Web Technology Usage at ISIS

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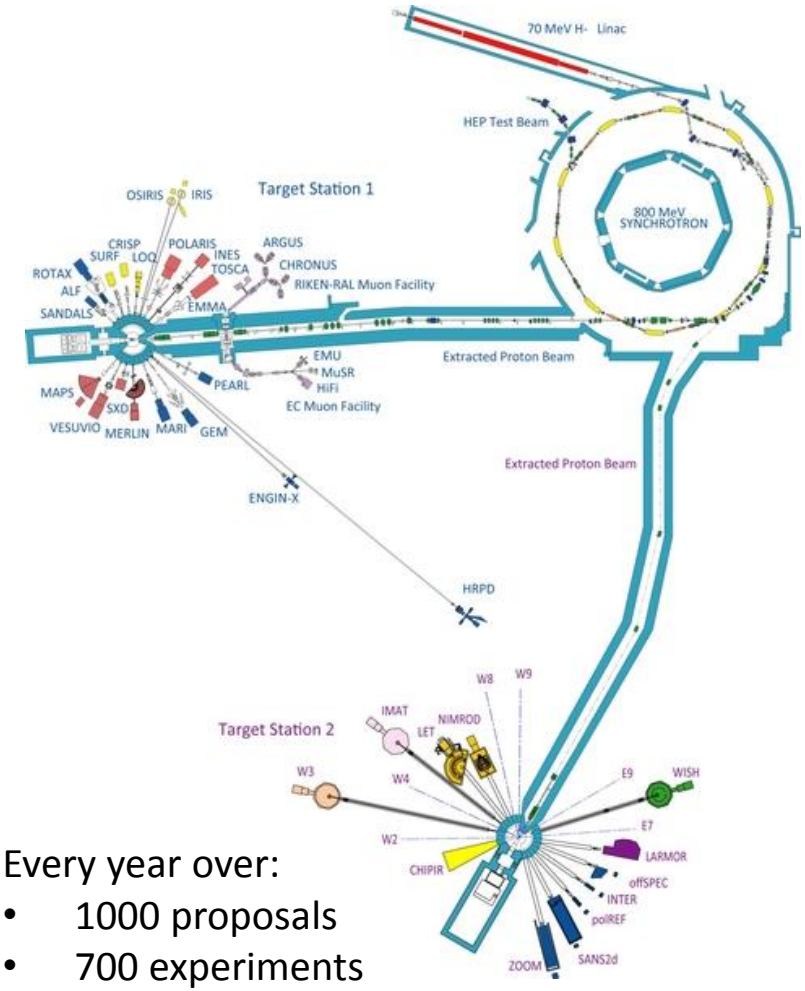
Science & Technology Facilities Council
ISIS

ISIS Facility

- Pulsed neutron and muon source
- ~30 experiment beamlines
- World leading materials research facility



Every year over:

