Update Status MxCuBE3 at beamline XRD2

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IT

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XRD2

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Since last meeting

- Mxcube3 in operation since September 2018

- Focus on:

  Stability

  ISPyB and data processing integration

  Remote Access

- Last 10 user shifts from remote, mainly from Italy

October 2019

- **Login** :
  - Rest authentication through ELETTRA VUO
  - ISPyB
    - Connection with VUO, proposals, people
    - *Populating the table with persons on sessions for logins*
  - Logout restart server every time

  - **Data Collection Tab**:
  - Beamline Actions
    - Visualize Beam, Optimize intensity (charts not working)
  - Diffractomer (MD2):
    - Changing md2 phases moved to main menu
    - Automatic loop centering
    - Camera streaming
    - Better status of pin mounted/unmounted

- **Sample Changer Tab**:
  - Fully integrated via SynchWeb-ISPyB
  - Robot actions moved to SC

- **Sample Overview Tab**:
  - MCA scans

June 2020

- **Login** :
  - ISPyB
    - In-house shifts treated as VUO internal proposals
    - Individual login for common sessions
    - Implemented "visit" concept, avoids overwriting
  - Clean Logout

  - **Data Collection Tab**:
  - Data Collection
    - Better data collection abort management
    - Better DISTL and AUTOPROC integration
    - New Pilatus Tango Device
    - Run number increment according to ISPyB
  - Beamline Actions
    - Optimize beam position (H,V, Yaw), intensity with live charts
  - Diffractomer (MD2):
    - Automatic loop centering
    - Camera streaming without v4l2loopback module
    - Better 3-click centering abort management
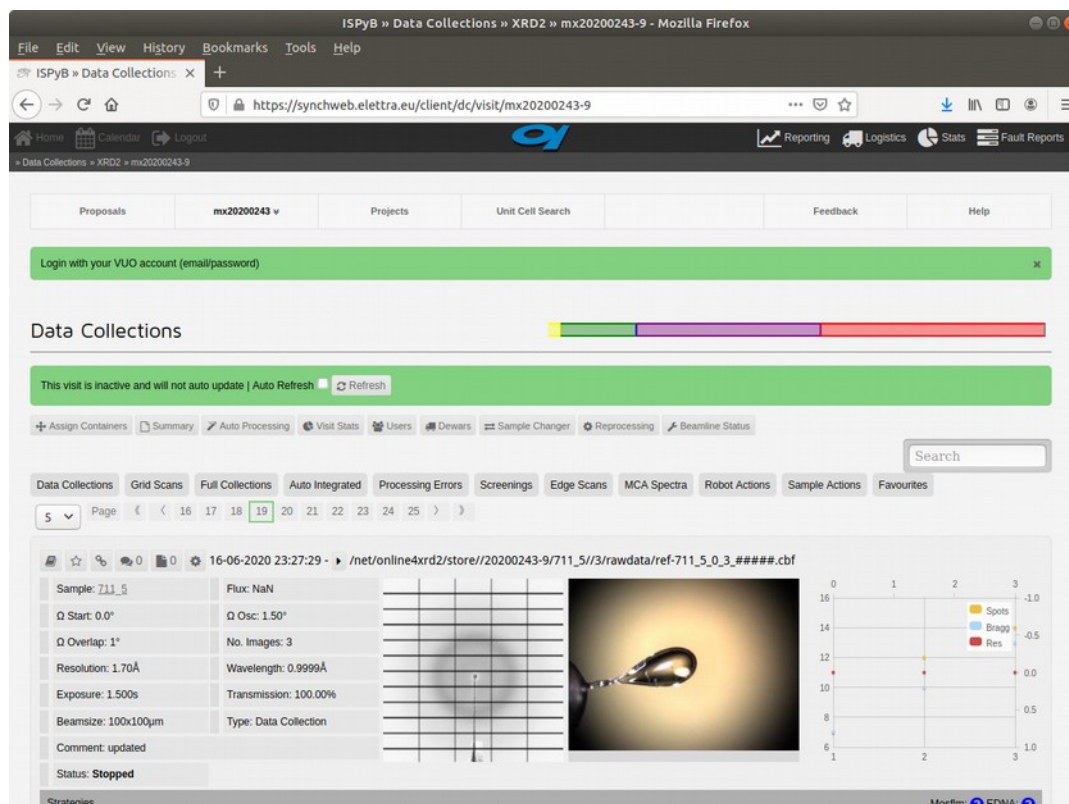
- **Sample Changer Tab**:
  - Bug fix for long term operations

