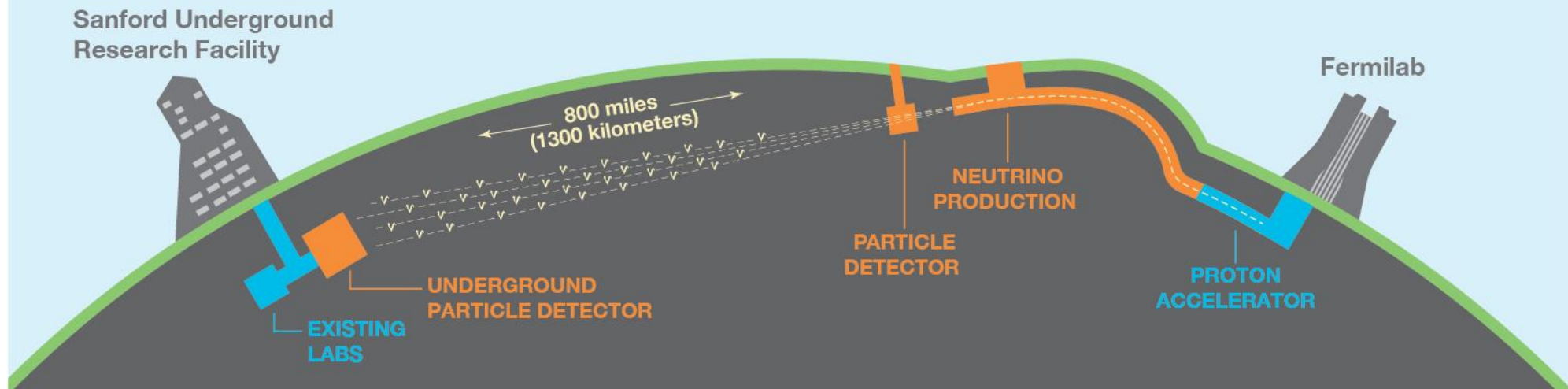
Our New Year's resolutions

Out gift wish-list

- the biggest neutrino experiment
- the largest science project in the US - local, state, federal and international collaboration