- 1000 proposals
- 700 experiments
- 400 publications

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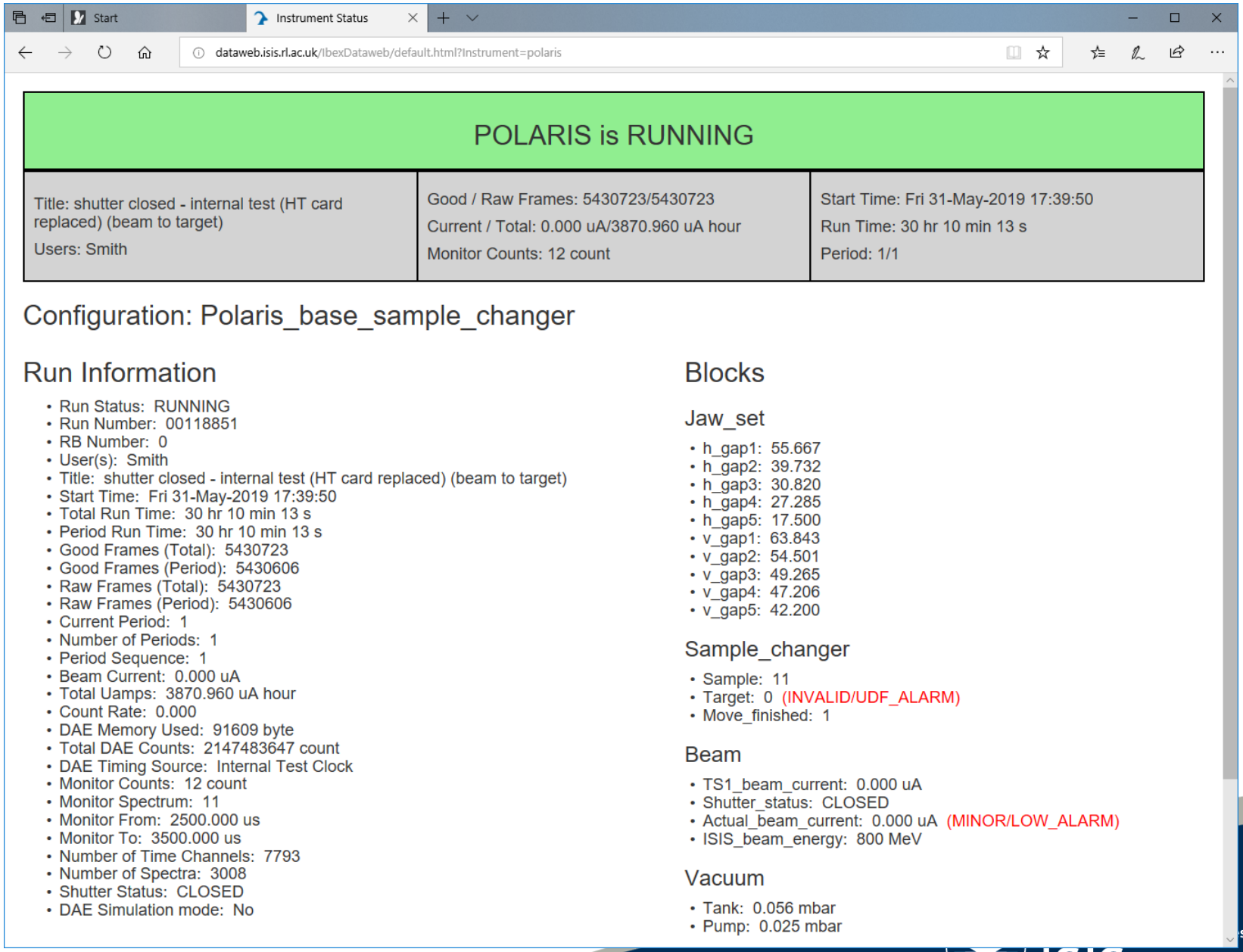
Instrument Control

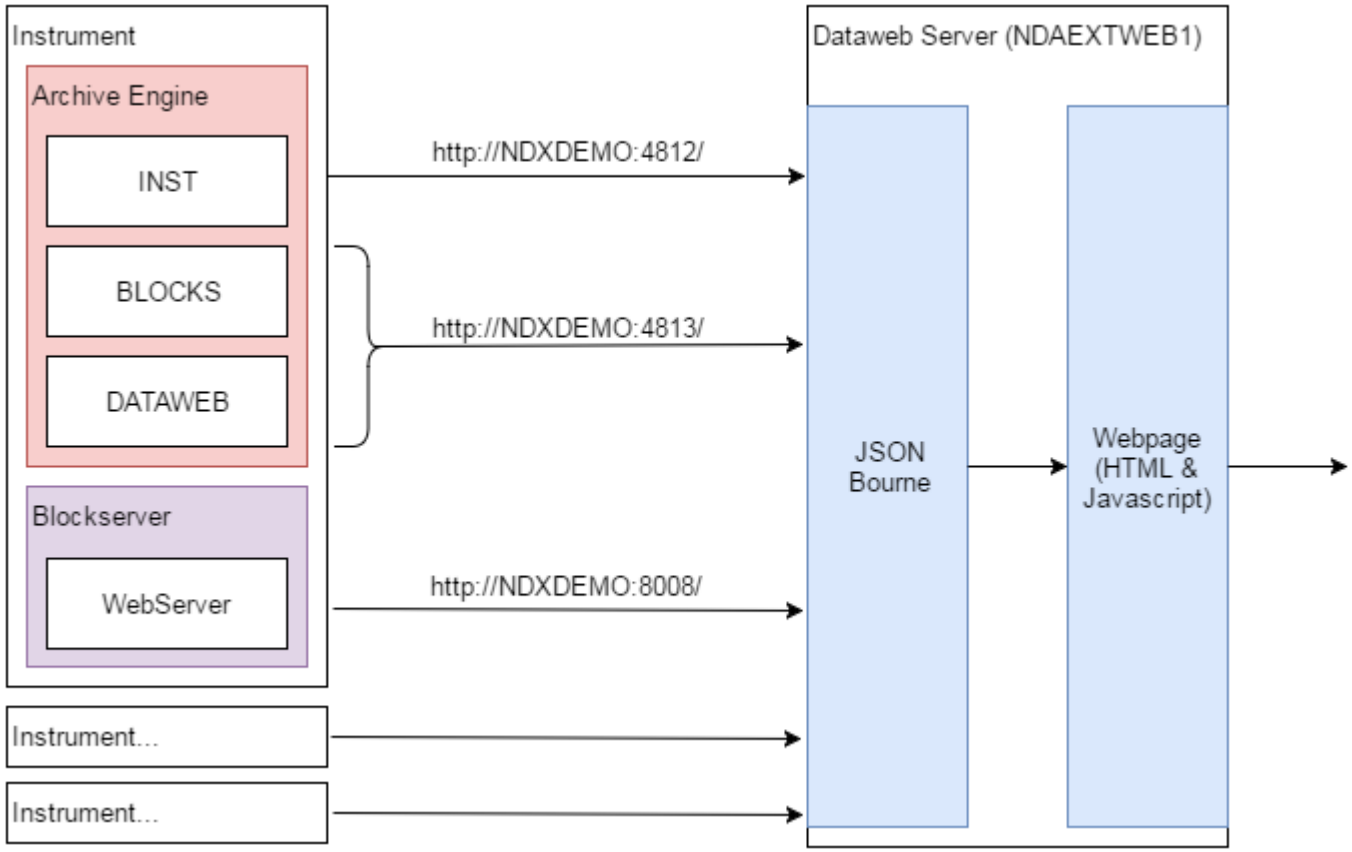
- EPICS base 3.15.5
- Eclipse GUI based on C S Studio
- Python scripting
- Running on Microsoft Windows x64

