Web Application in J–PARC

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J-PARC

- Japan Proton Accelerator Research Complex
- Joint project of: KEK (High Energy Accelerator Research Organization) and JAEA (Japan Atomic Energy Agency)
Requirements from J-PARC IT section:
Any operation of accelerator equipment shall be prohibited except from control LAN.

The Internet

Read-only CA available (since 2018)
Three Categories of Network

- Acc. Control LAN
- Office LAN
- DMZ

Devices with cellular connectivity are banned

Acc. Equipment (EPICS IOCs)

No room for web-app?

Web-app for mobile devices would be helpful

The Internet
Web application in J-PARC

Demand for web applications

- Accelerator operation status
- Status monitor for equipment
  - Magnet/RF power supplies
  - Coolant temperature and pressure
  - Etc.
- Operation is not considered (for the moment)
- Httpd receives data via file (at present)

No active web-app development on top of EPICS

- Neither in KEK
- Collecting information modestly
One and Only Web-App

Accelerator Operation Status

Fri May 31 2019 11:35:33 GMT+0900 (日本標準時)

<table>
<thead>
<tr>
<th>日付 Date &amp; Time</th>
<th>最新の運転状況 Latest Operation Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019-05-29 17:44:59</td>
<td>Status Status: In Operation for Experiments. ビーム供給中 Description: MLF: 利用運転中</td>
</tr>
</tbody>
</table>

Beam Destinations of Accel. Run 82

MR Beam Cycle and Mode
- MR-A
- MR-NoBeam

MLF Beam Information
- MLF Beam On: 536 kW

Power Trend (1 hour)<MLF 800 kW/MR 800 kW>
Data flow:

Server side:
- Capture OPI window periodically
- MEDM screen running in VNC
- Save image to file server
- Httpd reads the image on request
- Client side:
  - Web browser reads the image file periodically
  - Ajax (XMLHttpRequest)

Identical image to those OPIs in control room
No chance of operation by any means
Previous Attempt
Previous Attempt

Data flow:
- **Server side**: Collect data and write a JSON file
  - PythonCA
- **Client side**: Read the JSON file and render
  - Ajax (Mochikit + Plotkit), CSS

Abandoned
- Developed in 2006
- Not maintained anymore since 2011
Summary

There are demand for web application in J-PARC

- Strong are the restriction on network policy
- Present solution is file-based data transfer

One web application in service

- Might increase variety of captured OPI image, at most 10 – 20 kinds of images?

Collecting information modestly

- Client-side rendering is prefered
- Simple and easy way to convert from existing OPI panels?
  - edm, medm, css/boy