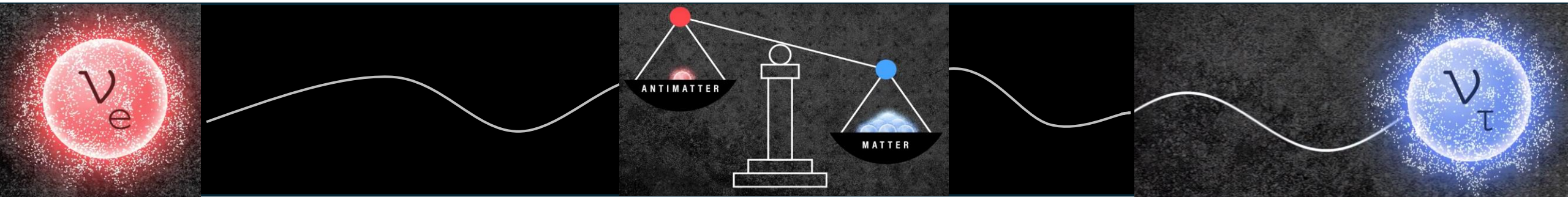


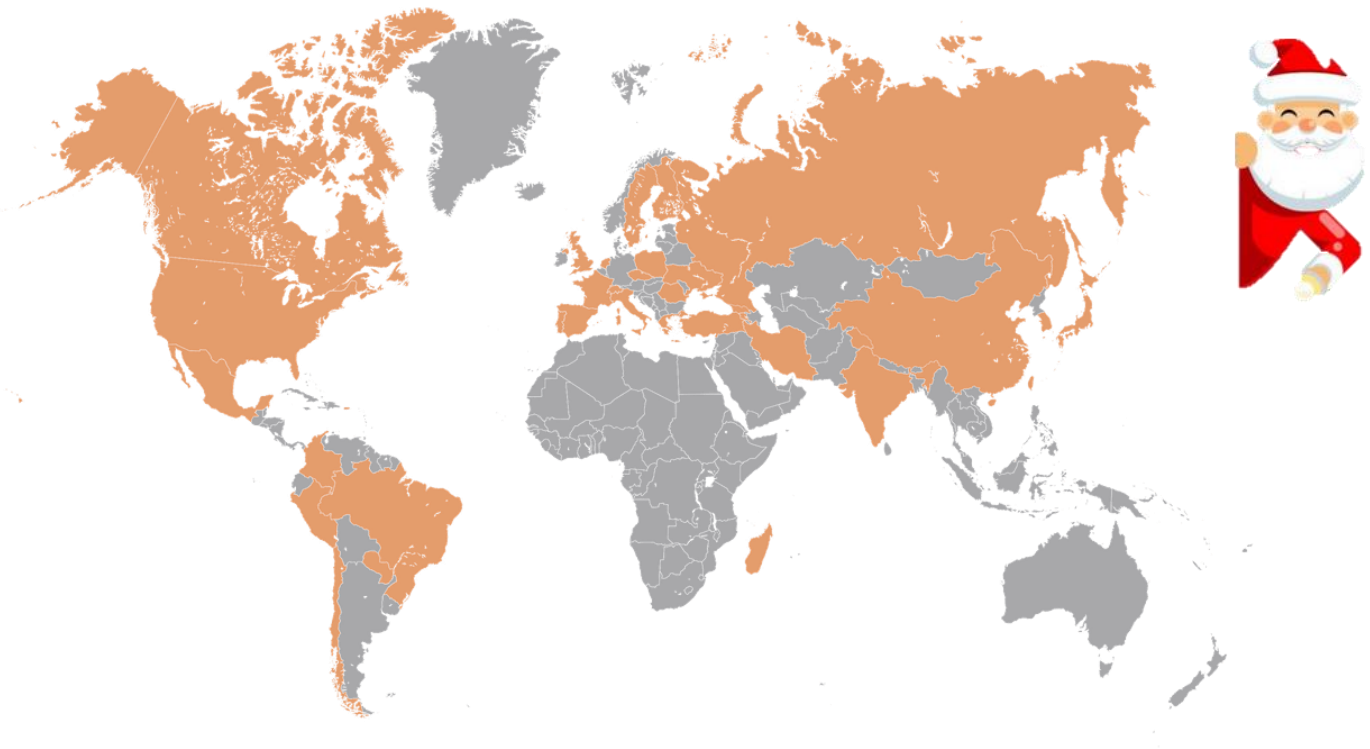
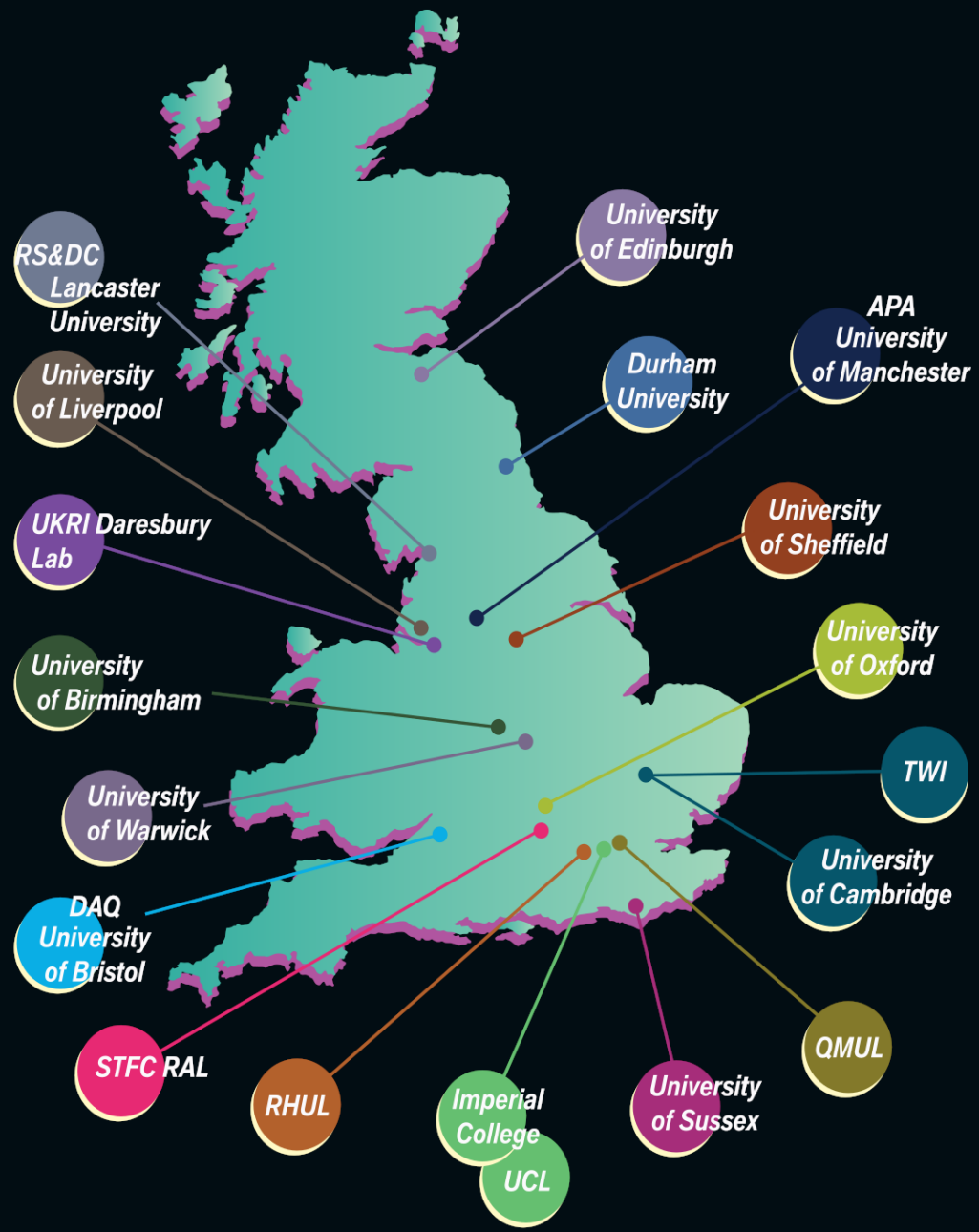
- the deepest underground laboratory in the US
- the longest baseline (i.e. distance between the beam source and the target)



