

ATF2 Flight Simulator Updates

- Overview of FS goals and requirements
- Summary of updates since Dec meeting
 - Core software
 - Client applications

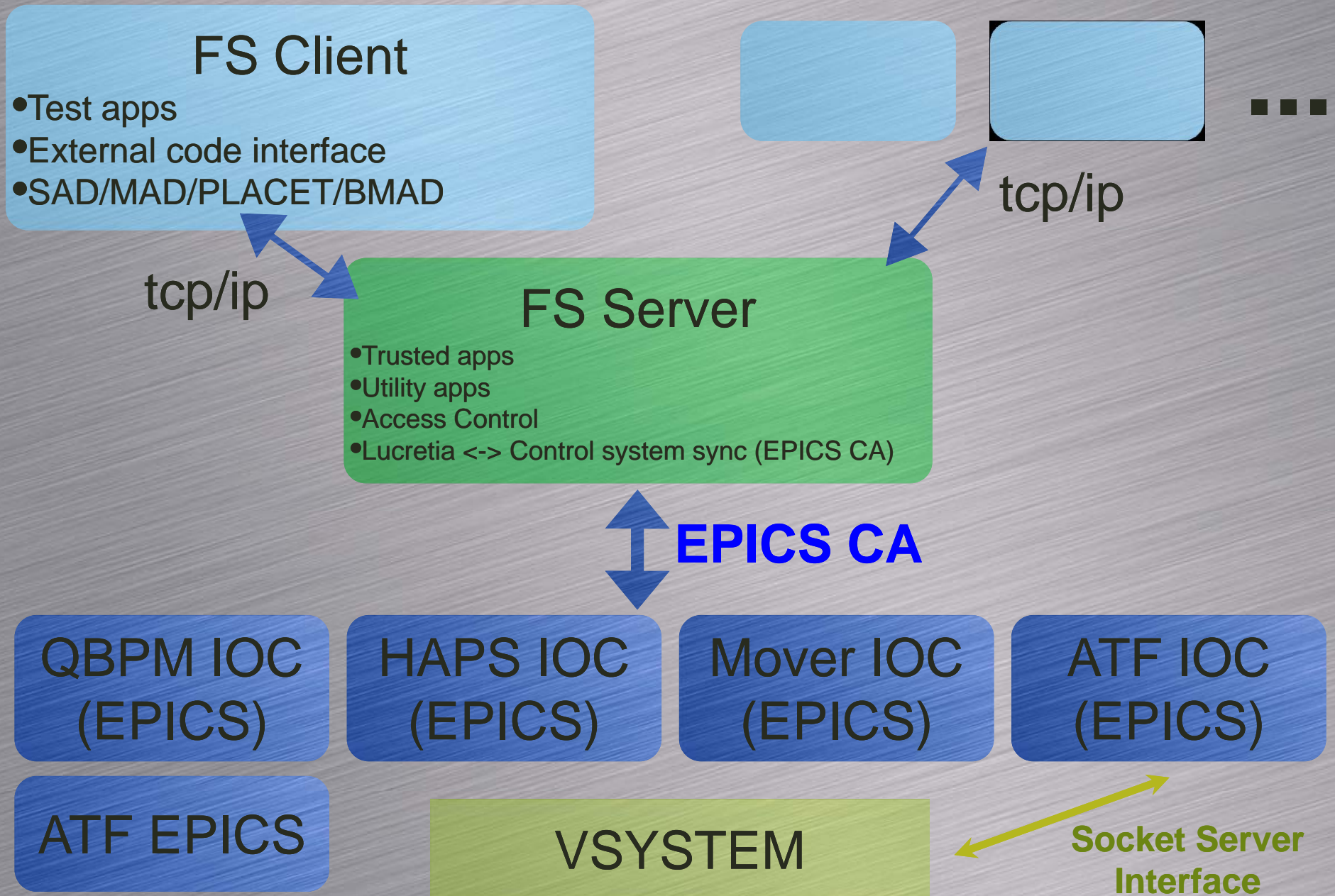


*Glen White, SLAC
8th ATF2 Project Meeting
June 2009*

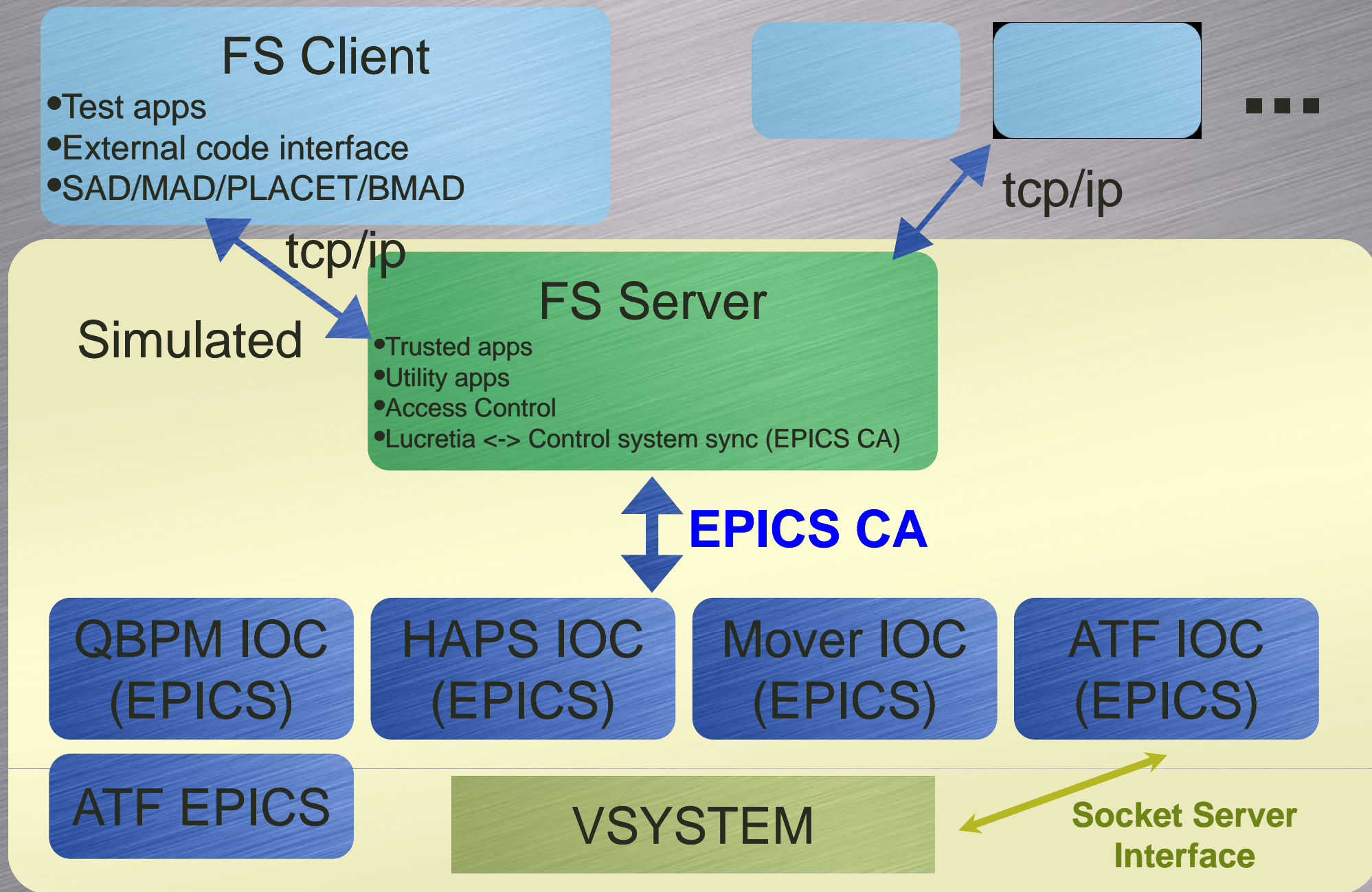
Flight Simulator Goals

- Provide simple to use, beam dynamics oriented, portable control access framework for ATF2 tuning tasks.
- Simple and reversible transition from beam dynamics simulation to accelerator ready code.
- Ability for international collaborators to develop beam tuning tools without need for expert level knowledge of control systems.
- Flight simulator operates in simulation mode at external location in the same way as the production system deployed at ATF2.

