Gradual re-start of the experiments and Involvement of the user community

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Information provided by the 4 LHC Experiments

Online information meeting: Plan for CERN’s gradual re-start, May 5, 2020
Progress during lock-down

- Limited progress with sub-detectors wherever possible including in remote institutes
- Teleworking has been used everywhere
  - Analysis unhindered thanks to availability of IT infrastructure
  - Design – access to CAD software (incl. remote licence usage)
  - ASIC development
    - design requires access to licensed software
    - chip submission depending on availability of foundry access

Big Thank you to IT department

ASICs have been a major concern of upgrades
Logistics is a challenge

- Delivery of components from other institutes (or companies)
  - Production halted
  - Delivery chain broken
- Availability of foreign experts is a major uncertainty
  - Varying travel restrictions
    - entry to France and Switzerland
    - departure from home country and uncertainty of returning home (quarantine)
    - permission from some countries for work at CERN still needs to be granted

  Example ATLAS NSW: Saclay has to resume Micromegas assembly before integration onto wheels at CERN.

Progress is very difficult to predict
Priority: completion of Phase 1 and preparation of Phase 2 upgrades

ALICE

CMS

ATLAS

LHCb
Experience from pre-T0 phase

- Experiments have started to work under COVID-19-like safety measures both in laboratories and at the experimental points

- Feedback to HSE on
  - wearing masks and Personal Protection Equipment in general; duration of work and practicalities of maintaining physical distance
  - access to experimental points: *hands-free* use of doors and elevators
  - density of people

Provides instant feedback - good training
Re-start of Experiments depends on Availability of Users (experts)

Today  Practicing work under COVID-19 rules

T0: Begin of gradual re-start  High priority work resuming where possible

June 8, LHC experiments and Accelerator: LS2 and Run 3

CERN all open  User presence depends on travel restrictions

Users returning

2020
Selection of ALICE activities during first 4-weeks of re-start

**Miniframe**
(Service support structure)

- Cabling and connectors
- Cooling and ventilation pipes
- Patchpanels
- Support structures
- Installation tests …

**ALICE experiment cavern**

- Inox cooling pipe installation
- MFT cooling plant installation
- Cabling and connectors
- Rack turbine replacement
- TPC heatscreens
- TOF readout modules and cooling
- Muon system electronics upgrade

**Cleanrooms and workshops**

- TPC commissioning SXL2 (P2)
- ITS commissioning Bat. 167 (Meyrin)
- Mechanical workshop Bat. 162 (Meyrin)

**SX2 surface building P2**

**ALICE Cavern**

**Bat 167**

**SXL2 surface building P2**
ATLAS focus during first 4 weeks

- Highest priority
  - New Small Wheel and Liquid Argon
  - TDAQ upgrade (also as support for the other remote activities)
  - BIS 7/8 muon spectrometer
  - but also urgent maintenance on cryogenics and magnet
- and then
  - SCT and Tile Calorimeter
  - Phase II upgrade (ITK, HGTD and Tile)

Progress slowed down since even some experts in the area cannot yet access CERN.
CMS focus during initial period

- Warm-up of magnet ongoing (30 days)
- CSC removal and refit (P5-UXC, P5-SX)
- CSC electronics revision (867/904)
- GEM assembly and test (904, P5)
- HCAL control module diagnostics (904)
- Beam pipe/pixel/lumi monitor upgrade (P5, 186)
Initial LHCb activities

- Vertex Locator
  - Installation of RF foil, preparation done, in collaboration with EN and TE, week 19/20.

- Upstream Tracker
  - Cleaning of CO₂ cooling test station, together with EP-DT, started 30 April.

- RICH
  - RICH 2 column installation in test rack and commissioning, in collaboration with EP-DT, started 4 May.

- Muon
  - Installation of new electronic boards, replacing old backplanes, cabling up control boards, registration into the DB, started 28 April.
Gradual re-start of non-LHC experiments and activities

• NA-experiments, ISOLDE, AD-experiments begin some small activities after T0 (to allow e.g. progress on thesis work) where easily and safely feasible

• Re-start of the EP workshops to support experiments where needed

• IT will slowly bring back small teams to allow working from adequate work places

• Library will reopen once there is a sufficient population at CERN to warrant presence. All library staff can be contacted remotely in the meantime (btw: New INSPIRE rolled-out during Lock-down).
Conclusion

• Many activities continuing in home laboratories on sub-components
  • Teleworking continues (analysis, simulation, engineering, documentation)

• Gradual re-start
  • practicing social distancing and learning to work in space restricted areas
  • progress difficult to predict while travel restrictions persist; experiments making efforts to circumvent bottlenecks