

SPring-8 Experimental Data Repository [SP8DR]

Toru OHATA / SPring-8

Contents

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What is SP8DR ?



What is SP8DR ?

SP8DR is a storage platform for experimental data



Image view of a repository

What is SP8DR ?

SP8DR is a storage platform for experimental data

Of course, we choose...



*Image
picture*



What is SP8DR ?

SP8DR is a storage platform for experimental data

Of course, we choose...



What is SP8DR ?

SP8DR is a storage platform for experimental data

equipped with

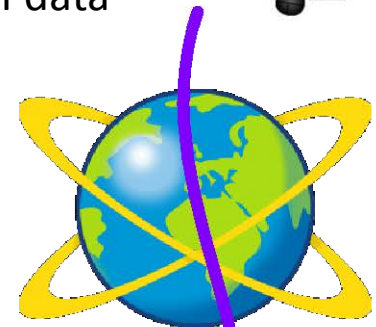
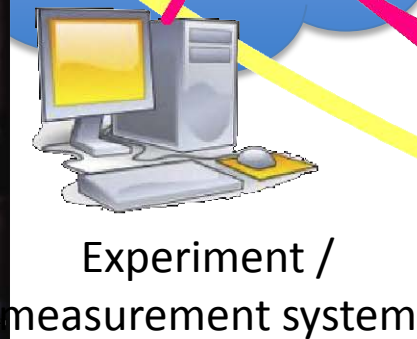
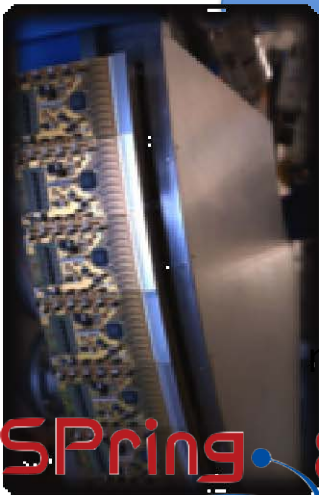
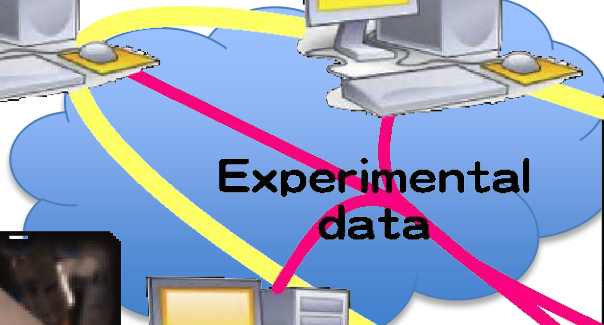
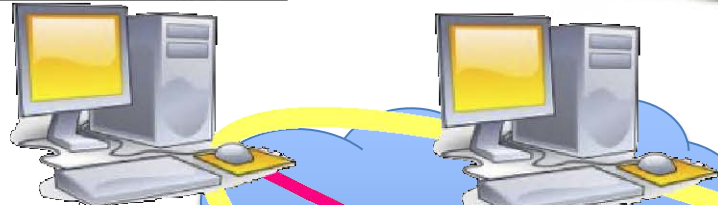
- functionality of data delivery for remote experiment user
 - Remote experiment, measurement service for industrial application, etc.
- standardized interface layer for data acquisition
 - Automation and streamlining of beam-line experiment.



Overview of SP8DR



- Experimental data come from beam-line are stored in the **storage system**.
- And stores additional information in the **database**.
- User can access their own data from the Internet.



Internet

meta-data



Database & Web UI

Storage infrastructure



Feature

SP8DR storages experimental data with

- owner information for all data.
 - owner(=SPring-8 user) information are taken from user-office database.
 - linked with user. (secure data management)
- experimental condition.
 - taken from SPring-8 operation database and control system.
 - ex.) specimen, ring current, X-ray energy, vacuum, temperature, detector type, any required parameters.