ATF2 Implementation

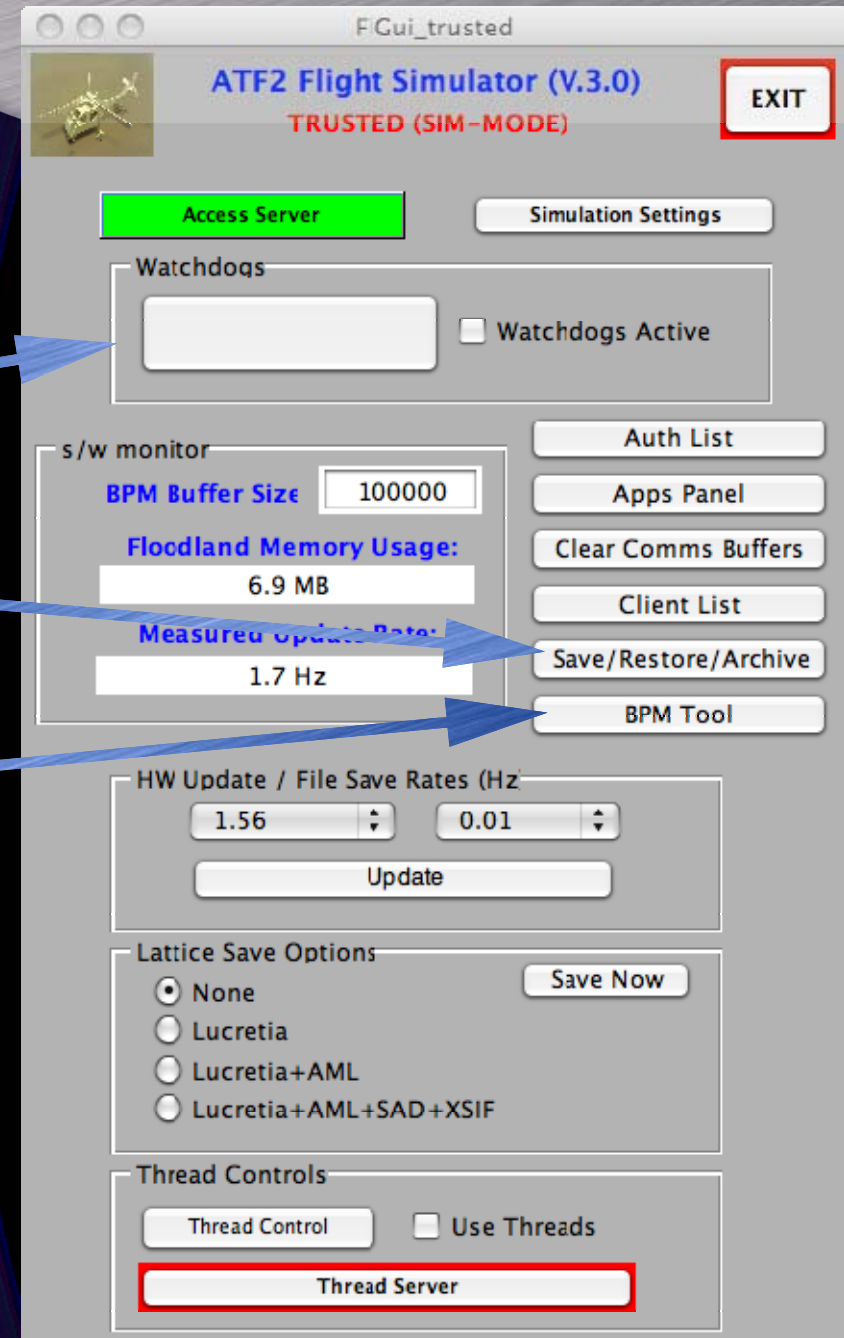


Simulation Mode



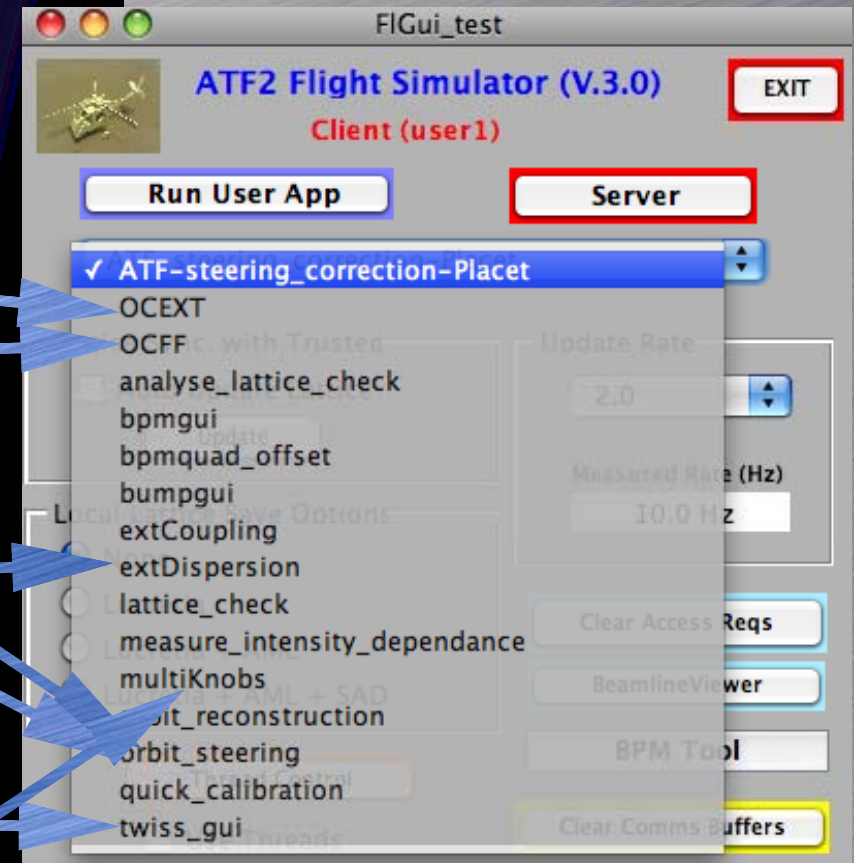
Server Development

- Watchdog apps
- Improved Archiver tool
- BPM tool
- Server available through VNC on controls subnet.



Client Apps Development

- EXT Steering
- FFS Steering
- Improved EXT dispersion tool
- Improved Twiss Tool with MAD interface
- IP multiknobs (functional interface only)



FFS Matching Quad Polarities

setQMffPolarities

Set FFS Matching Quad Polarities EXIT

QM16FF <input checked="" type="radio"/> QF(N) <input type="radio"/> QD(R)	QM15FF <input type="radio"/> QF(R) <input checked="" type="radio"/> QD(N)	QM14FF <input type="radio"/> QF(R) <input checked="" type="radio"/> QD(N)
QM13FF <input checked="" type="radio"/> QF(N) <input type="radio"/> QD(R)	QM12FF <input checked="" type="radio"/> QF(N) <input type="radio"/> QD(R)	QM11FF <input type="radio"/> QF(R) <input checked="" type="radio"/> QD(N)

Write To Database Refresh

Panel writes polarities (QF=1, QD=-1) to EPICS on pressing button

FiGui_trusted

ATF2 Flight Simulator (V.3.0) EXIT

h/w Settings EXIT

Magnet Standardisation

EXT Matching Quad Polarities

Access Server

Watchdogs

s/w monitor

BPM Buffer Size 100000

Floodland Memory Usage: 6.9 MB

Measured Update Rate: 1.7 Hz

Auth List

Apps Panel

Clear Comms Buffers

Client List

Save/Restore/Archive

BPM Tool

HW Update / File Save Rates (Hz)

