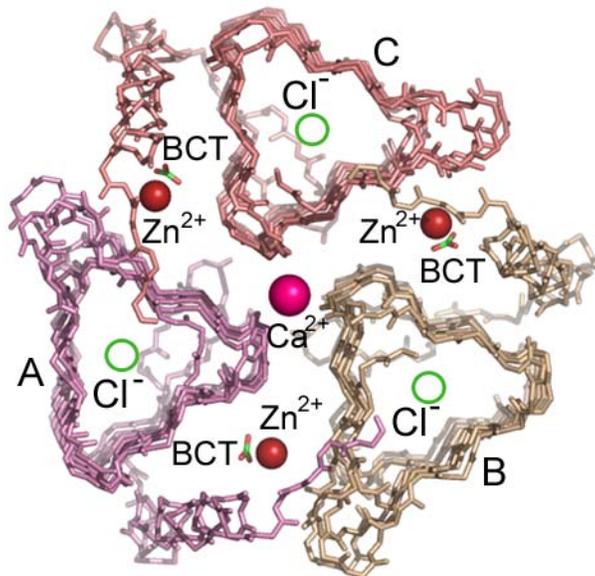# Macromolecular Crystallography (MX)

SPring-8 Taiwan Beamline 12B2

Beamline Scheduling Software (BSS)

User's Manual - II

(QUICK REVIEW)

Beamline Staffs

Jeyakanthan PHS 7877

Yoshimura   PHS 3156

SPring-8 Taiwan Beamline 12B2 PX Station Technical Summary

Operator	NSRRC-PX Group
Beamline Website	http://bionsrrc.nsrrc.org.tw
Beam time Schedule	http://portal.nsrrc.org.tw/schedule/lsch.php
Average Beam Life time	Infinite under SPring-8 Top up Modes
Ring Current (mA)	100 mA
Source	Bending Magnet
Optics	Vertically Collimating Pre-mirror, Fixed-exit Double Crystal Si (1 1 1) Monochromator, Toroidal Focusing Mirror. (Mirrors Rh-Coated and Mirror cutoff variable)
Energy Range	7-23 keV (1.77 -0.54 Å)
Flux	1.5 X 10E11 @ 12.398 keV
Spot Size	0.25 mm (H) X 0.25 mm (V)
Goniometer	Kohzu High Precision Goniometer (s. o. c. < 1 micron)
Pin Length and Restrictions	10-24 mm and Omega +/- 360 degree
Detector	ADSC Quantum-Q4R CCD Area Detector
Xtal-detector Distance	900 – 850 mm
Detector Details	Inter-Frame Total Dead Time: 14s
2θ Range	+/-5 cm Horizontal, +9cm/-1cm Vertical
Cryo Capability	Rigaku/MSC X-Stream2000,~110 K@ sample
Software	BSS & ADX Control Software, HKL2000 and all Crystallography Software
Experiments	MAD, SAD and Monochromatic

Usage Protocols for PX Experiments

1. To prevent the interference between different user groups, users are expected to reach the beamline site **AFTER** their beam time begins.

2. Users are also expected to have backed up all their data sets and cleaned the beamline area **BEFORE** their user time ends.

3. During the first two hours of each group's beam time, support staff will optimize the beamline condition and also give orientation course to user. All the users expected to attend the orientation course.

4. Users are responsible for knowing and following all applicable safety protocols.

5. Users are responsible to report the missing items or broken experiment tools.

6. Users should not attempt to repair or realign beamline optics.

7. Users should not attempt to remove covers or power off any electric equipment.

8. Users should not attempt to reboot any on-site computers.

9. Users should not bring any eating/drinking items inside the experiment ring.

10. User should return their Luxel Landauer and ID card to user office or concern office (12B2 staff) after their users beam time over.

Attention!!

1. Please keep in mind that the 1st priority is the personnel safety and the 2nd priority is the safety of the CCD detector.

2. Unless you are under the situation of the radiation injury, please **DO NOT** touch the **DUMP BUTTONS** on the Interlock Controllers. It will **SHUTDOWN** whole SPring-8 storage ring.

3. Please **DO NOT** touch the front surface of the **CCD detector** or put anything on the detector. The CCD detector is very fragile and expensive. Before you can mount/dismount or center your crystal, the CCD detector must be evacuate to the 350 mm position and put on the protection cover.

