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# Joint Accelerator Performance 2024 Workshop (JAP24)

Montreux, 10-12 December 2024

<https://indico.cern.ch/event/1439972/>

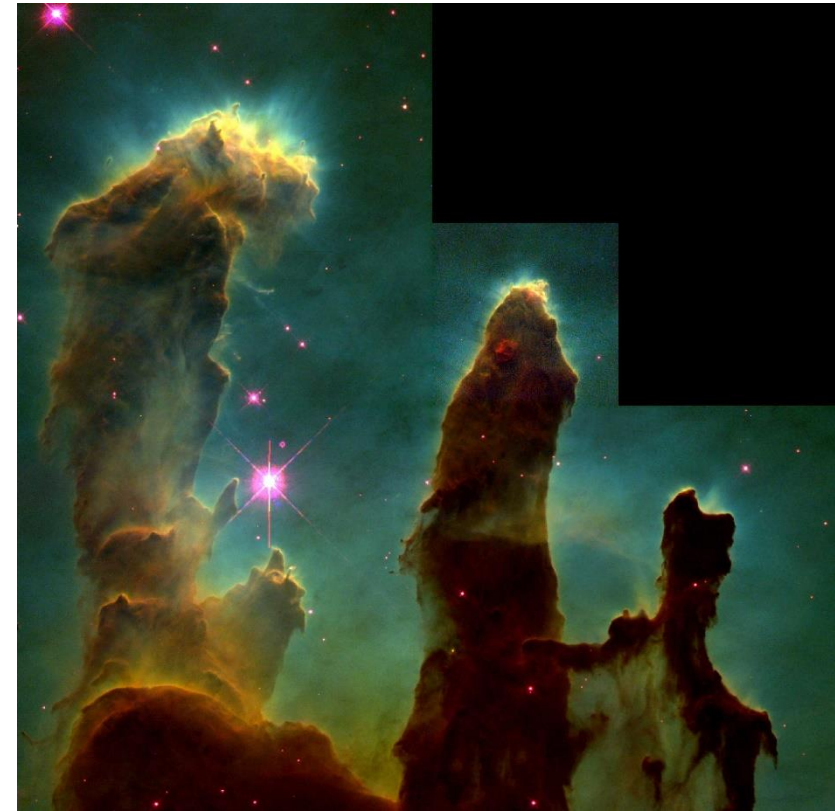


# The pillars

## Two pillars of Hercules

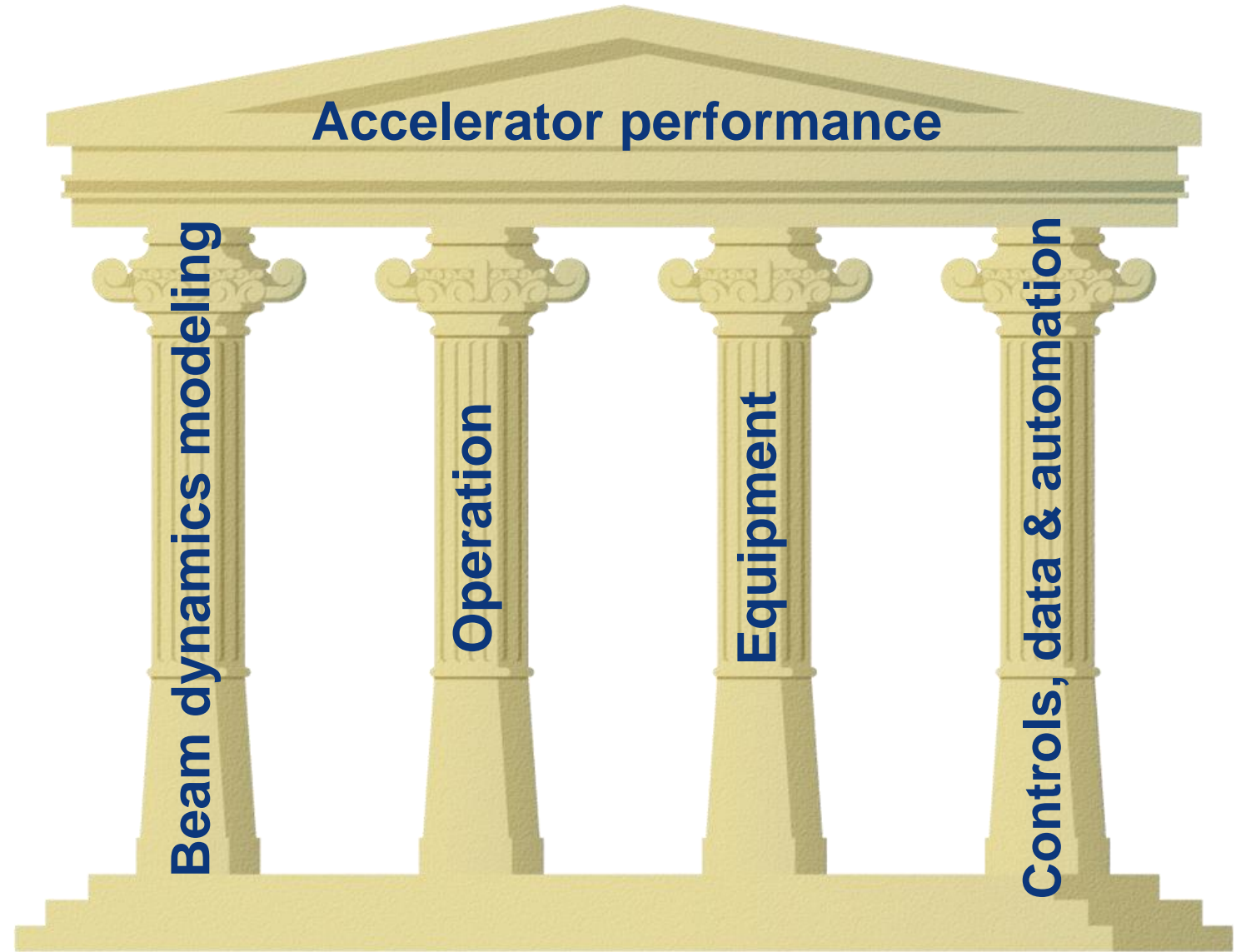


## Three pillars of creation

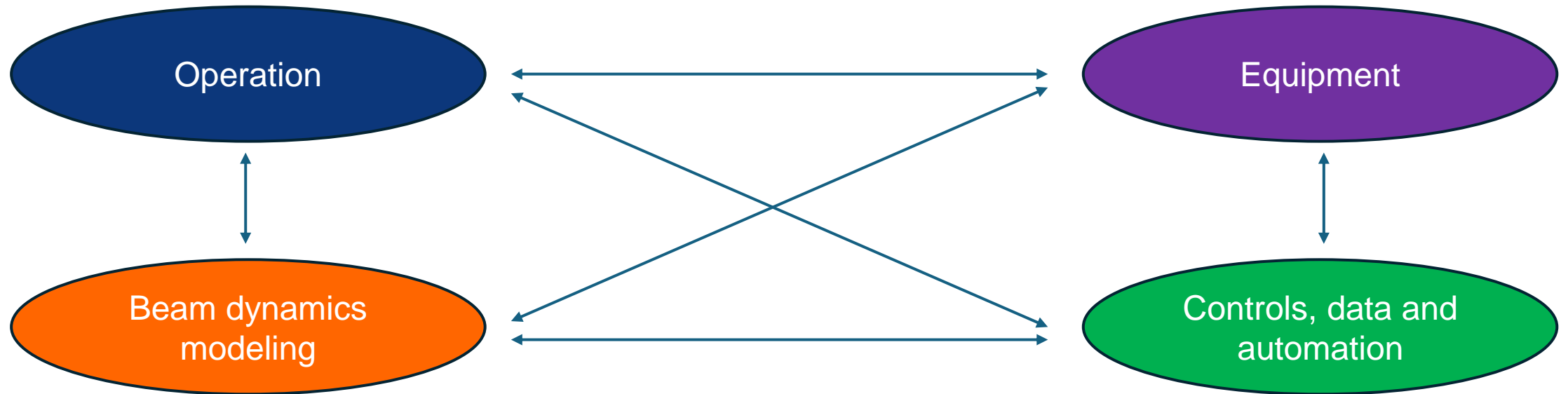


# The four pillars

...of accelerator performance



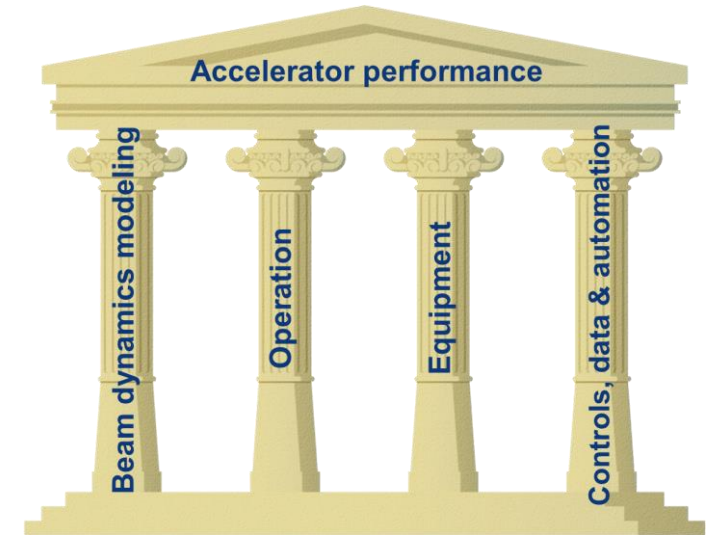
# JAP24 – Experimental edition



- Pillars of accelerator performance