1.56 0.01

Update

Lattice Save Options

None Save Now

Lucretia

Lucretia+AML

Lucretia+AML+SAD+XSIF

Thread Controls

Thread Control Use Threads

Thread Server

BPM Tool

- FS Calibtion for striplines

- BBA orbit subtraction of which BPMs to

cal status

FS cal constants

Save/Restore/Archive

Rate Rates (Hz)

0.01

- Reference orbit taking

05-Jun-2009 11:35:31

Re-Initialise

Sync to Server

SAD+XSIF

Use Threads

Server

Archive Tool

- Save/Restore from/to Matlab file or EPICS archive

- After restoring a known good file
- Set as default optics file
- Then option to restore some or all settings to control system.

setDefaultsSelect

Set Control System Variables To Floodland Default Values

Regions <input type="checkbox"/> DR <input checked="" type="checkbox"/> EXT <input checked="" type="checkbox"/> FFS	Magnets <input checked="" type="checkbox"/> Bends <input checked="" type="checkbox"/> Quadrupoles <input checked="" type="checkbox"/> Sextupoles <input checked="" type="checkbox"/> Skew Quadrupoles <input checked="" type="checkbox"/> X Correctors <input checked="" type="checkbox"/> Y Correctors	Movers <input checked="" type="checkbox"/> Horizontal <input checked="" type="checkbox"/> Vertical <input checked="" type="checkbox"/> Roll
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ABORT

EXIT

Clear Comms Buffers

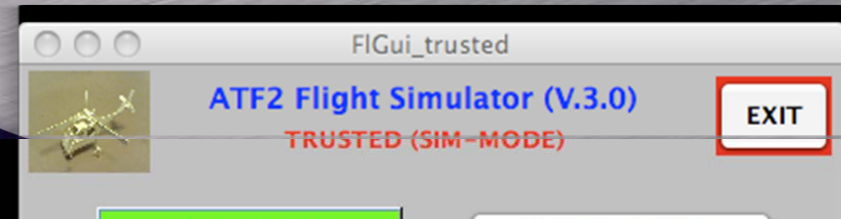
Client List

BPM Tool

- Ability to zero all movers simultaneously

Connect / Update

Watchdogs



aperturesGui

Aperture Watchdog - Septum EXIT

Alarm Status: OK

Aperture display
 $x = 0.00320645 \pm 0.0150239 \text{ mm}$ $x' = -0.00184949 \pm 0.0068548 \text{ mrad}$ $y = 0.00280022 \pm 0.0158354 \text{ mm}$ $y' = -0.000156522 \pm 0.00433943 \text{ mrad}$ Update

BPM Orbit Plots: Septum Reset BPM List

BPM List:
MB2X
MQF1X
MQD2X
MQF3X
MQF4X

Max RMS / Min Q: 3 / 0.5

Aperture Offset / Size (mm / mrad / degrees):
x/y offset: 0 / 0 / 0
width: 0.001 / height: 0.001

Alarm Update / s: 60

BPM / # ave.: 5 / 10

Make New

Alarm Active for this Aperture?

Remove BPM(s) fwd propagate?

Reference Orbit: Select File New Def. Use Default

ICT To Use for Q cut: ICTDUMP ICT1X

Select Plane: x y

shape: ellipse rectangle

Simulation Settings

Watchdogs Active

Auth List

Apps Panel

Clear Comms Buffers

Client List

Save/Restore/Archive

BPM Tool

Save Rates (Hz): 0.01 Update

Save Now

Use Threads

Thread Server

Summary

- FS in use during 2009 run periods.
- Most debug issues now resolved
 - Connections to correct PSs / Movers / BPMs
 - Consistent co-ordinate system
 - FS stability
- Compiled list of core and test apps tweaks to do over summer shutdown period.
 - Also work on documentation.
- Planned more major developments to be reported on in next talk.