4. Please avoid hitting beam stopper, Co-axial camera and backing light accidentally. Before you can collect your data, please make sure that the beam stopper and back light at the right position. If the beam stopper is not at right position and the direct beam will damage the CCD detector.

5. If you hear alarm noise or wrong operation from the Interlock Controller, please press the **STOP button** on the screen of the Interlock Controller and call the supporting staff immediately.
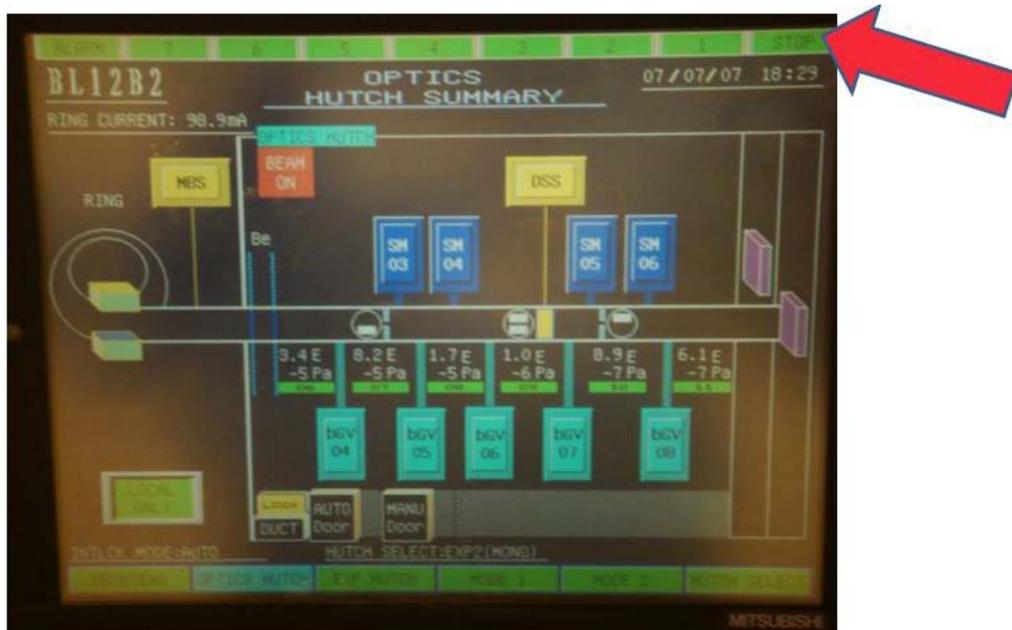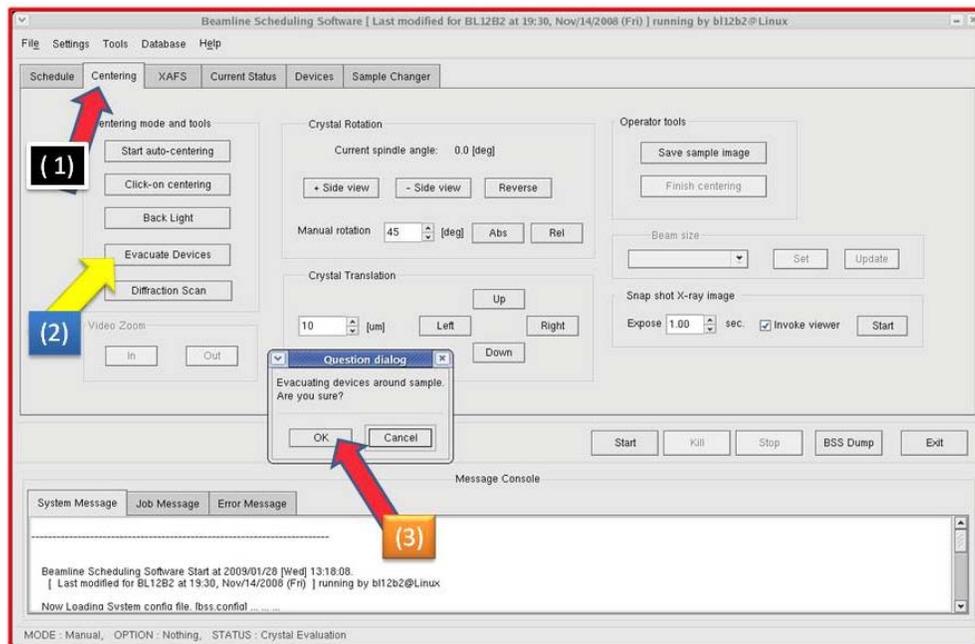
How to proceed your Data Collection (quick review)