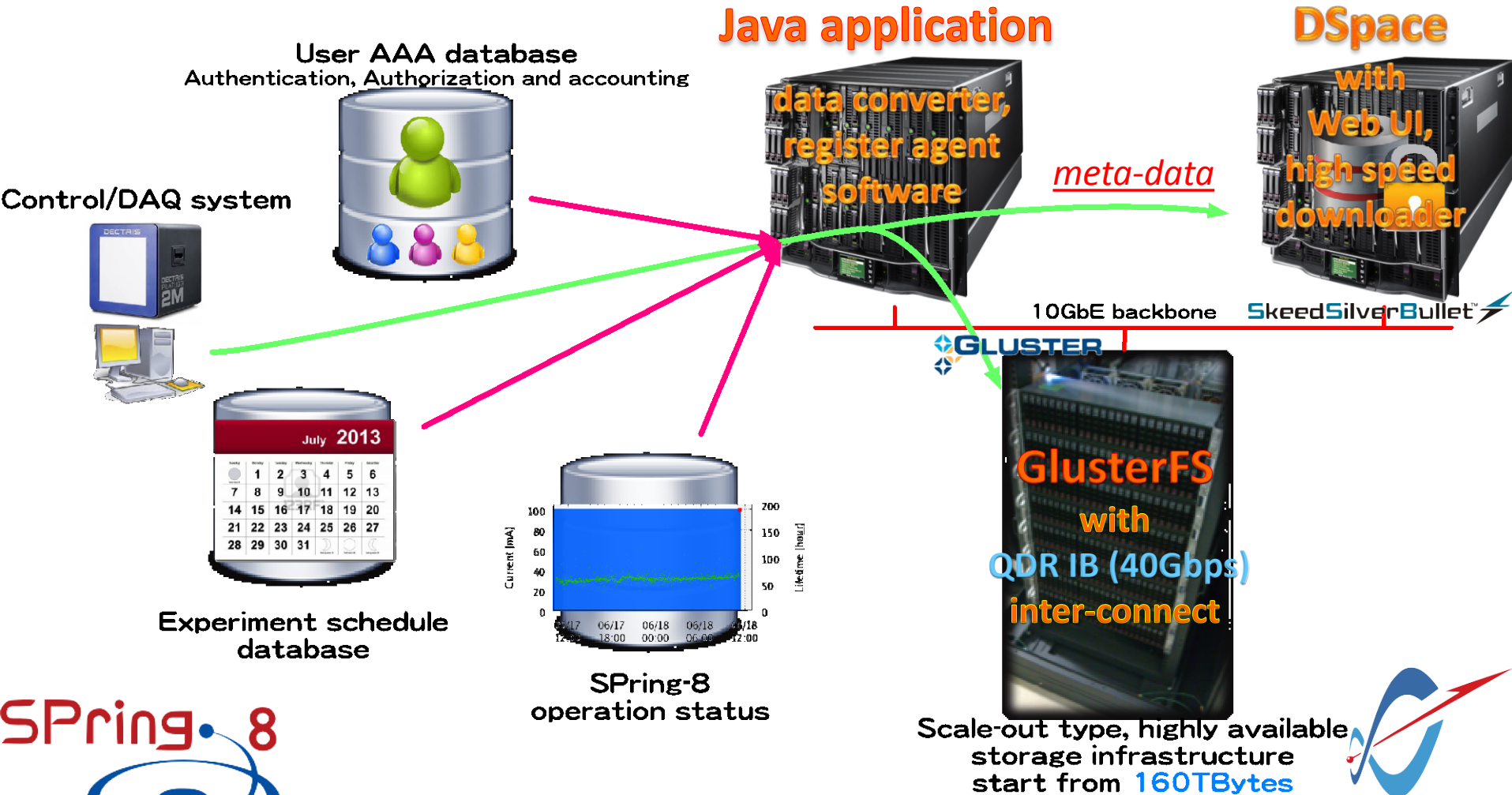
automatically added into SP8DR database as meta-data



Implementation

SP8DR consists of three parts;

- 1) Application programs for data store,
- 2) Storage infrastructure,
- 3) Database and Web UI