Web Technology Usage

- Only use web for display of data
- Main application is “web dashboard”
  - a summary of the instrument state for user
- Separately also use WebAgg matplotlib backend
  - For plotting in IBEX client GUI
  - Allows locating plot next to PyDev console


Start
Instrument Status
dataweb.isis.rl.ac.uk/IbexDataweb/default.html?Instrument=polaris
POLARIS is RUNNING
Title: shutter closed - internal test (HT card replaced) (beam to target)
Users: Smith
Good / Raw Frames: 5430723/5430723
Current / Total: 0.000 uA/3870.960 uA hour
Monitor Counts: 12 count
Start Time: Fri 31-May-2019 17:39:50
Run Time: 30 hr 10 min 13 s
Period: 1/1
Configuration: Polaris_base_sample_changer
Run Information
• Run Status: RUNNING
• Run Number: 00118851
• RB Number: 0
• User(s): Smith
• Title: shutter closed - internal test (HT card replaced) (beam to target)
• Start Time: Fri 31-May-2019 17:39:50
• Total Run Time: 30 hr 10 min 13 s
• Period Run Time: 30 hr 10 min 13 s
• Good Frames (Total): 5430723
• Good Frames (Period): 5430606
• Raw Frames (Total): 5430723
• Raw Frames (Period): 5430606
• Current Period: 1
• Number of Periods: 1
• Period Sequence: 1
• Beam Current: 0.000 uA
• Total Uamps: 3870.960 uA hour
• Count Rate: 0.000
• DAE Memory Used: 91609 byte
• Total DAE Counts: 2147483647 count
• DAE Timing Source: Internal Test Clock
• Monitor Counts: 12 count
• Monitor Spectrum: 11
• Monitor From: 2500.000 us
• Monitor To: 3500.000 us
• Number of Time Channels: 7793
• Number of Spectra: 3008
• Shutter Status: CLOSED
• DAE Simulation mode: No
Blocks
Jaw_set
• h_gap1: 55.667
• h_gap2: 39.732
• h_gap3: 30.820
• h_gap4: 27.285
• h_gap5: 17.500
• v_gap1: 63.843
• v_gap2: 54.501
• v_gap3: 49.265
• v_gap4: 47.206
• v_gap5: 42.200
Sample_changer
• Sample: 11
• Target: 0 (INVALID/UDF_ALARM)
• Move_finished: 1
Beam
• TS1_beam_current: 0.000 uA
• Shutter_status: CLOSED
• Actual_beam_current: 0.000 uA (MINOR/LOW_ALARM)
• ISIS_beam_energy: 800 MeV
Vacuum
• Tank: 0.056 mbar
• Pump: 0.025 mbar

