What is VIAQS?

- A collaborative open-source project.
- A hardware and software solution for controlling instrumentation.
- A very easy to use way to get data into EPICS, Labview and Web clients.
What instrumentation can it support?

- Beam position monitors
- Current transformers
- Loss monitors
- ......
What platform does it run on?

- It runs on Linux (No licenses!)
- Uses widely available I/O cards for easy maintenance
Is it easy to use?

- You can get a low cost pre-loaded system
- Typically this then does not require any setup!
- To try it out - plug it in, attach screen and keyboard, and you can see your data.
- Menu driven configuration if you wish to modify network settings, device names or calibration values
- Examples are given of medm and labview screens
Example LabVIEW screen
### Example medm screen

<table>
<thead>
<tr>
<th>NAME</th>
<th>X</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPM1</td>
<td>-9.376</td>
<td>-9.372</td>
</tr>
<tr>
<td>BPM2</td>
<td>-9.369</td>
<td>-9.378</td>
</tr>
<tr>
<td>BPM3</td>
<td>-9.378</td>
<td>-9.378</td>
</tr>
<tr>
<td>BPM4</td>
<td>-9.954</td>
<td>-9.381</td>
</tr>
<tr>
<td>BPM5</td>
<td>-9.378</td>
<td>-9.378</td>
</tr>
<tr>
<td>BPM6</td>
<td>-9.369</td>
<td>-9.379</td>
</tr>
<tr>
<td>BPM7</td>
<td>-9.380</td>
<td>-9.380</td>
</tr>
<tr>
<td>BPM8</td>
<td>-9.380</td>
<td>-9.381</td>
</tr>
</tbody>
</table>
**Example web screen**

**VIAQS http Demonstration Page**

Beam Position Monitor (BPM)

<table>
<thead>
<tr>
<th>ID</th>
<th>Owner Name</th>
<th>Param Name</th>
<th>Value</th>
<th>Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 BPM</td>
<td>CLK0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>2 BPM</td>
<td>CLK1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>3 BPM</td>
<td>CLK2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>4 BPM</td>
<td>CLK3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>5 BPM</td>
<td>CLK4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>6 BPM</td>
<td>CLK5</td>
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<tr>
<td>7</td>
<td>7 BPM</td>
<td>CLK6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>8 BPM</td>
<td>HILO</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>9 BPM1</td>
<td>X</td>
<td>2043</td>
<td>2587824</td>
</tr>
<tr>
<td>10</td>
<td>10 BPM1</td>
<td>Y</td>
<td>2059</td>
<td>2587824</td>
</tr>
</tbody>
</table>
Can I get the source code?

- YES – it is an open system
- All code is available
- It is released under the GPL license
What data does it typically provide?

- Last value of a reading
- Array of the last n values
- FFT of latest values
- Arrays of latest values of all sensors
Can I extend the system

- It is designed to be a general purpose extend able system.
- It is easy to add user defined functions for data processing or data reduction on the server.
How do I get it

- Purchase a pre-configured turnkey solution.
- Build it yourself!
Can I get support?

- Email support is available
- Specialists can be contracted to provide custom extensions.
- Training is available for advanced users.
The end

Questions?
Viaqs in more detail
Getting the code

- From the viaqs home page [www.viaqs.com](http://www.viaqs.com)
- From sourceforge [www.sf.net/projects/viaqs](http://www.sf.net/projects/viaqs)
- From cvs ([anonymous@cvs.sf.net](mailto:anonymous@cvs.sf.net):/cvsroot/viaqs)
  - viaqs – contains core viaqs code
  - doc – contains documentation and examples
  - ui_viaqs – contains code for setup menus
  - epics_viaqs – contains viaqs drivers for epics
  - php_viaqs – contains code to access viaqs from web
'viaqs' – the core directories

- bin (linux binaries)
- lib (linux shared object libraries)
- include (include files)
- developer
  - startvaiqs (the runtime 'main loop')
  - viaqslib (libraries to access the data)
  - console (low level debug program)
Epics Viaqs

- lairApp (device support for reading viaqs)
- joinApp (record + device support for joinArray)
- maxApp (record + device support for maxArray)
- CoApp (ioc application for closed orbit)
ui_viaqs – menus and utilities

- start_menu – main menu program (perl)
- Scripts – directory containing scripts
  - view_net – shows network config
  - set_dhcp – sets system to use dhcp
  - gw_sub – sets gateway address
  - epics_sub – set epics device names etc
  - ....
**php_viaqs**

- VIAQS.c – code for php to access viaqs
- config.m4 – configuration
- php_viaqs.h – header file

This code needs to be built in you apache source tree – under extensions – look into php documentation for details.

An example php screen is in the doc directory
Software Layout

labview  epics  web

Viaqs

Comedi
Starting viaqs (init.d ?)

modprobe ni_pcimio

comedi_config /dev/comedi0 ni_pcimio


/usr/local/bin/comedi_calibrate

cd /root/viaqs/viaqs/bin

screen -d -m ./startviaqs config/coConfig.conf

/usr/local/apache2/bin/apachectl -k start

cd /root/viaqs/epics_viaqs/iocBoot/iocco

screen -d -m ./st.cmd
cd /root/viaqs/viaqs/bin

cd /root/viaqs/viaqs/bin

screen -d -m /usr/lib/j2se/1.4/bin/java -jar Server.jar
Checking system

- Screen -r should list 3 running screens
  - Connect to each (startviaqs, epics, labview server) and check for errors
  - If not three stop them and start processes by hand
- Connect to web server – check web server running
Getting help

- Submit bug reports via www.sf.net/projects/viaqs
- Training courses are available
- Consider buying one turnkey system to get you started
The end

Thank you