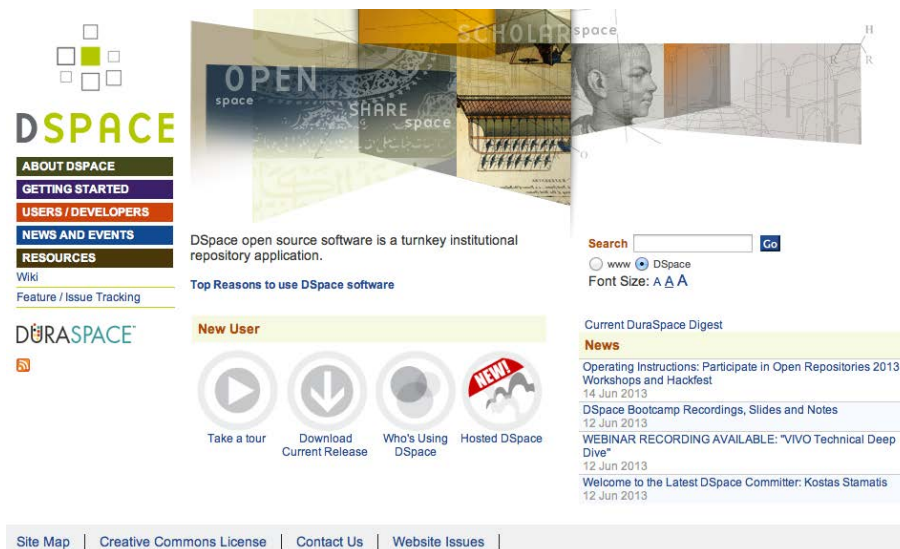
Meta-data management

DSpace

- is open-source software that provides and enables easy and open access to digital data.
- was developed by HP and MIT. First released in 2002.
- was adopted at a lot of library for digital archive.
- is based on **dublin core** standards for flexible meta-data management.

Dublin Core

- consists of fifteen basic elements that is common keyword sets and makes high interoperability with other DSpace.



The screenshot shows the DSpace website homepage. On the left, there is a navigation menu with links: ABOUT DSPACe, GETTING STARTED, USERS / DEVELOPERS, NEWS AND EVENTS, and RESOURCES. Below the menu are links for Wiki and Feature / Issue Tracking. The main content area features a large banner with the text "OPEN space" and "SHARE space". Below the banner, there is a section titled "New User" with four icons: "Take a tour", "Download Current Release", "Who's Using DSpace", and "Hosted DSpace". On the right side, there is a search bar, a "Go" button, and a "Font Size" selector. Below the search bar, there is a "Current DuraSpace Digest" section with a "News" link. The footer contains links for "Site Map", "Creative Commons License", "Contact Us", and "Website Issues".



Dublin-core basic elements

Contributor
Coverage
Creator
Date
Description
Format
Identifier
Language
Publisher
Relation
Rights
Source
Subject
Title
Type

Dublin Core Metadata Element Set, Version 1.1
<http://dublincore.org/documents/dces/>

Key-Value store type database
➔ enables newly metadata addition
w/o database change

We defined format of [value] data,

Dublin-core basic elements and refinements

Contributor	→	Collaborators.
Coverage	→	Beam-line information
Creator	→	Principal of an experiments.
Date	→	...
Description		
filling	→	filling pattern
current	→	ring current
Format		
data	→	Data format
experiment		
method	→	method of experiments
detector	→	type of detector
energy range	→	energy
temperature	→	temperature
Subject		
sample	→	Sample name

We defined refinements to adapt experimental information that enables easy to search and sharing data. (meta-data harvesting)

Development and present status

2011 start development

1st application is completed.

Storage system R&D. (average writing speed ~ 100MByte/sec)

2012 β release to beam-line

UI update (High speed downloader are implemented)

Storage system is completed.

2013 began test service at an industrial application beam-line in May.

Performance comparison between http and high speed downloader (SFM)

Destination	HTTP (Mbps)	SFM (Mbps)
Hokkaido univ.	34	94
KEK	21	50
Nagoya univ.	34	140
Osaka univ.	54	66
OIST	92	133
home	8.9	61



Future plan

Deployment to beam-lines

- under test and evaluation
- under construction in several beam-lines

Derivatives from SP8DR, we are planning...

- instant online storage (as an experiment data cloud)
- SP8DR appliance (runs data store application)



Expansion of infrastructures

- combination with analysis system, HPC and/or K-supercomputer
(We are constructing **SACLA data repository** that are serviced on single sign-on (SSO) with SP8DR.)



Thank you for your attention.