1. Click the Bemaline Scheduling Software (BSS) button on the task bar and please check the Question dialog box.
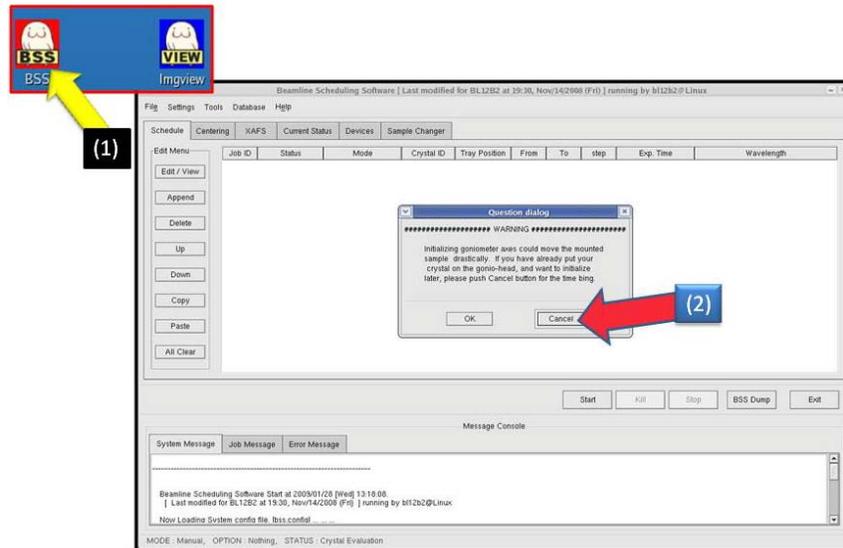
2. Evacuate the detector position to the 350 mm and wait for the motion finish.

3. Close the Down Stream Shutter (DSS) and wait for a while until close the DSS shutter. Switch the shutter Control Key to the DISABLE position.


4. Open the Hutch door and Put the protection cover on the CCD detector.

5. Mount your Sample and come to the BSS task bar window. Click the Centering button and align your crystal using the auto centering methods and please follow the instructions (More Details are in Manual –I).
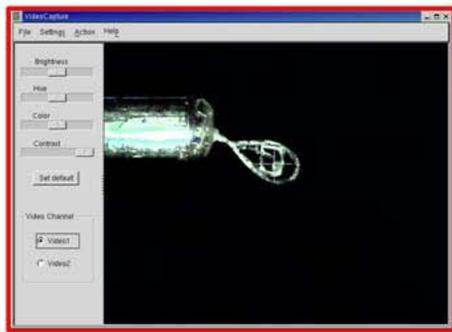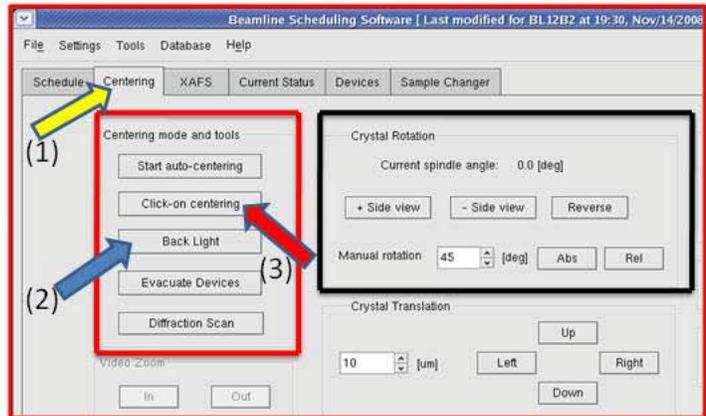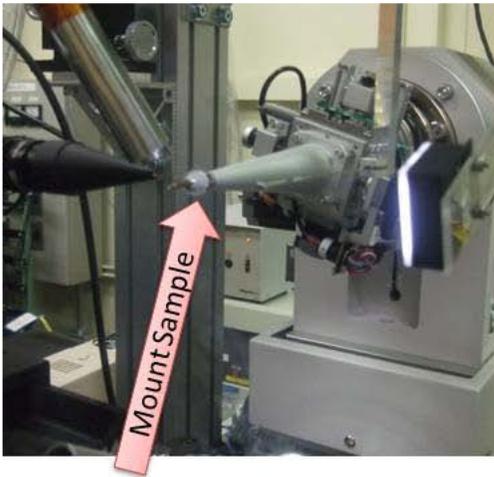
6. Please check the Beam stopper and Back light. Remove the protection cover carefully on the CCD Detector.