# Are neutrinos the reason we exist?

At DUNE we are likely to find things we didn't expect to find





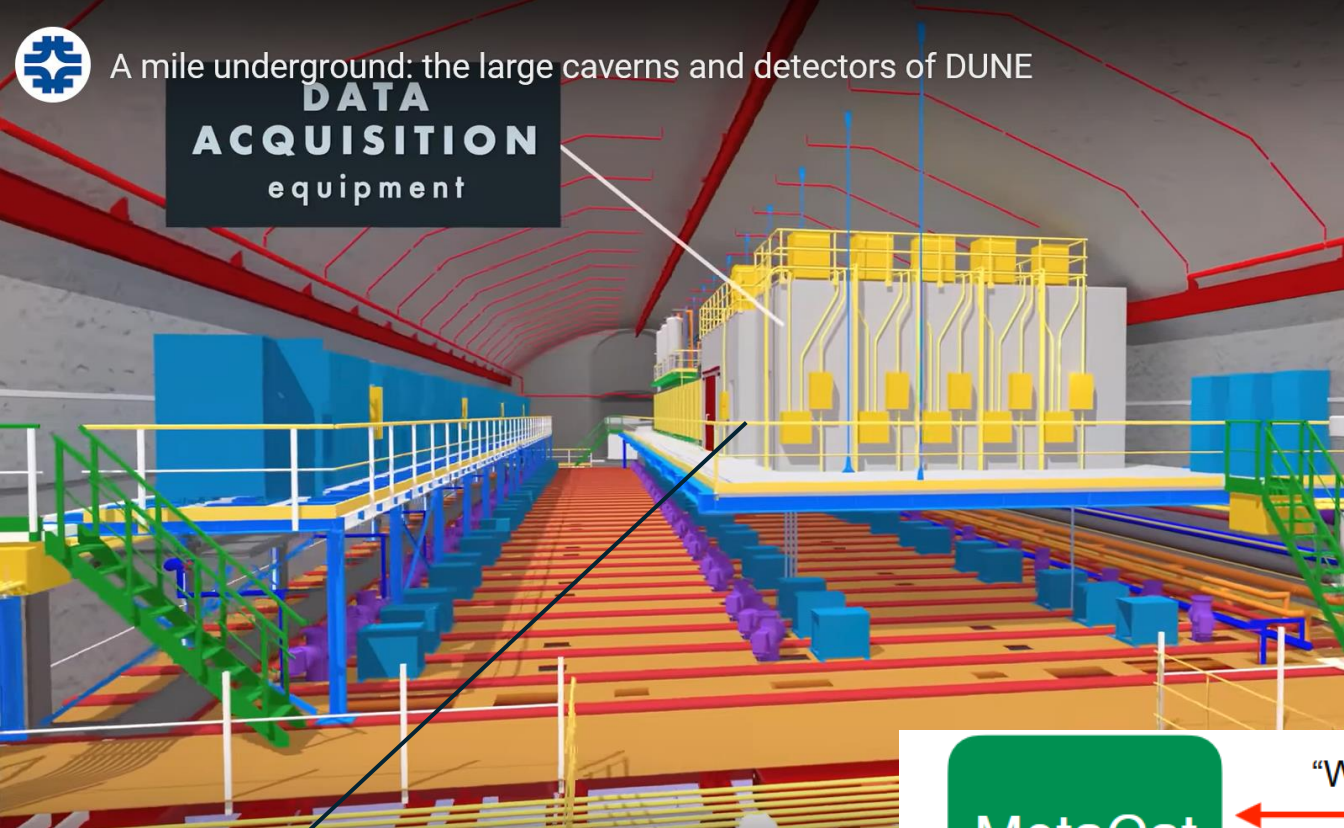
DUNE is the largest international project in the US modelled after CERN's CMS and ATLAS experiments which are a working example of global scientific collaboration

DUNE is a very big opportunity for UK

UK postdocs, postgraduate students. scientists help DUNE succeed and make discoveries



