GAN-MVL Overall architecture

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DESY
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- Requirements
- The Architecture
- Diagnostics integration
- Conclusions
Requirements

- GANMVL has to provide:
  - Access to the control system
  - Video/audio communication
  - Access to instruments for special measurements
  - High quality video in some situations
  - Access to documentation etc.
- Guided user interface that can be easily used
- Access control for different users
  - Remote maintenance/operation (read/write)
  - Remote observation (read only)
- Secure methods to access the control system
Requirements (2)

- Access to **all** parameters of the control system (r/w)
- Access to **all** parameters of the beam diagnostics (r/w)
- Should be possible to install in interested institutes
- Has to work with existing control system applications
  - Rewriting part of the control system will not work
- 'Some' independence of the underlying control system
  - Should not rely on a special control system
  - Control system interfaces are very different
Remote Web access to multiple ports:
- blocked by firewall
- requires security patches
- data is NOT available for control system
Web Interface (2)

Remote Site

Oper.Console

Office

Displ

Prog

Application Server

Web Server

Gateway

Single hole in firewall

Controls Network

Device Server

Electr.
Access to Diagnostic Devices

- All programs require **full** access to **all** data
  - Display and control applications
  - Configuration and save & restore tools
  - Alarm handler
  - ...

- All sites want full access and want to see the **same** data
e.g. Operator calls an expert for help
  - Operator at the console
  - Expert from office
  - Remote expert
GAN-MVL has to integrate different Web services

- elogBook
- Documentation
- Schedules, plans ....

Advantages of a Web-based system:

- Good user navigation
- A few open ports to the internet only
- Single sign-on possible
- Platform independent
- Simple porting to other sites
GANMVL Web Site (Prototype)

Select a: project

service

Global Accelerator Network Multipurpose Virtual Laboratory V1.0beta

User (email): pugliese@elettra.trieste.it  You are staff of the Linac Control Room station: Sincrotrone Elettra Trieste

Project: Linac Operations  Your actual grant: Leader

Generate your unix password  Edit your profile  Log off

Add a member  Edit project  Delete project

Chat eLogBook FileManager VPVS BASIS EVCDocs

Member's list

<table>
<thead>
<tr>
<th>Login</th>
<th>Name</th>
<th>Mail Address</th>
<th>Grant</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>roberto</td>
<td>Roberto Pugliese</td>
<td><a href="mailto:pugliese@elettra.trieste.it">pugliese@elettra.trieste.it</a></td>
<td>Leader</td>
<td>Send Msg, Remove</td>
</tr>
</tbody>
</table>

write a message to all members
write a message to news
Set this project as your working project

Project info

Station: Linac Control Room
Project status: standby
Integrated Services

- Audio / Video conference
  - VRVS:
    - Free, download from www.vrvs.org
    - Available on all main operating systems
    - Allows multipoint conferences

- eLogBook
  - Will be part of the GANMVL package
  - Based on TTF implementation
    - Used in DESY, SLAC, CERN ...

- Instruments
  - By IVI or Web interface --> Rainhard Bacher
Control System Integration

- Runs on an application server at the accelerator site
  - Use the same programs as the operators
    - No special program development required
    - Minimal installation on clients
    - No problem with versions and updates
  - Single and secure connection through firewall
    - Minimum administration
    - SSH with authentication
    - Can be restricted to IP addresses
  - Standard access control of the control system can be used
Application Server Access

- All applications are running on an application server, the display only is transferred over the network.

- Possible transport protocols:
  - X11
    - A lot of experience @ TTF
    - Natural for UNIX, was designed for remote displays
    - Slow for JAVA applications
  - VNC, JAVA VNC
    - Can be integrated in Web pages
    - Good experience @ TTF (video conferences)
  - Remote desktop protocol
    - Windows applications only
Diagnostic Device: Data Access

- raw device data
- corrected device data
- all configuration parameters
- all debug info
- archived data
- authorization
- ...

Oper.Console, office ...

Application Server

Device Server

Electr.

Controls Network

Displ

Prog

Prog
Configuration Example
Conclusions

- Remote and local users are using the same programs
- Instrument designers should not invent a separate control system
- GANMVL integrates
  - site specific control system
  - audio/video conference tool
  - Measurement instruments (scope, DVM...)
  - Web based services (eLogBook, documentation etc.)
- Remote access requires no extra effort
  it's all part of a [modern] control system
- Is a different culture of work, takes some time to adapt it