



Joint Accelerator Performance Workshop

5-8 December 2022

<https://indico.cern.ch/event/1194548/>



Concluding remarks...(for now)

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What a team!



Flashes

- Ewan: showing OMC spreading like a thick blanket, from LHC across the injectors
- The solid baseline of the HL-LHC filling scheme
- Tails: being studied and understood from PSB injection up to LHC stability in physics
- Michi: defending that the LHC can't overly impact the SPS physics
- Fast pace of ideas for improvement (e.g. extraction quality and beam losses with crystals, EBC, ...)
- Urs and the physics seminar, showing our place in the grand scheme of things
- Very open, frank and deep discussion of the issues we have to face

Where are the limits?

- Cannot do “more with less”
- Performance and your achievements are at an extremely high level
- The teams and experts are already at their limits – people are not machines and there is a lot of pressure
- Asking for even more aggressive approaches eventually risks being counterproductive
- We are also limited by our present culture and organisation
- Risk taking and failure/delay to be accepted
- Too many demands on the time – meetings, processes, HR, projects, ... Have to streamline this wherever it's under our control

Where should we put our attention?

- Core of Operation, Projects, Studies are (relatively) clear
- For “Performance” in the widest sense, **efficiency** is one key aspect, **motivation** the other
- Strong Motivational and Performance benefits if we better protect the space for R&D and speculative developments
- Can’t keep adding – at constant resource level, we have to improve by subtracting. Need to be critical about what we do, and how we do it
- Automation brings real gains, foundations are there, need to define and commit across the sector, with (re)allocation of resources
- Transverse synergies across teams/groups is crucial → can we find a better way to drive this – how to try ideas like ‘Avengers team’?

What's the vision for the future?

- **Efficient** operation of the complex – in terms of physics, energy and people
- **Operability** and maintainability to be considered from the outset
- Improve our **agility** and synergy, while keeping **motivation** and agency
- Keep building on this incredible environment with all its strengths (**people**)
- **Focus** more, bring resources to bear where needed, interpreting the high level objectives at ATS level
- Injectors and LHC are **together** – many lessons to transfer across the complex
- Stimulating to see **future** possibilities coming closer... need to balance the *new* with a stop of the *old*, to free the resources for these exciting challenges

Key threads (?)

1. Instrumentation requirements for operability, to review collectively (with benchmark campaign?)
2. Meaningful trial of dedicated interleaved beam delivery, including key objective of dedicated LHC filling
3. Efficiency 1: Automation is already here and has been ongoing for years - need strategy to now develop this in a coherent way across complex
4. Efficiency 2: Energy efficiency in operation – develop policy, accounting and deployments
5. Clarity of priorities and focus at key levels between Depts and Groups
6. Culture and organisational changes to reduce pressure and overload on all teams (will be long-term effort)

Follow up from here

- First debrief of WS planned next week Thurs 10:30 with Organising Committee, to refine main threads for follow-up and actions
 - Please feel free to give any input you have (any channels)
- Chamonix end of January 2023 (inputs and outputs)
 - Review in Feb/March 2023 how we organise these workshops
- Review in early 2023 ATS meeting organisation (in time to make any changes for commissioning, to try new ideas)
- ATS to extract organisational/managerial questions and decide how we can try and address these (also linked to ATS survey results)
- ...
- ...

Real concluding remarks

- Fantastic to spend these stimulating days **together**, bringing together experiments, operation, equipment and support groups – across whole CERN complex
- Running the complex and delivering this incredible physics program is huge, complicated and beautiful endeavour - **congratulations** to everyone, and all teams, for doing such a marvellous job
- Volume and quality of work, and number of new ideas and improvements, is simply **incredible**
- We got out much more than we asked for. There is a huge amount of **output** to digest, discuss, filter, prioritise and put into place – let's try and do this properly
- **Thanks** to all speakers, spotters and chairs – it was a major effort at the end of a huge year. And thanks to all of you for taking part (room + zoom) and making it so special – let's keep **building** on this

Have a very, very well deserved Christmas Holiday



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