

Beamline Control Module developments at the ESRF

D. Spruce ESRF

Contents

- Overview of current work
 - ProDC, PxWeb, DNA
- Current plans for the future
- Establishing common developments

Current work - ProDC

ProDC Beamline Control ProDC V9

File View Commands Help

Instrument(s) Control

Fast X-ray shutter is **CLOSED**

Motor Position Control:	Current	Destination	Relative
Phi	+90 -90 0.0	0.0	0.0
Detector Dist.	0.0	0.0	0.0

ADSC Q210 Detector

File format:

Save Corrected Image

No Image Display

Take dark current at start of collection

Binned Fast

Status Messages

Register User In Database

Proposal number. fx - 1

OK Cancel HELP

Data Collection Input

Collection mode Single Run Exposure Mode Oscillation

Directory /bliss/users/blissadm/test/

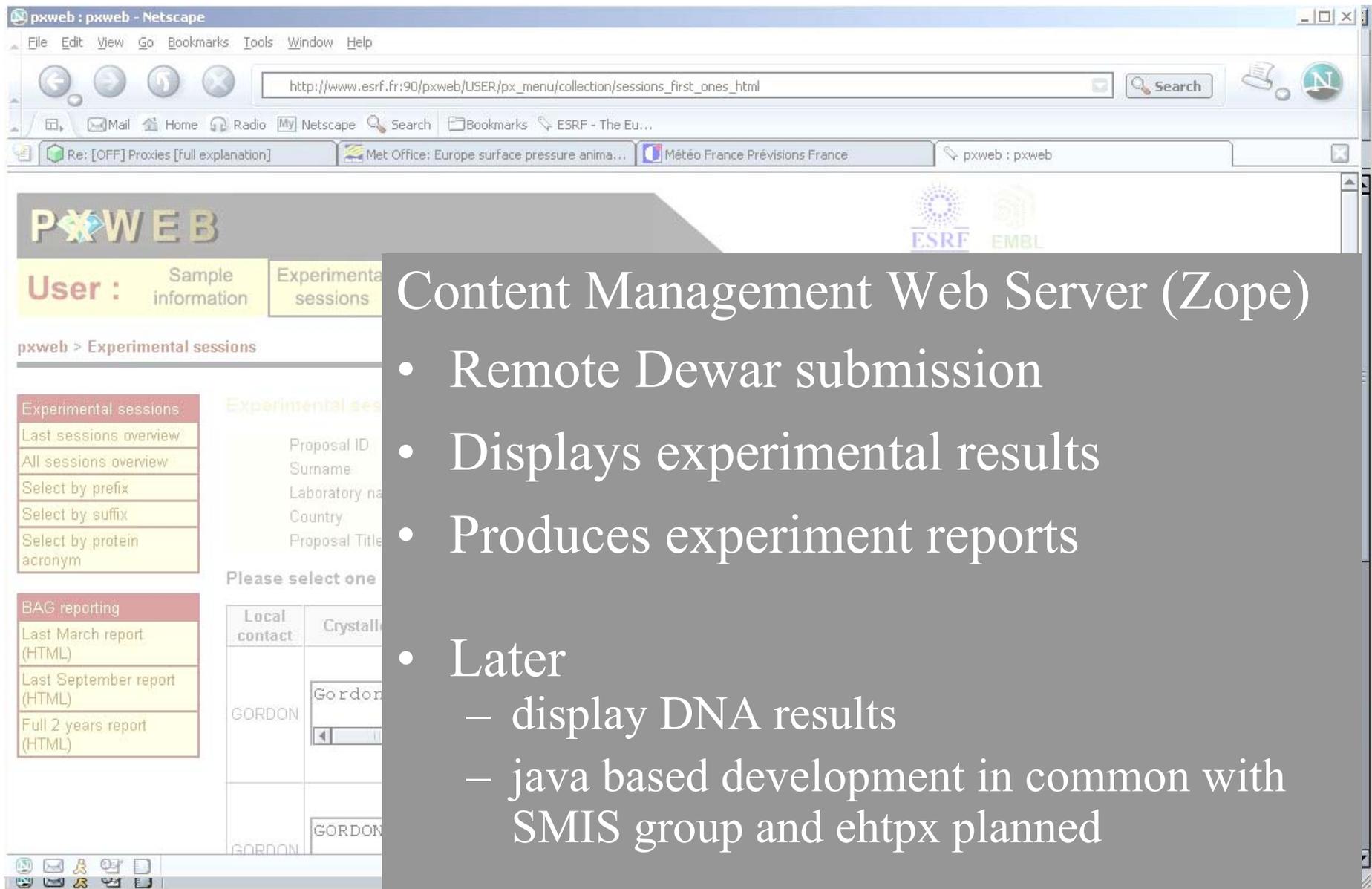
Frame number to start	1	Propos
Oscillation Start (deg)	90.000000	Protein
Oscillation Range (deg)	1.000000	Prefix
Overlap between frames (deg)	0.000000	Run nu
Exposure time per frame (sec)	5.000000	Comme
No. of passes per frame	1	Templa
No. of frames to collect	100	Disk sp
		Total e