**DATA ACQUISITION**  
equipment

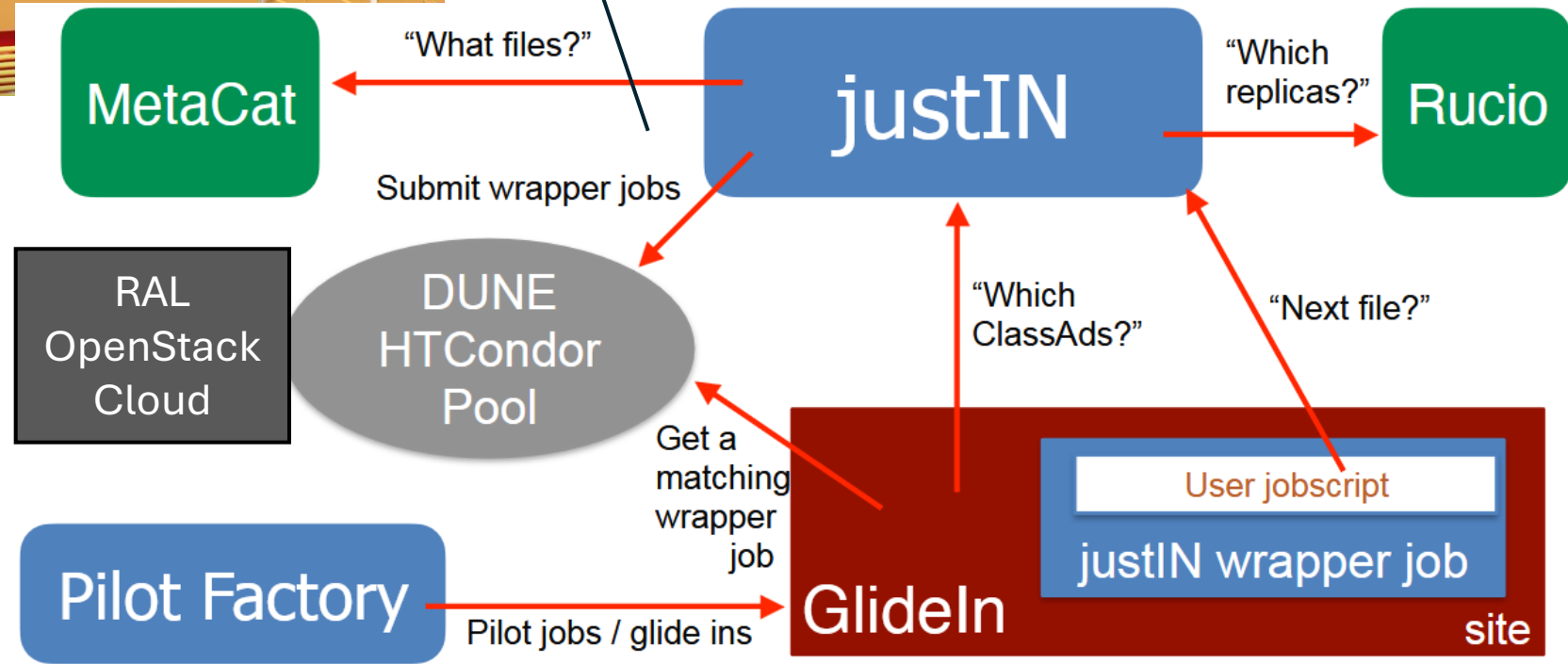


# At RAL we do

Software Reconstruction and Distributed Computing



DUNE central production relies on:

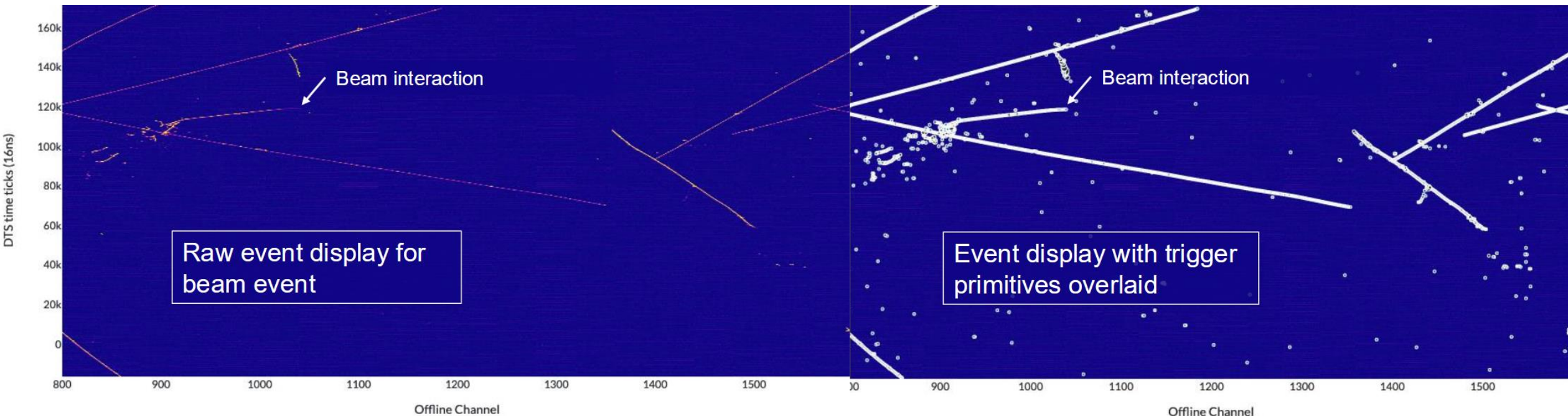


Trigger and Data Acquisition

# What went well...



- Alessandro Thea promoted from DAQ Technical Lead to DAQ Consortium Lead
- DUNE DAQ consolidated grant for 2024 completed
- First beam delivered to ProtoDUNE-II (Horizontal Drift), followed by stable beam operations and successful physics data taking from June to September at the CERN Neutrino Platform (NP04)
- Software-based Trigger Primitive (TP) generation algorithms successfully commissioned and studied using cosmics and beam particles; TPs recorded in a dedicated TP stream for offline analysis