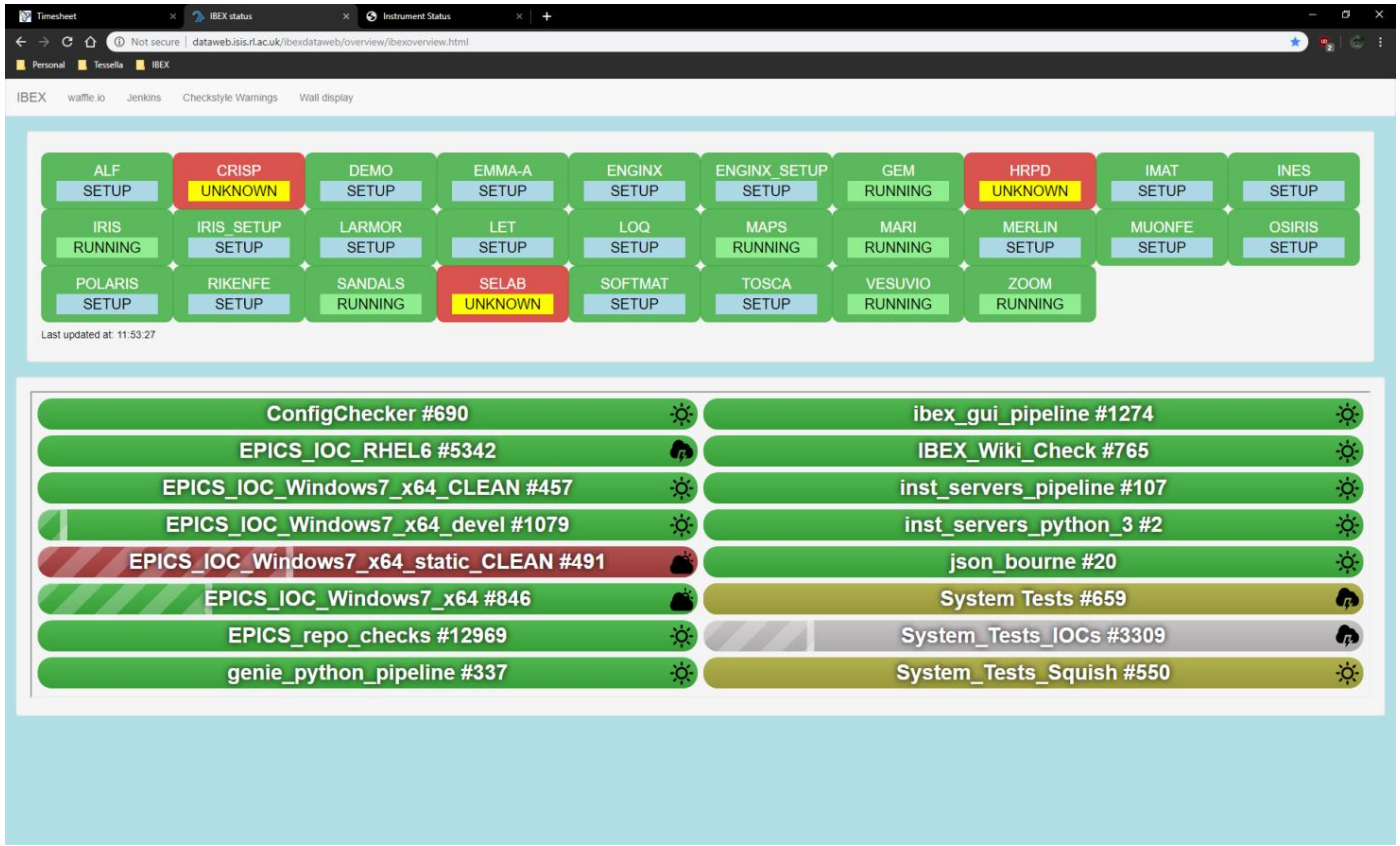
Web Dashboard Architecture



Web Dashboard Operation

- CSS Archive engine provides data as JSON
  - Several engines per instrument
- JSON Bourne process amalgamates data
  - Acts as a cache
  - Also groups it using blockserver configurations
- Client JavaScript (bootstrap) page reads data
  - Currently refreshed by polling

Easy to reformat data



Future

- Enable web dashboard to show graphs of historical data
- Starting to think about tablet computers on beamlines:
  - Smaller screen, less powerful
  - Potential application as a motion “jog box”
  - Looking at CS Studio Phoebus, but web an option?