Web-Based Electronic Operation Log System  Zlog System

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What is Zlog System?

• An Electronic logbook system
• Developed at KEK
• Zope based
• Designed mainly for daily operation of KEKB/PF-AR accelerator complex
• But also usable for many purposes
History of Operation Log Systems for KEKB Accelerator

~ Aug. 2002
  Real Notebook
  Handwritten

  MS-Access & SQL server
  Typed by hand (partially automated)

Jan. 2004 ~
  **ZLog System** – Zope & PostgreSQL
  Automatic data entry
Old Log Notebooks

~ Aug. 2002
• Notebook
• handwritten
Old Electronic Log

Sep 2002 ~ Dec 2003

- MS-Access & SQL server
- Typed by hand (partially automated)
New Electronic Log: Zlog System

Jan. 2004 ~

• ZLog system – Zope & PostgreSQL
• Automatic data entry
Daily operation in KEKB control room
How it looks?

Zlog on terminal
Main User Interfaces

• Input and Edit Interface
• Viewer Interfaces
• Search Interface
**Input and Edit Interface**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event (Japanese)</th>
<th>Action (Japanese)</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:48:10</td>
<td>KEKB e -&gt; PF</td>
<td>KEKB e -&gt; PF</td>
</tr>
<tr>
<td>12:13:52</td>
<td>AR -&gt; KEKB e</td>
<td>AR -&gt; KEKB e</td>
</tr>
<tr>
<td>22:46:11</td>
<td>Bell Injection Inhibit</td>
<td></td>
</tr>
<tr>
<td>22:59:23</td>
<td>PF -&gt; AR</td>
<td>PF -&gt; AR</td>
</tr>
<tr>
<td>16:58:25</td>
<td>ZH/AGIL PS</td>
<td>ZH/AGIL PS</td>
</tr>
<tr>
<td>17:55:50</td>
<td>AR -&gt; PF</td>
<td>AR -&gt; PF</td>
</tr>
<tr>
<td>17:45:00</td>
<td>KEKB e -&gt; AR</td>
<td>KEKB e -&gt; AR</td>
</tr>
<tr>
<td>17:39:38</td>
<td>KEKB e -&gt; KEKB e</td>
<td></td>
</tr>
<tr>
<td>16:55:41</td>
<td>PF -&gt; KEKB e</td>
<td></td>
</tr>
</tbody>
</table>

- **Input Area for New Entry**
- **Text & ScreenShot Image**
- **Latest Entries** (Auto Update)
  - to edit click here
- **time range to show**
- **open 1-shift viewer**
Viewer Interface - 1

- Simple Viewer
- Read Only
Viewer Interface - 2

Viewing Options
Multiple Logs can be selected.

Entries from different Logs are shown with different colors.
**Search Interface**

- Search by Group, Trouble Level
- Search by Keyword
• Paper copies are also made for every shift.
• They are kept as non-electronic backup.
Structure of Zlog System

Frontend

Zlog Core (Zope based)
(Web Application for user interface)

Backend

PostgreSQL
(Database server)

Log Monitor Server
(Server for automatic data entry)
Database Server - PostgreSQL

- KEKB
  - 1.5 million event entries

- PFAR
  - 0.18 million event entries

Inherit

- ALL
  - (Default Log Table Structure Template)

- KEKB
  - Shift Schedule Entries
Log Monitor Server

- PostgreSQL
- Log Monitor Server - python script
- EPICS/Python API
- OPI
- IOC
- IOC
- IOC

Automatic entries
- Start/Stop of Injection
- Injection rate
- Start/Stop of Physics run
- Peak Luminosity
- Start of Beam Tuning
- Alarm Events
- etc....

Developed in Python
Web Application Server - Zope

PostgreSQL

DA (Zope Product)

Zlog core (Zope Application)

Web Application Server - Zope

Feature of Zope
- Web Server
- Development through Web
- Ready-made Products
  (Application Templates)
  (plug-in Zope components)

Web browser
What is Zope?

- Python-based open source web application server.
- Available on Mac, Unix and Windows.
- Ready-made Products are available (Application Templates) (plug-in Zope components).
- Through-the-Web development & management.
Zope Management Interface
Why Zope?

• Easy to learn
• Rapid development (only 2.5 months by 2 persons for the ZLog)
• High extensibility
• Python-based (we are familiar to Python.)
• Easy to handle Japanese character in multi-platform
Application Templates of Zope

Examples in KEKB

Device Management BBS

KEKB Control Group Working MEMO - Plone
Other Zope Applications

Developed for KEKB/PF-AR

Devices Management

Shift Schedule Management
The Merits of Zlog System

• Automatic entry of the operation log records.

• Users can browse and edit operation log wherever network terminal is available. Development is also possible from the network terminal.

• Free from Platform dependency of the terminals

• Because development itself is done in Web Server, no additional procedure such as data conversion is necessary to publish on Web.

• Easy to develop/maintain by object oriented feature of Zope.
Zlog is exported to other projects

- RI-beam of RIKEN - Zlog System
- J-PARC - Zlog core
- Vacuum System Management at KEK - Zlog core & PostgreSQL

Zlog core Template is now available.
- Recently Zlog core is restructured as a “Product” of Zope.
- Easy to install, configure, modify
Zlog System is evolving…

Thank you.