- Bilateral sessions between each pair of pillars

# JAP24 – Experimental edition

- Injector complex, LHC and experiments entirely mixed in the sessions for the first time
- **Your feedback would be most welcome on this experimental setup of the workshop**



# Looking back

## 2024 was a tremendous year

- Excellent performance of all facilities paired with high availability
- Absolutely overwhelming width of material treated in not even 3 days
- Impossible to put together a summary paying justice to all that work



# Selected questions for animated discussions

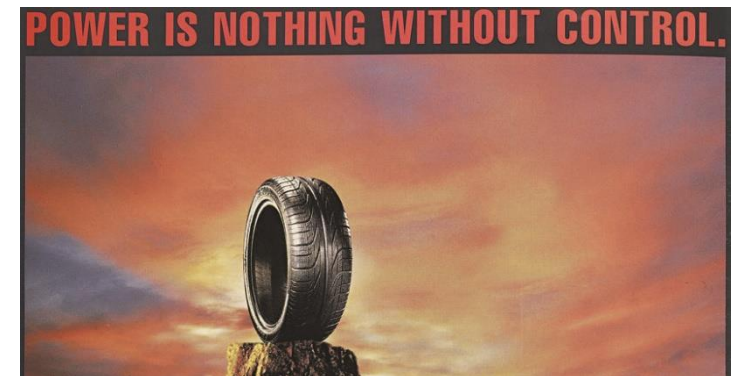
- **Reliability run for LIU/HL-LHC beams in injectors**
  - Emulate LHC filling up to extraction from SPS
  - **Essential to ensure readiness of injectors for HL-LHC!**
  - Margin in SPS to demonstrate reliability and reproducibility? 10%?
  - Include also the LHC? Which beams?
- **Beams for physics in the LHC in 2025 (and 2026)?**
  - BCMS with **3, 4 or 5** × **36** bunch batches
  - Hybrid schemes → Nobody likes them?
    - Someone does...





