LabVIEW INTERFACE FOR MADOCA II
WITH KEY-VALUE STORES IN MESSAGES

Takahiro Matsumoto, Yukito Furukawa, Yousuke Hamada, Tomohiro Matsushita
JASRI/SPRING-8, Hyogo, Japan

Abstract

We redesigned MADOCA II-LabVIEW interface for easy to use to spread the benefits of MADOCA II into many LabVIEW users in SPring-8. LabVIEW VIs were built with Dynamic Link Libraries for better maintainability. Message and various data in MADOCA II are easily accessed with key-value stores and messaging processes are simply decomposed with the VI. MADOCA II applications can be easily built with the new LabVIEW interface. We plan to apply MADOCA II-LabVIEW in control applications in SPring-8 such as image monitoring at experimental stations.

Developed VI components of MADOCA II

- Messaging processes are simply decomposed for clients and servers (Equipment Manager)
- Easily programmed with 23 VIs in total
  - Open/Closed, Send/Receive, Parameter, Error
  - Message Interface (SVOC message + Various data)

Available Data Format

- Data can be accessed through Key-Value Stores
  - Value, Array, Hierarchical structure
- MessagePack to serialize the data in the messaging
- Data format is defined for each case
  - Image data, Waveform data, Camera controls etc.

### Key Data type Value

<table>
<thead>
<tr>
<th>Key</th>
<th>Data type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;image_data_type&quot;</td>
<td>string</td>
<td>&quot;MONO&quot;, &quot;RGB&quot;, &quot;RGBA&quot;</td>
</tr>
<tr>
<td>&quot;image_width&quot;</td>
<td>int32_t</td>
<td></td>
</tr>
<tr>
<td>&quot;image_height&quot;</td>
<td>int32_t</td>
<td></td>
</tr>
<tr>
<td>&quot;image_depth&quot;</td>
<td>int32_t</td>
<td></td>
</tr>
<tr>
<td>&quot;image_num_type&quot;</td>
<td>string</td>
<td>&quot;uint8_t&quot;, &quot;uint16_t&quot;, &quot;uint32_t&quot;, &quot;float&quot;, &quot;double&quot;</td>
</tr>
<tr>
<td>&quot;image_data&quot;</td>
<td>defined by</td>
<td>image_num_type</td>
</tr>
<tr>
<td>&quot;image_pixel_order&quot;</td>
<td>string</td>
<td>&quot;lefttop&quot;, &quot;leftbottom&quot;</td>
</tr>
</tbody>
</table>

• Data format for the image data

Camera Image Viewer with MADOCA II LabVIEW Interface

- Applied to image data in two-dimensional interferometer with MADOCA II
  - A. Kiyomichi et. al, Proc. of ICalepcs 2013, p.78

Contact: Takahiro Matsumoto E-mail: matumot@spring8.or.jp