7. Push the EXIT button of the Interlock Controller in the Experimental Hutch.
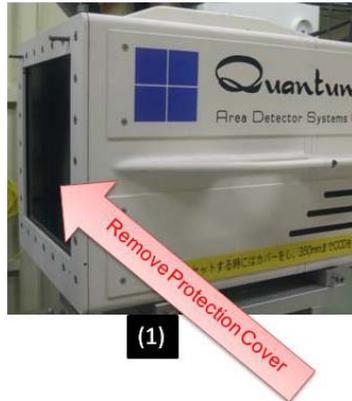
8. Close the Hutch Door and wait for until close the door.

9. Switch the shutter control key to the ENABLE position and Open the Down Stream Shutter (DSS)
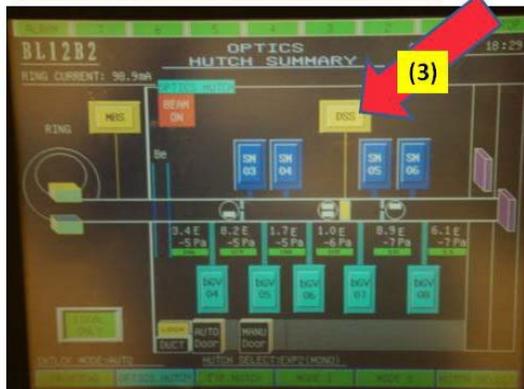
10. In BSS GUI, Click the Edit/View or Append menu to setup your working director, Camera distance, starting omega angle, oscillation range, exposure time. Take some images to evaluate your crystal and determine your data collection strategy.
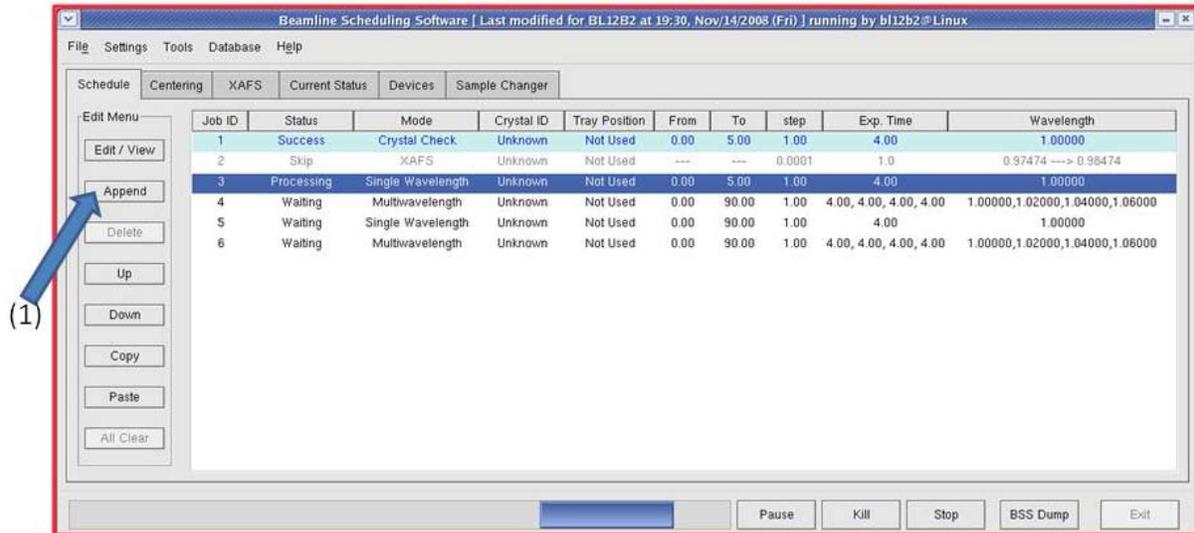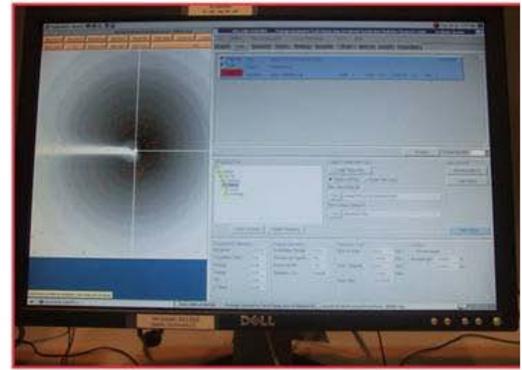