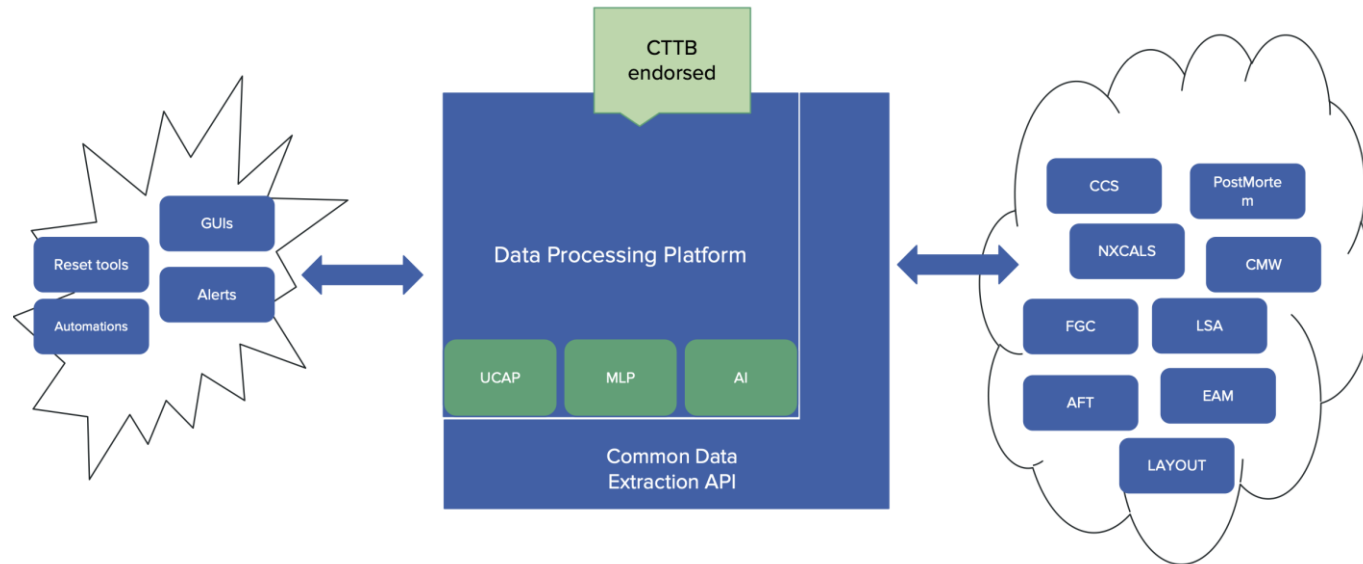
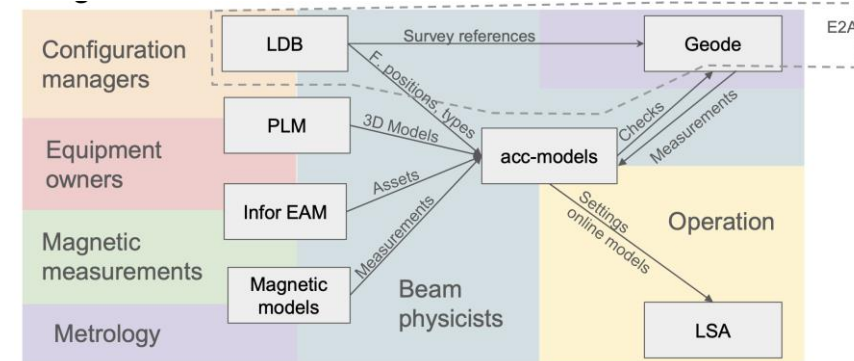
# Selected questions for animated discussions

- **Strategy to adopt in LHC until LS3?**
  - Worth to choose filling scheme based on 1% level performance predictions?
  - Prepare with **longer term strategy of preparing for the HL era?**
- **Automation is key to run accelerator complex efficiently**
  - Lots of **great powerful applications** already out there
  - Fundamental to keep control
    - Storage, version control,...
  - **Need tools to keep overview**