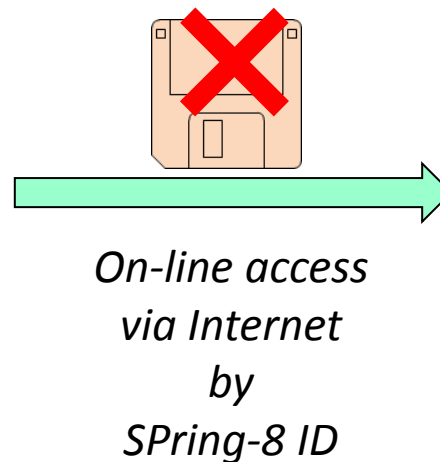
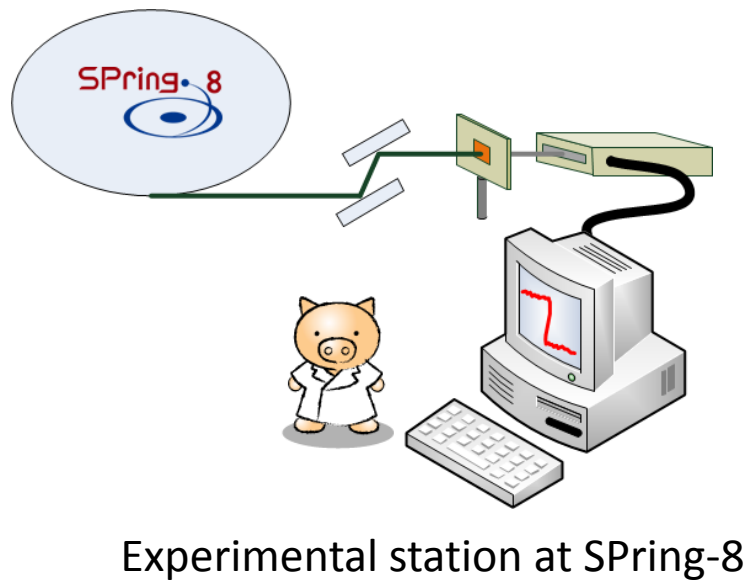