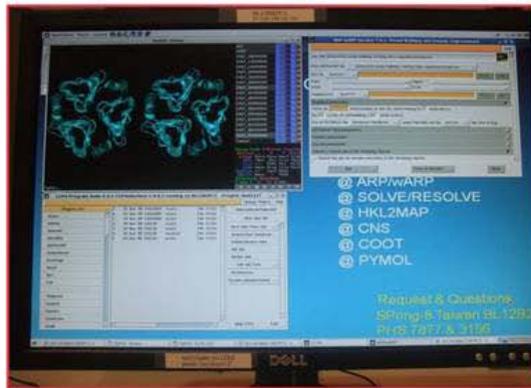Edit your Job in Beamline Scheduling Software (BSS) and Start Data Collection Methods
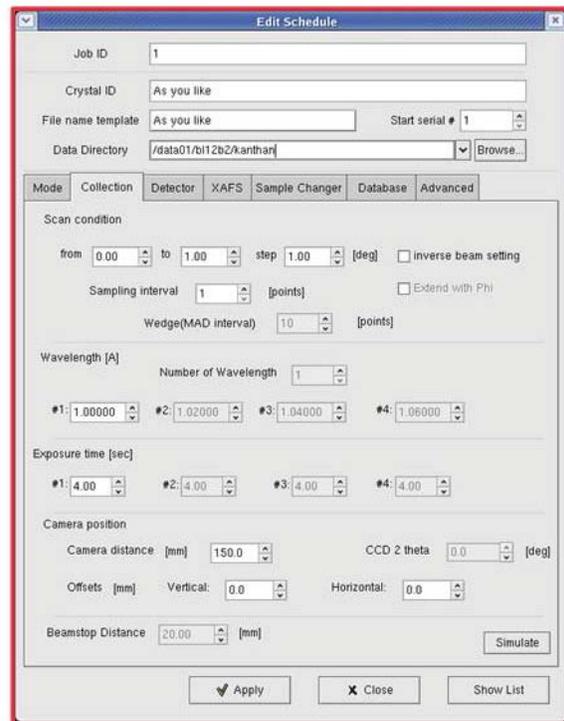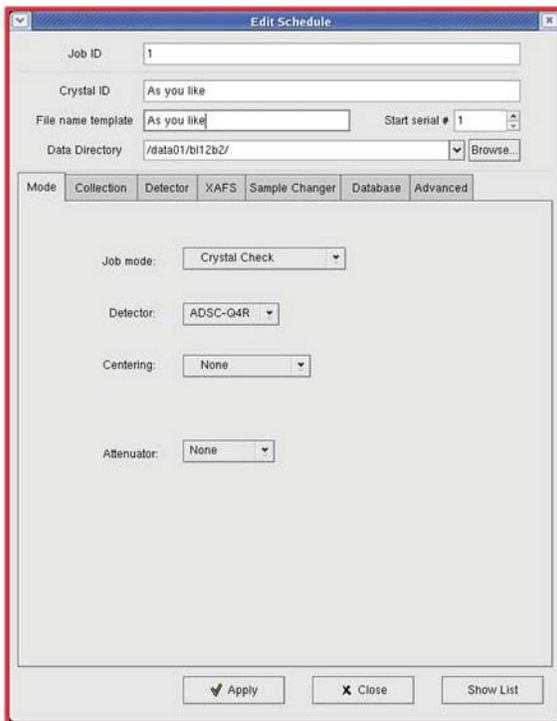
CPUs for Data collection, Data processing and Data analysis
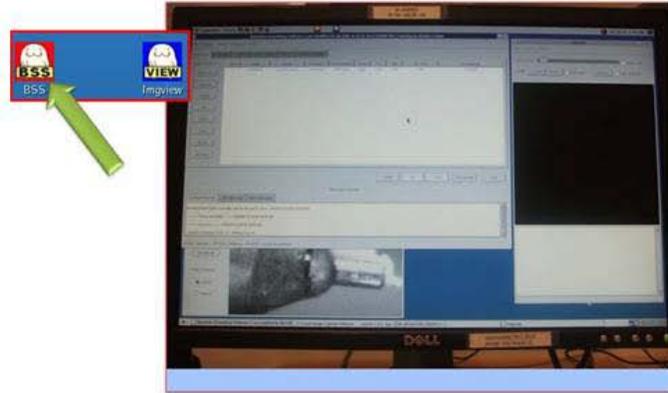
BSS: Data Collection CPU
IP: 192.168.59.152