- **Sample Overview Tab**:
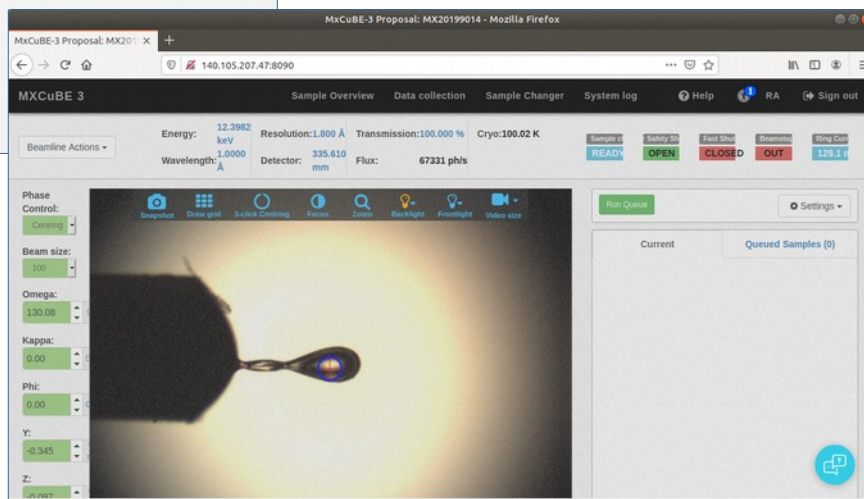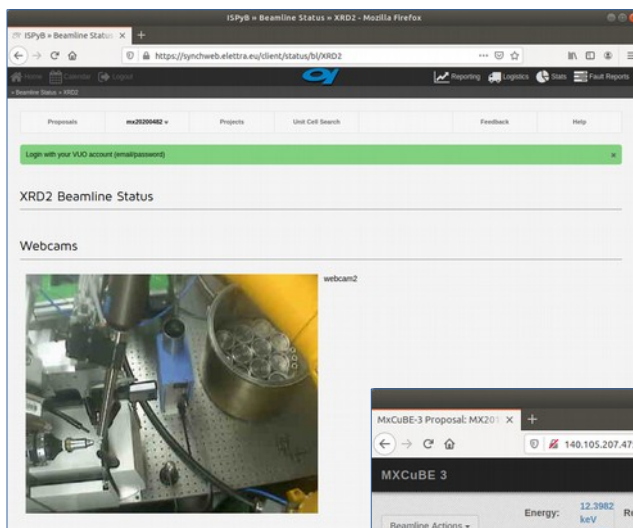 - MCA scans

First months after last meeting

- Worked on better abort management (data-collection, 3-click centering)

- Automatic Distl and Autoproc data processing within MxCube3

- SynchWeb has been upgraded to the latest version (support from DLS)

- Automatic integration of Autoproc results into ISPyB

- Beam Flux optimization in MxCube with live charts (Beamline Actions)

- New Pilatus Tango Device (Python)

29-30 June 2020

Last months: strong focus on Remote Access (COVID-19)

- Customized sample camera streaming (with bug-fix)

- Individual user login for common proposal

- Robot camera streaming integrated into SynchWeb

XRD2 RA setup

- Direct access to MxCube3
- Direct access to SynchWeb
- Reserved ZOOM room
- Albula via NoVNC Remote Desktop

Customization and bug fixes

LONG TERM OPERATION ISSUE

We've experienced an **automatic hidden command retry** from the web browser after a 2 minutes timeout: this led to an unexpected robot arm movement, very dangerous. Fortunately the standard timeout can be increased in the webpack configuration files.

VIDEO STREAMING

On Ubuntu18.04, kernel 5.3.0-4, we found the standard v4l2loopback module compiled in readonly mode. We had to adapt MxCube3 for streaming the video to ffmpeg via a pipe.

We've experienced a web browser crazy CPU usage, we had to modify part of the Javascript code for avoiding the creation of multiple video stream connections.

What's next?

- Automatic login name for Remote Access sessions

- Remote client already logged in after MxCube3 server restart, why?

- Automatic loop centring (MD2 not reliable): XREC, C3D ?

- Implement Raster Scan

- Solve MD2 issues: PC substitution, Camera Zoom motion system

- Actions from 'Sample Overview' or 'Data Collection' tabs are not the same?

- Force proposal selection after login and avoid duplicate messages in "RA chat"

- Autoproc analysis moved to a cluster?

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Thank you