supplement

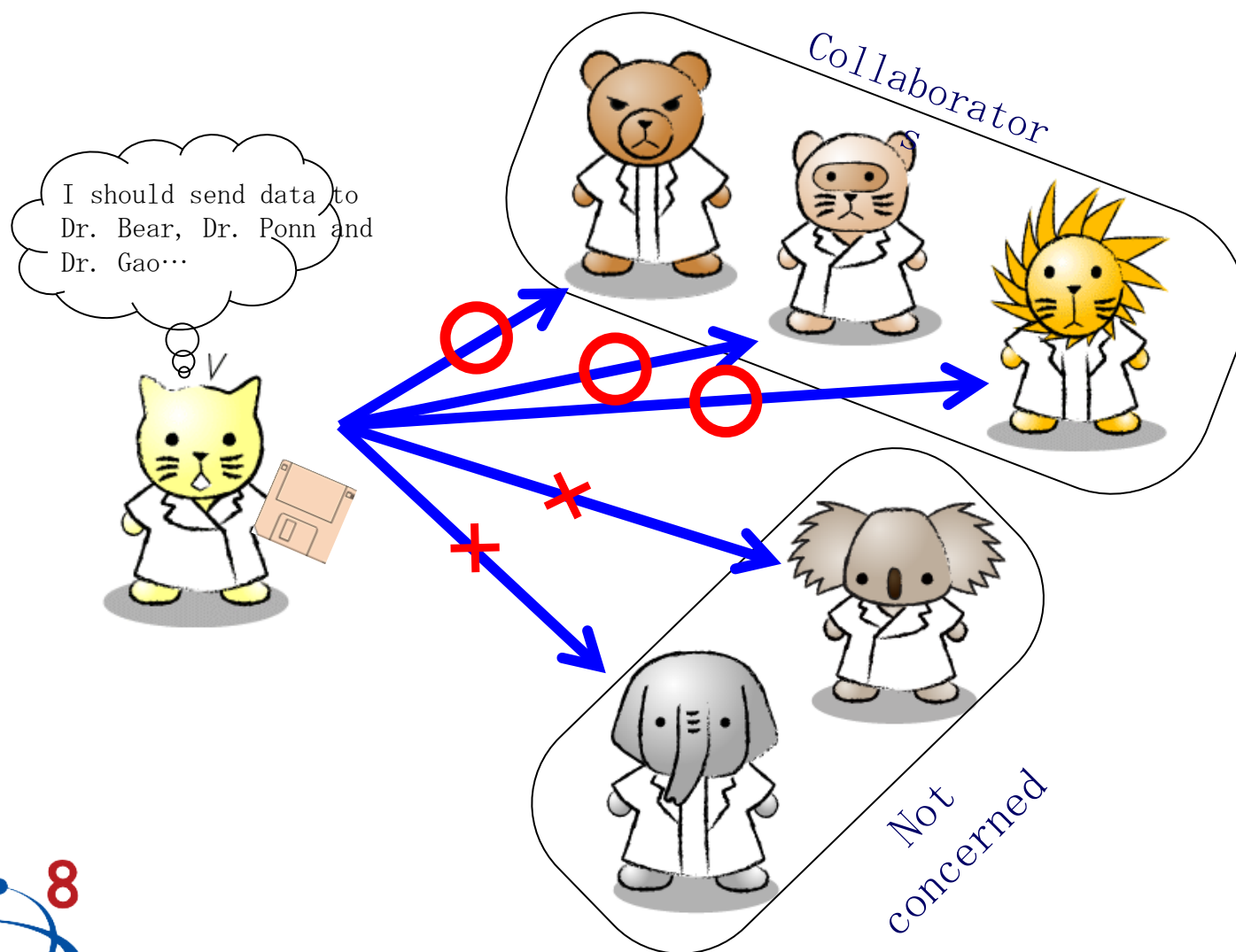


Access data from own institute

Experimental user dose not need
to come to SPring-8



Data sharing with Collaborators



Snapshot of Web-UI

SPring8 ID: 0000263 (Logout)

SPring-8 Experimental Data Repository System Preview Site >

日本語 English

List view [Tree view](#)

All Inspections

Period: - Go All Period

Results 1-10 of 11.

Results/Page | Sort items by In order Update

Item hits:

<input type="checkbox"/>	Subject No	Opening Day	Subject Name	Sample	Regist Day	Operation
<input type="checkbox"/>	2011B9999-000018	20130328 12:01	-	-	2013-03-28T03:01:40Z	<input type="button" value="Into cart"/> <input type="button" value="Dwnload"/>
<input type="checkbox"/>	2011B9999-000017	20130328 12:00	-	-	2013-03-28T03:00:50Z	<input type="button" value="Into cart"/> <input type="button" value="Dwnload"/>
<input type="checkbox"/>	2012X0002-000007	20130319 15:17	SPring-8 Experimental Data Repository Operation Trial for BL20B2	BL20B2デモ用ダミーデータ	2013-03-19T09:20:20Z	<input type="button" value="Into cart"/> <input type="button" value="Dwnload"/>
<input type="checkbox"/>	2012X0002-000002	20130312 16:35	SPring-8 Experimental Data Repository Operation Trial for BL20B2	BL20B2デモ用ダミーデータ	2013-03-12T07:46:16Z	<input type="button" value="Into cart"/> <input type="button" value="Dwnload"/>
<input type="checkbox"/>	2012X0002-000006	20130312 16:35	SPring-8 Experimental Data Repository Operation Trial for BL20B2	BL20B2デモ用ダミーデータ	2013-03-12T07:46:19Z	<input type="button" value="Into cart"/> <input type="button" value="Dwnload"/>
<input type="checkbox"/>	2012X0002-000005	20130312 16:35	SPring-8 Experimental Data Repository Operation Trial for BL20B2	BL20B2デモ用ダミーデータ	2013-03-12T07:46:19Z	<input type="button" value="Into cart"/> <input type="button" value="Dwnload"/>
<input type="checkbox"/>	2012X0002-000004	20130312 16:35	SPring-8 Experimental Data Repository Operation Trial for BL20B2	BL20B2デモ用ダミーデータ	2013-03-12T07:46:18Z	<input type="button" value="Into cart"/> <input type="button" value="Dwnload"/>
<input type="checkbox"/>	2012X0002-000003	20130312 16:35	SPring-8 Experimental Data Repository Operation Trial for BL20B2	BL20B2デモ用ダミーデータ	2013-03-12T07:46:17Z	<input type="button" value="Into cart"/> <input type="button" value="Dwnload"/>
<input type="checkbox"/>	2012X0002-000001	20130312 13:39	SPring-8 Experimental Data Repository Operation Trial for BL20B2	BL20B2デモ用ダミーデータ	2013-03-12T05:01:59Z	<input type="button" value="Into cart"/> <input type="button" value="Dwnload"/>
<input type="checkbox"/>	2012X0001-000001	20101007 13:14	SPring-8 Experimental Data Repository Operation Trial	Eu2O3 <透過法>	2013-03-08T00:16:01Z	<input type="button" value="Into cart"/> <input type="button" value="Dwnload"/>

1 2 next

Return

Show cart
Dwnload cart
Folder into cart
Checked items into cart

SPring 8

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速度分布(Local/dirty_ratio=70,dirty_bg_ratio=50)