Data Process and Data Analysis CPU
IP: 192.168.59.153

Data Process and Data Analysis CPU
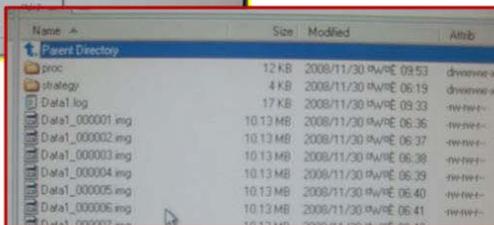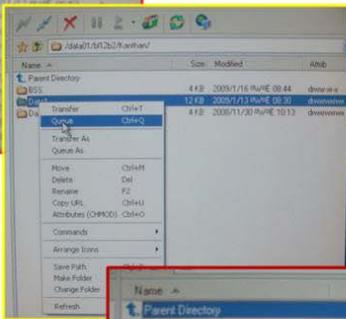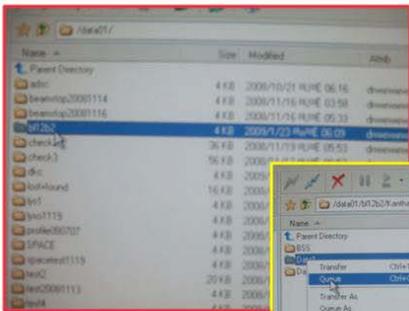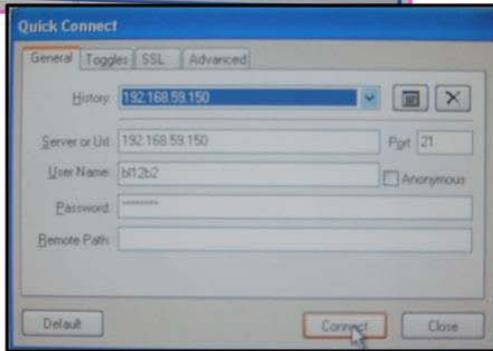IP: 192.168.59.151

Data Storage CPU 7TB Raid disk
IP: 192.168.59.150

IP Address for User Computers:
192.168.59.201--...
Users Network Set...
IP:192.168.59.2... ...ask:255.255.255.0
...254 DNS:10.10.27.1

LAN (DHCP)