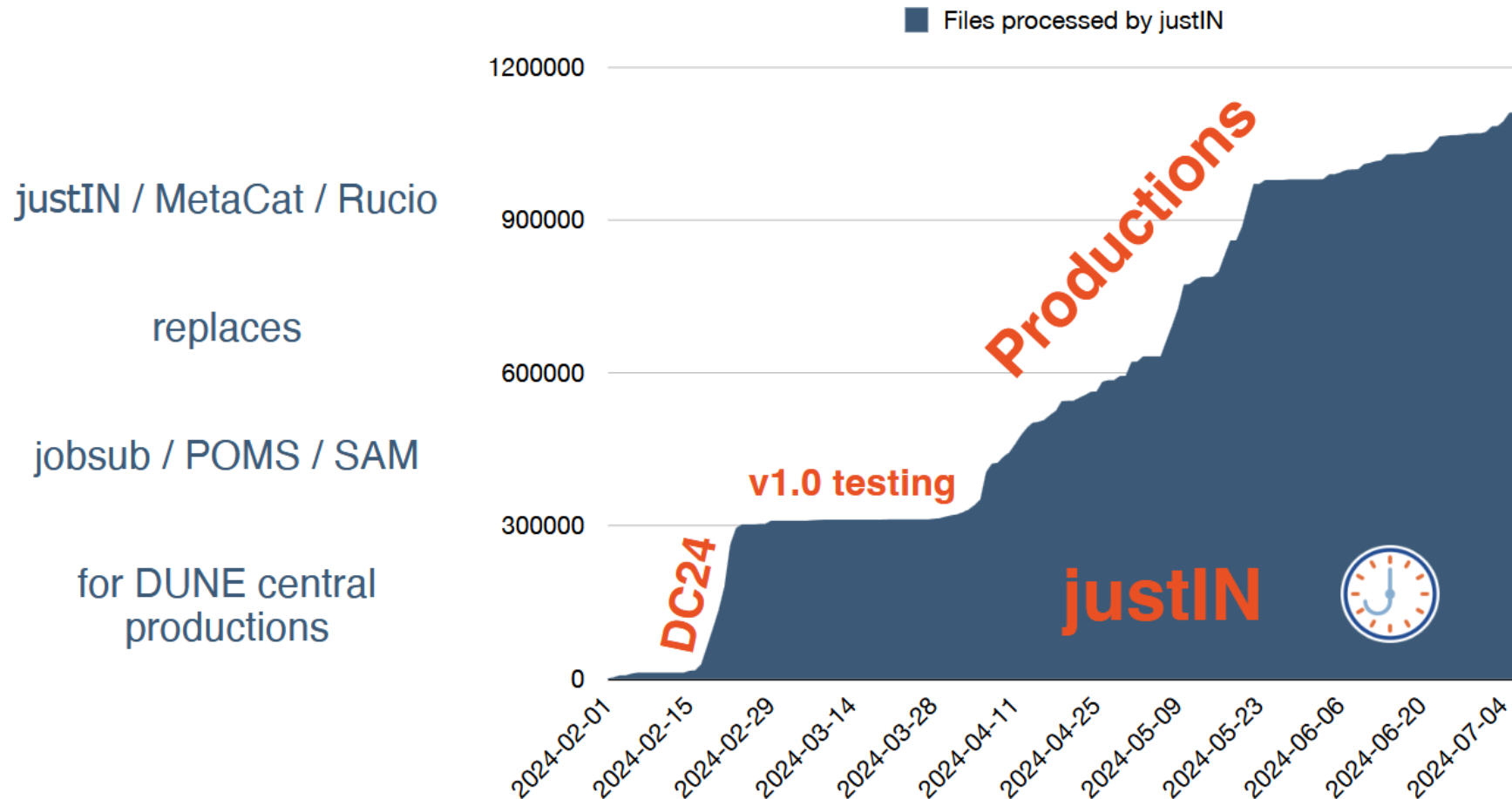


# What went well...



- Last year, installing job managers on the cloud in STFC to allow the DUNE workflow management system (being developed at Manchester and PPD) to directly send jobs to all DUNE sites on the Grid which were then used for processing the data from the ProtoDUNE-II run.