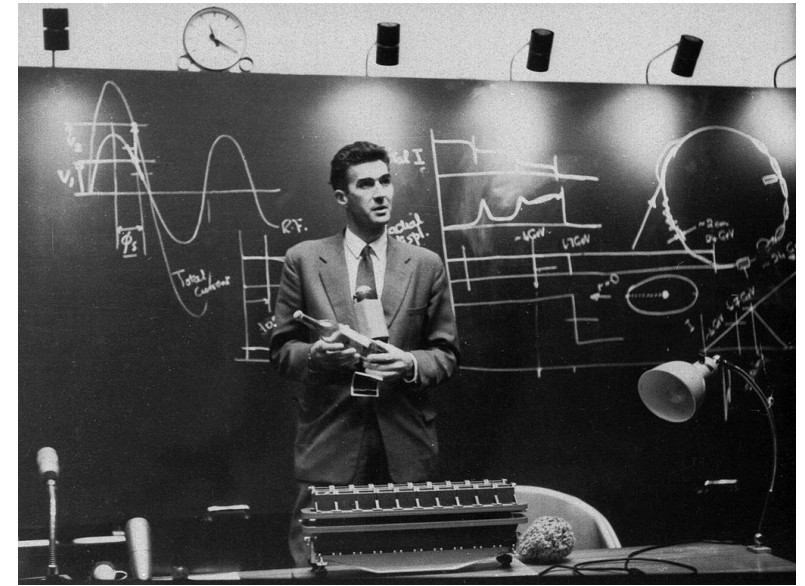
# Selected questions for animated discussions

- **Integration within DataBases, tools,...**
  - Information is available, but scattered in different locations
  - Difficult to aggregate
  - Inter-play between systems is key



# Celebrations at CERN

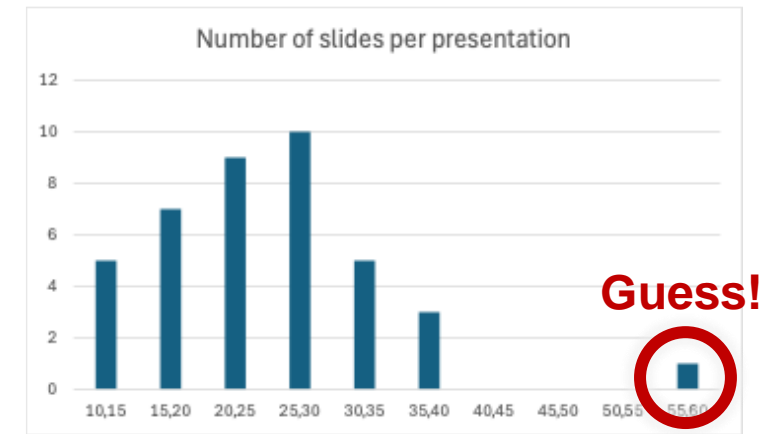
- **24 November**: First acceleration to flat-top in the PS (1959)  
→ CERN enters high-energy physics



- **10 September 2008**: First circulating beams in the LHC
- **10 September 2024**: magic injector improvement day...

# JAP24 in numbers

- **4 pillars**
- **1 + 6 bilateral sessions → 14 session chairs**
- **40 technical presentations → 17 hours and 35 min**
  - **10 hours and 30 min** of pure dense and excellent presentation
  - **7 hours and 5 min** of interesting and lively discussions
- **994 slides** (without counting spare), for an **AVG of 25.8/presentation**
  - **Tried to avoid**
- **At maximum 144 participants in Montreux, up to 50+ on zoom**
  - **416 lunches and 252 dinners served**





# Did we better than last year? – for the group photo...

2023

2024



**YES, we cheated with filters!!**

# Big Thank You

- For the **excellent atmosphere** during these three days of intensive workshop and discussions
  - To **all session chairs and speakers** for having taken the challenge and prepared it with **impressive quality**
  - To **Eleanor and Hervé** for making this possible with **all their magic in the background!**
  - To the **hotel** for having taken care of us so well
  - **To you all for your active participation!**
- **Incredible amount of material to be digested and processed**
- **The (future) pillars of accelerator performance**



# Have a safe trip home Season's greetings!