Public Network
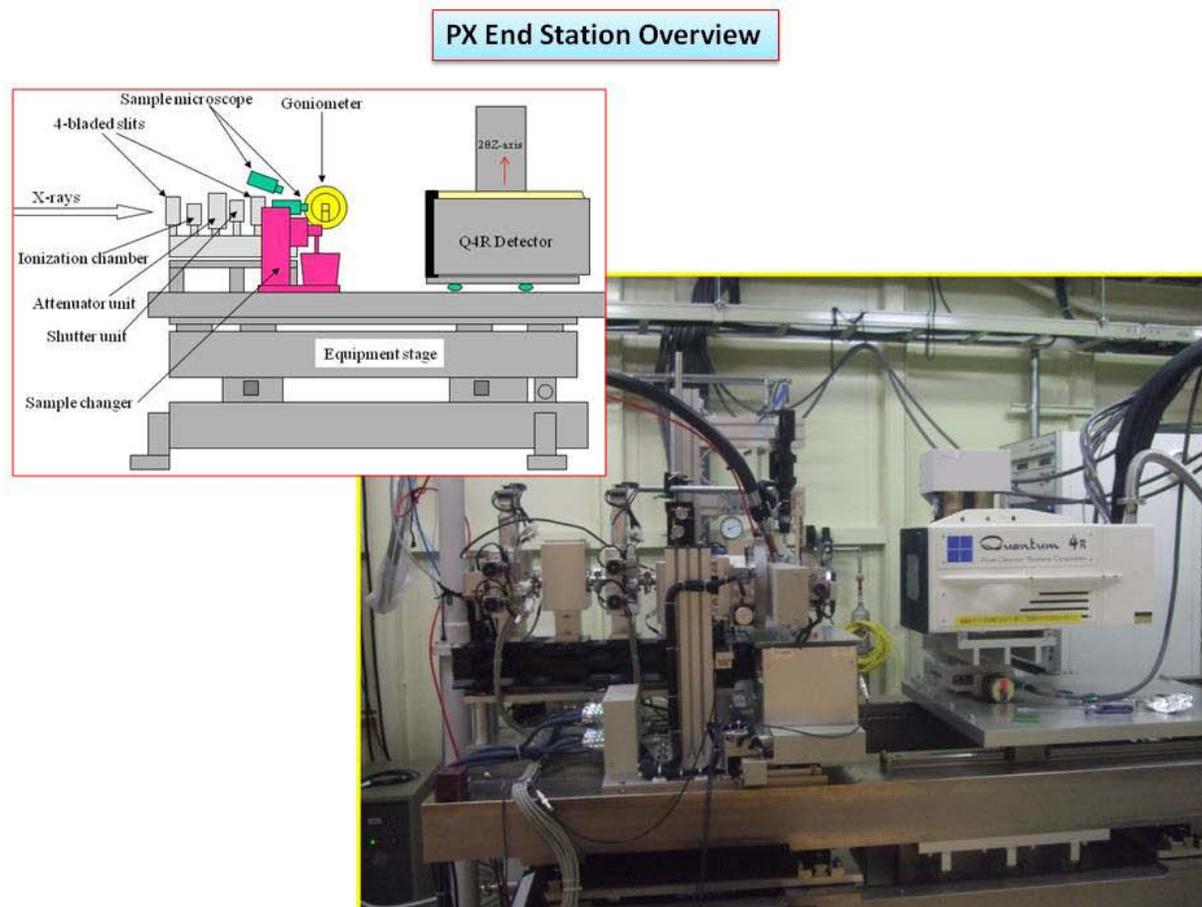
Available Hub

Computer System for Data Backup
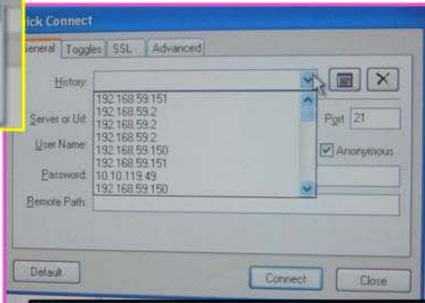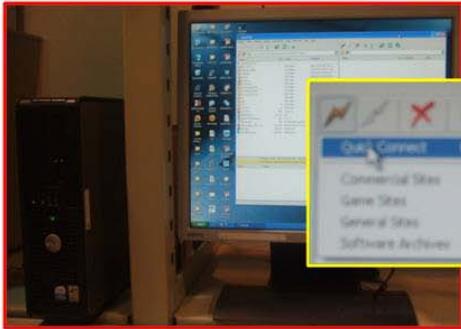
PX-Experimental Hutch

PX End Station Overview

Information and Request:

Current BSS is still under development. There are some errors that can be recovered by the users, please record all errors on the log note book or report to beamline staffs regardless of how trivial those errors are. Trouble shooting to those errors will be added to the manuals for the coming version.

Bug reports are very helpful for programmers. Your cooperation is necessary to make the beamlines better.