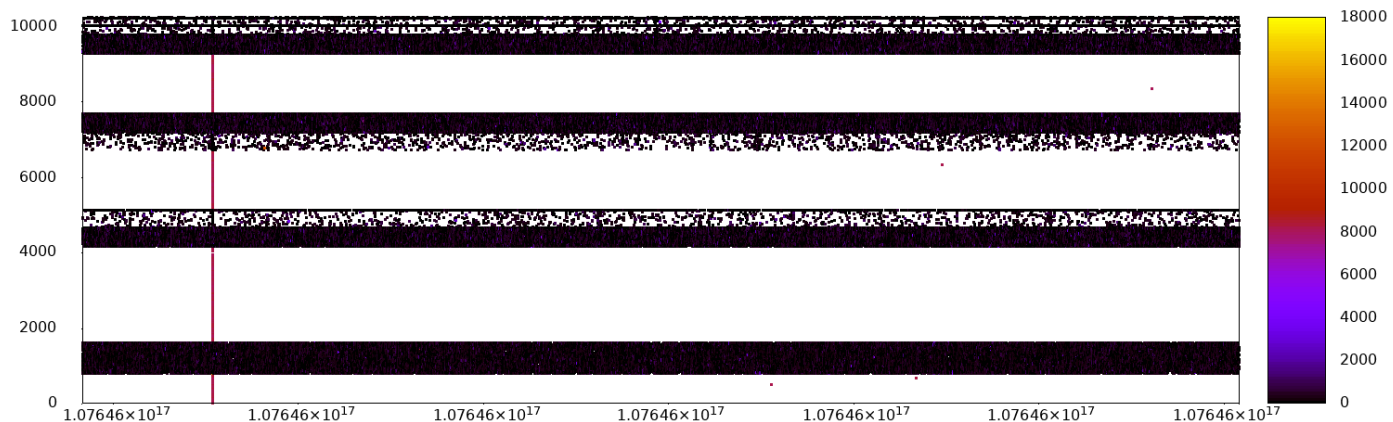
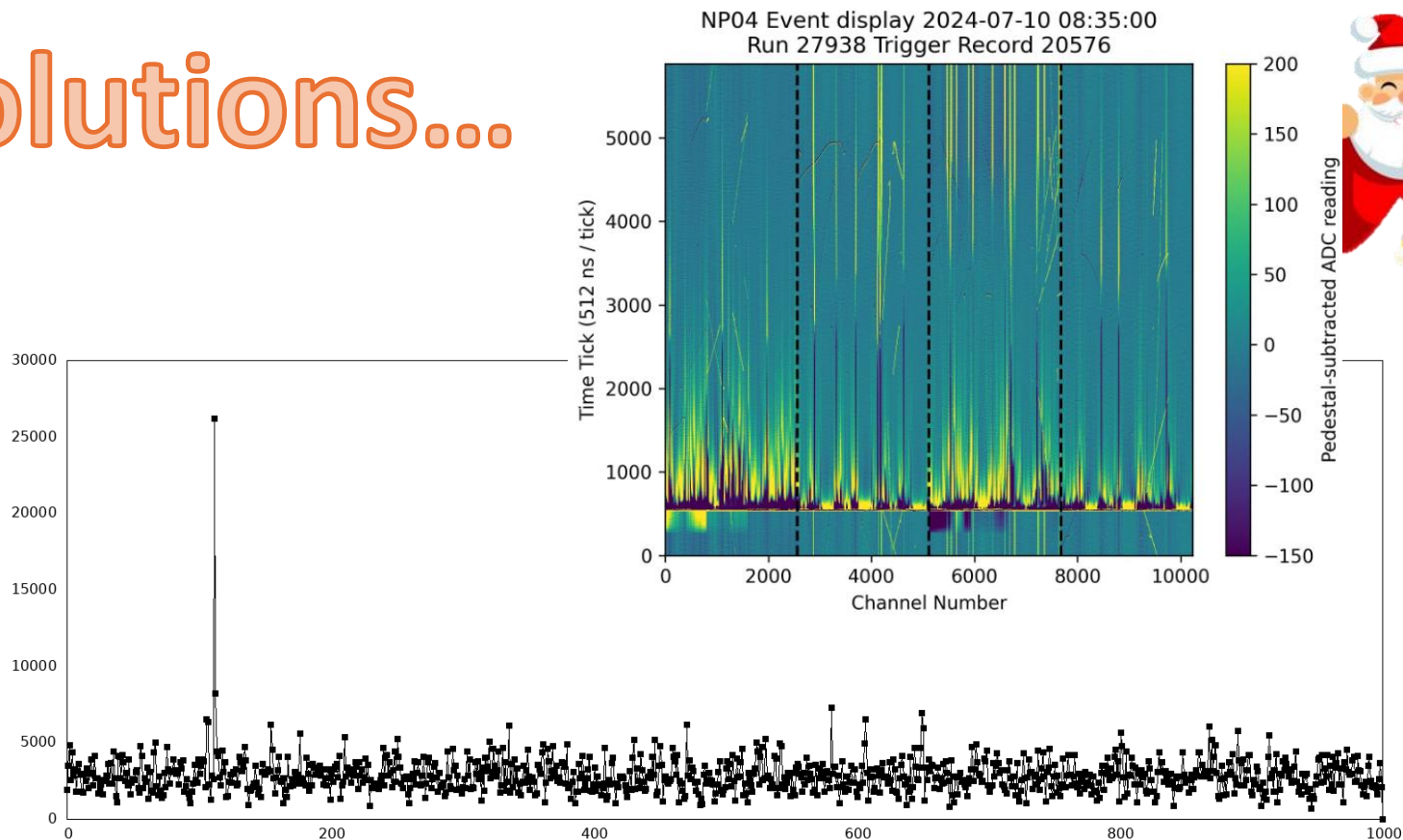
keep-up processing of ProtoDUNE-II data





# New Year's resolutions...

- Many DUNE-DAQ releases with lots of new features
- Get ready to purchase Readout switches and servers for the FD
- Looking forward to ProtoDUNE-II (Vertical Drift) beam operations in 2025 at the Neutrino Platform at CERN (NP02)
  - Improve tools to provide prompt feedback on the overall DAQ and TP generation algorithms performance
  - Maintain capability to detect unexpected effects or SEUs
- Looking forward to deploying the extra workflow management services to make it a truly reliable production service





# Gift wish-list...



- DUNE-DAQ grant from STFC - Alessandro
- What I want for Christmas is to have sufficient storage and CPU power to process as many of the recorded ProtoDUNE-II data as needed - Ivana
  - 30 M triggers, 4.2 PB of beam data, 0.8 PB cosmics; of the order of ~1 PB of TPs
- What I want for Christmas is to fill the 50% vacancy quickly and easily. - Chris

Backup



# The Trigger system

Real-time processed datastream!

Self-triggered system!

