

# Instrument Breakout Session



# Instrument Breakout Session

- Introduction to Instrument Suites at JPARC and ESS
- Overview of use of NOBORU to confirm source characteristics
  - Much for ESS to learn from this experience
  - Our test beamline team will visit JPARC in January – action to contact M Harada with questions beforehand

# Instrument Breakout Session

## JPARC Instruments

- BL01 4SEASONS (Spectroscopy)
  - Commissioning team included scientists from other beamlines
  - Commissioning and construction simultaneously – staged approach.
  - Lessons for ESS ...
    - Have software ready!
    - Check interfaces (cryostat flange) – standardise! Able to mitigate problem by using equipment from another beamline.
    - Things will not be perfect - but .. work with what you have to make progress
    - Work to reduce background will take time and require modifications ... will continue
- BL22 RADEN (Imaging)
  - Large instrument team large with complementary expertise (incl. university collaborators): carried out the commissioning
  - Was the first TOF imaging instrument for users (demo at BL10 before)
  - Benefit from being 'late' instrument (2012->2015): e.g. device integration 'done'
  - Detectors keep developing (and more options added to instrument)
  - Lessons for ESS ...
    - Plan for a wide array of detectors (incl. those needed for commissioning)
    - Imaging has specific requirements for e.g. sample environment (and cannot automatically benefit from central pool)
    - Have software ready and minimize time for device integration (using time available before BOT)

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## ESS Instruments

- LoKI
  - Key challenge is the detector system – layers of tubes.
  - Background characterisation and suppression
  - Single-shot measurements – implies large data rate.
- ODIN
  - Key challenge is chopper cascade (10 chopper axes!)
  - Commission as much as possible before neutrons
    - Controls
    - Data chain (with x-rays on ODIN, with neutrons elsewhere)
- Common theme – need to repeat some commissioning steps as accelerator parameters change. Need efficient process.

# Instrument Breakout Session

## JPARC Safety

- Whole organisation involved
- 3H – Hisashiburi “it’s been a while” -> important to remember!
- Emergency drills – be ready!
- Discussion of monitoring and contamination controls
- Shipping of samples
  - Packaged by instrument scientist at JPARC and sent back by user office
- User supplied equipment
  - Design needs to be checked with relevant experts from facility before coming and fixed if needed
  - Tested outside experimental hall before use in hall

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## **JPARC Controls**

- Standardised software available for instruments – IROHA
- Undergoing upgrade to IROHA 2 now
- Servers can be controlled from web client – better UX
- Looking forward now to IROHA 3 ... maybe EPICS
- One person manages IROHA development with some help, but outsource much to company.

## **ESS Controls**

- NICOS + EPICS + Timing system
- Previously – testing and development at V20 test beamline at HZB
- Testing of controls and DAQ at AMOR instrument at PSI
- In-house integration platform YMIR – allows integration and testing without neutron instruments
- Need instrument scientists to learn python to make commissioning more efficient!

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## Summary

- Lots to think about for ESS
- Don't assume things will work as designed!
- Make sure we have cross-team connections before commissioning – lots of people needed!
- Have software ready before neutrons
- Integrate hardware before neutrons
- Involve whole organisation in safety