Start data collection Stop data collection

User Nobody logged out

- Standard on ESRF Px beamlines
- Current automation integrated (including sample changer)
- Writes experimental parameters to database

Current work - PxWeb



Content Management Web Server (Zope)

- Remote Dewar submission
- Displays experimental results
- Produces experiment reports
- Later
 - display DNA results
 - java based development in common with SMIS group and ehtpx planned

Current work - DNA

DNA Expert System for data collection

Collect Reference Images | Auto Index | Strategy | Collection Progress | Configuration Editor

Setup for collecting two reference images 90 degrees apart by Expert System

Directory = /data/id14eh3/external/fx11/29April04/AVS1/4539B4

Prefix = AVS1-4539B4

Keep PUBLIC copy of reference images = Enabled

Start Run Number = 1

Exposure Time = 1.0

Oscillation = 1.0

Resolution = 2.0

Bravais Lattice = unknown

DNA Control

Status

Help

Quit

Abort

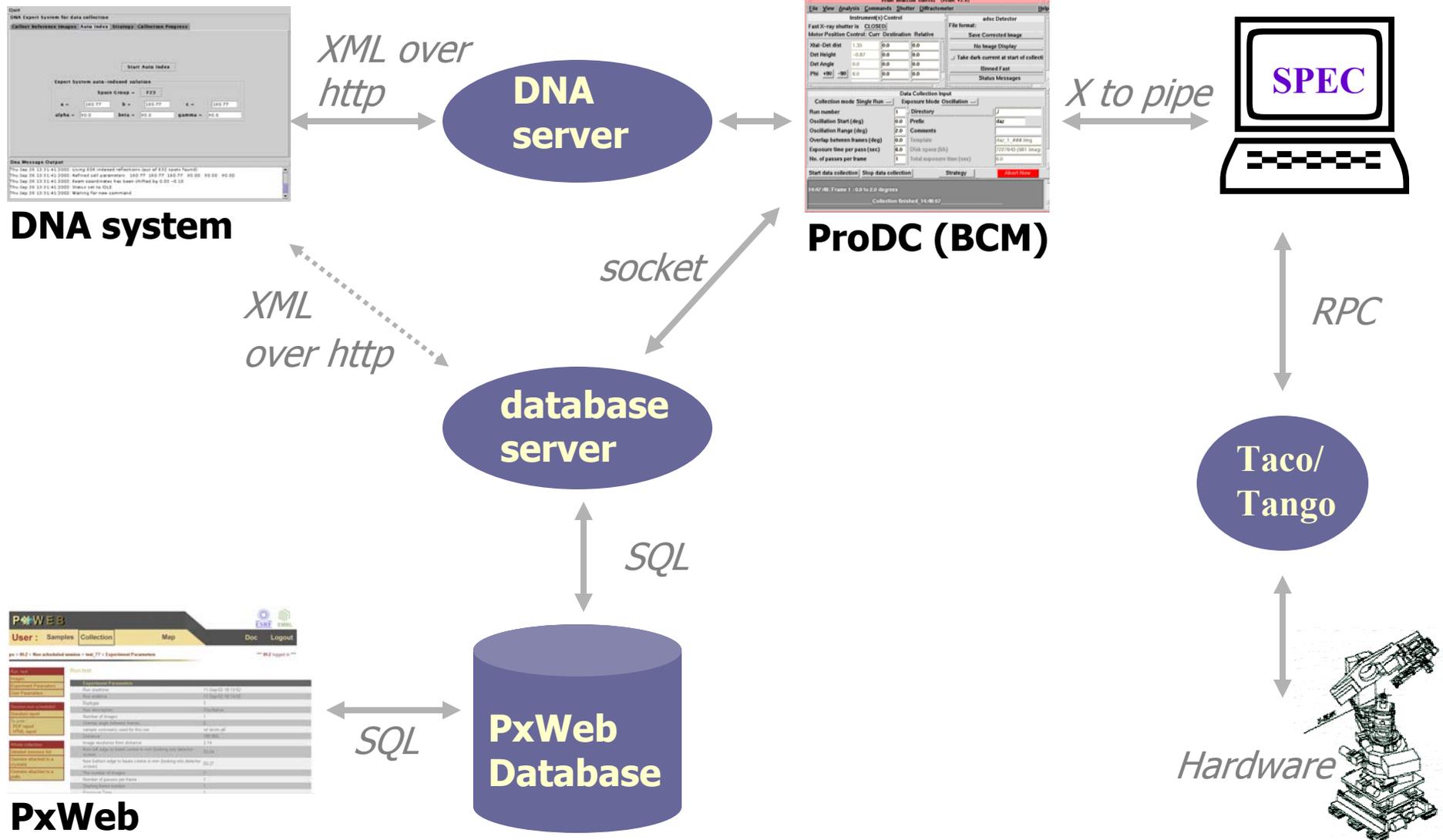
Executive Output | MOSFLM Out

```
030504 08:20:13 :
030504 08:20:13 :
030504 08:20:13 : Startup of th
030504 08:20:13 : $Id: ExpertSy
030504 08:20:13 : DNAHOME = /us
030504 08:20:13 : DNANAME = id
030504 08:20:13 : BCM host = at
030504 08:20:13 : Waiting for r
```

Automated data processing

- Characterise crystal, giving cell, space group
- Gives collection strategy
- Collects data using ProDC/PxGen

How do they connect together?



Future Plans- BCM

- More automatic beamline needs different presentation for user.
- Current programs need better integration

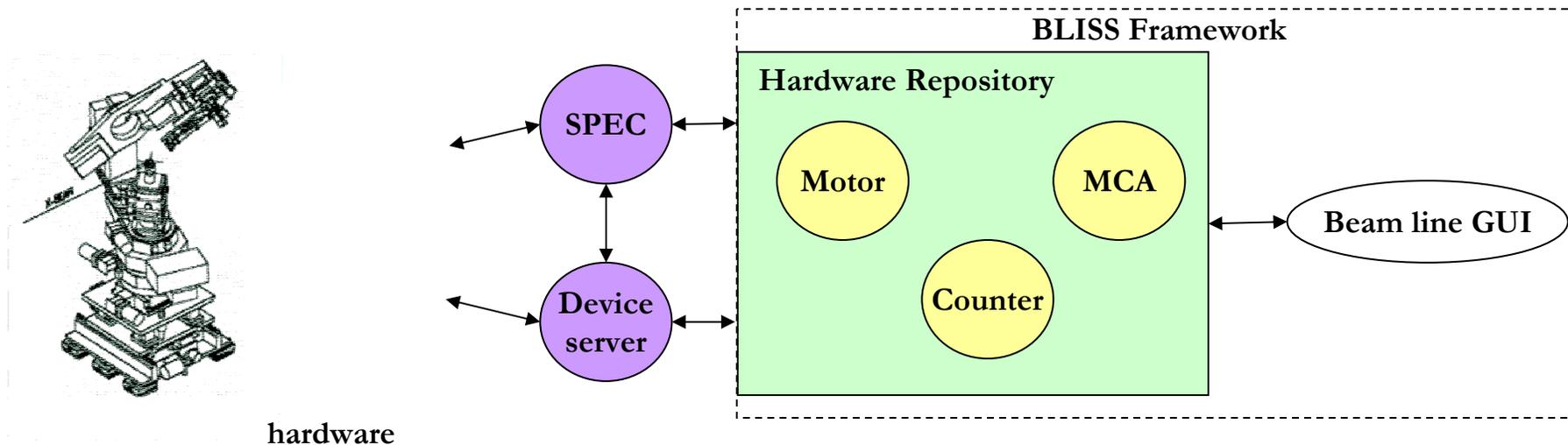


- Two beamline Interfaces
 - for fully automated experiments and expert operations (using the BLISS framework)
 - Web browser to access current and enter new information on samples and experiments (PxWeb2)

Future Plans – BLISS GUI Framework

Main role for a GUI : allowing the user to ‘see and control’

How can our bricks interact with the hardware on beam lines ?



- ▶ The **Hardware Repository**, as part of the Framework, provides abstract objects representing real hardware devices
- ▶ These objects are data sources and controllers for the bricks

Future Plans – Framework example

Exes ID23 (expert) ID23 GEMINI

ID23 - Exes Control Panel

exptable



real	pseudo
thgt	-4.497
txtilt	+14.624
tytilt	+0.963
ttr	+14.037
tztilt	-4.769
tftilt	-9.000

minidiff



mple	more
shutx	-1.281
shutz	-0.318
shut	+0.000
bstopy	+0.140
bstopz	+0.005
DtoX	+295.000

slitbox

slit1	slit2
slv	+1.000
tlv	+0.080
slh	+1.000
tlh	-0.020

saf. shut

closed

Open

mirror

pseudo	real
roll	+0.593
tory	+2.950
yaw	+0.027
mhen	-1.113
torh	-0.559
mtt	+1.267

sslit

pseudo	real
ssvo	+0.000
ssvg	+1.000
ssho	+0.000
sshg	+3.000

mono

pseudo	real
energy	+9.65896

pslit

pseudo	real
psvo	+0.000
psvg	+1.500
psho	+0.000
pshg	+3.500

Front End

automatic

Auto

Close

Scan | mirror | sslit | mono | pslit | filters | exptable | slitbox | minidiff

Mirror Beam V.	Din In/Out	Mon Beam V1	B.Viewer	Axis 2	Axis 1
● yag	Diode	Pt	PyroC 0.5	● Empty	● Empty
Empty	● Empty	yag	Diamond	AI 0.3	PyroC 0.5
Diode		● Empty	● Empty	AI 0.5	PyroC 1
		Cu	AI 5	AI 0.93	PyroC 2
		Fe	PyroC 5	AI 1.87	PyroC 4
		Zr	PyroC 6	AI 2.71	PyroC 6
		Mo			
		Diode			

INFO 04-26-2004 20:58:08 Got reply from Spec version lid232:eh1, ID 730

INFO 04-26-2004 20:58:22 SpecCommand start: launch command "dscan shutz -2 2 50 0.1"

INFO 04-26-2004 21:04:50 Got reply from Spec version lid232:eh1, ID 732

Future Plans -New BCM interface

- In a single window
- Fully automated user/operator mode
 - Pre-defined experiment sequences
 - Automatic alignment (optics + sample)
 - Sample handling
- Full control (expert) mode
 - Full access to beamline instrumentation

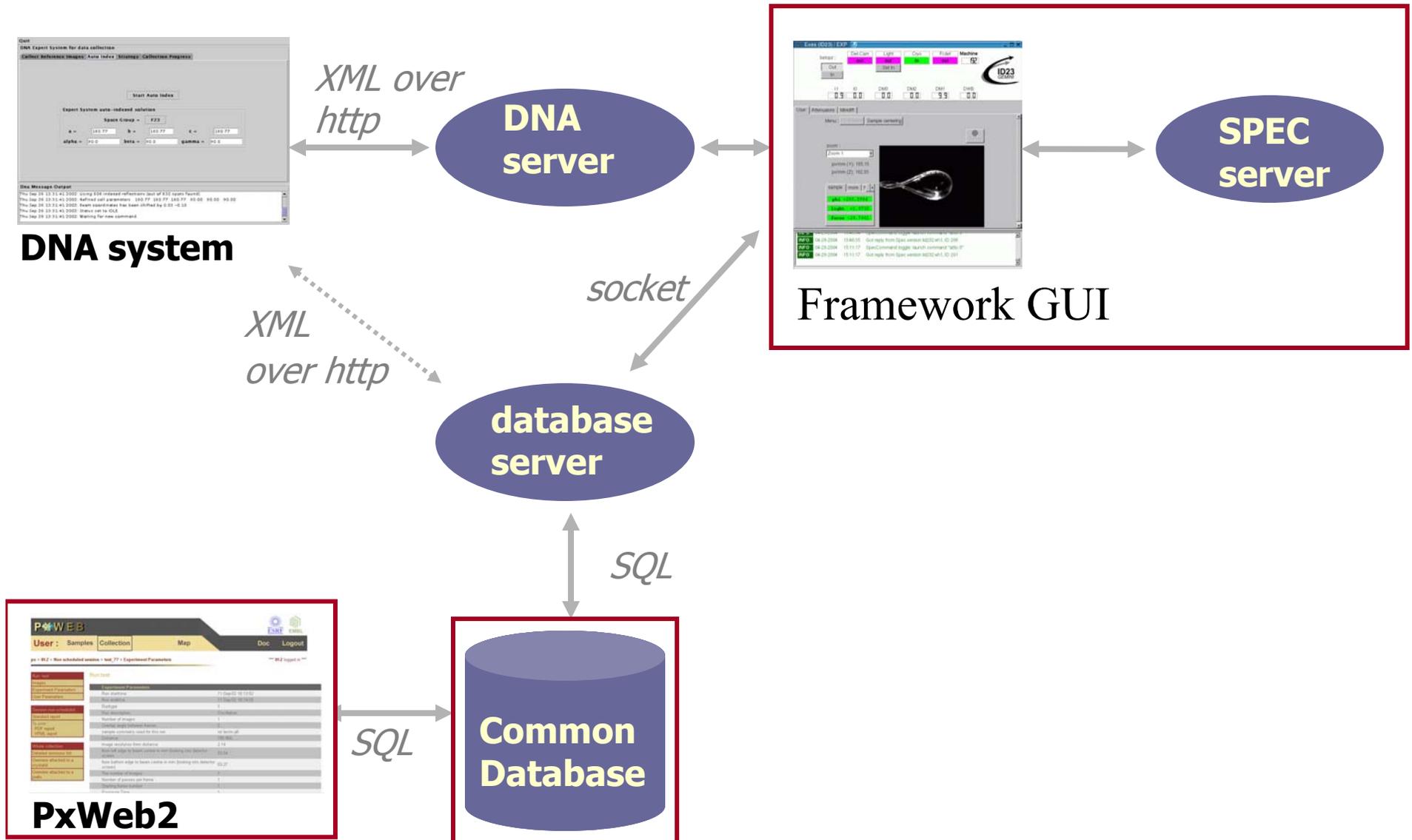
Future Plans -Web Server Interface

- Information can be accessed locally on the beamline and remotely, offsite
- Will benefit from PxWeb knowledge and experience
- More Integration into SMIS, easier for users
- Common requirements with ehtpx collaboration
- Java based development

How can we work in common?

- Convergence on look and feel
 - discuss with other groups about similarity
 - Try to evolve similar GUI's to look similar
- Common data models
 - Help define common model and report back to EBI

Current/Future Setup



People/Projects

- PxWeb (Solange Delageniere/ Darren Spruce)
 - + input from industrial correspondants
- DNA (Olof Svensson, Graeme Winter, Steve Kinder, Karen Ackroyd, Harry Powell, Darren Spruce)
 - + input from many experienced crystallographers
- Framework (Gilles Berruyer, Matias Guijarro, Vicente Rey Bakaikoa)....
- ProDC (Darren Spruce)
- + input from MX group at the ESRF

Questions...

Current Funding

- Bioxhit
- SPINE
- Ehtpx