

Update Overview of Reki-Show Authoring Tool

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Outline of Presentation 2

- Introduction
- System's Overview
- Examples of new features
- Consideration for Data Interoperability
- Conclusion

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Introduction : Project's Overview 3

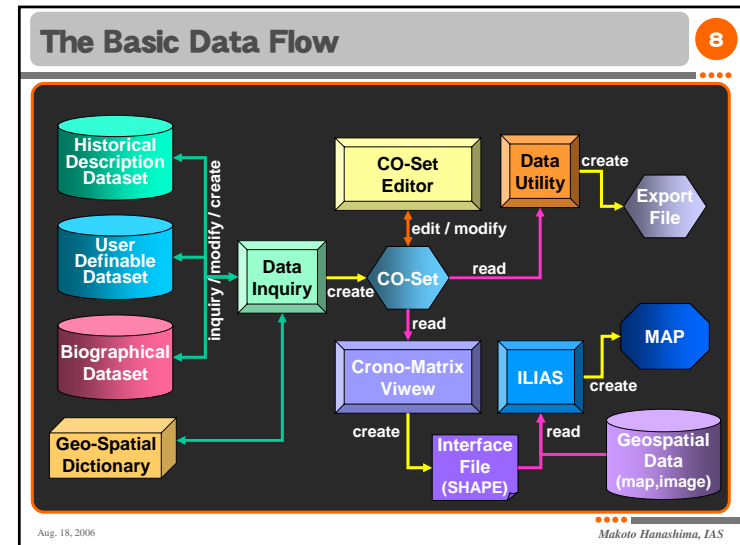
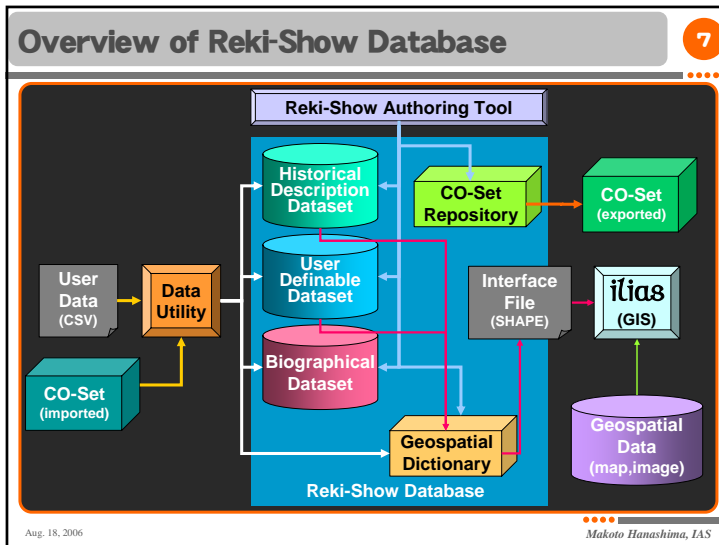
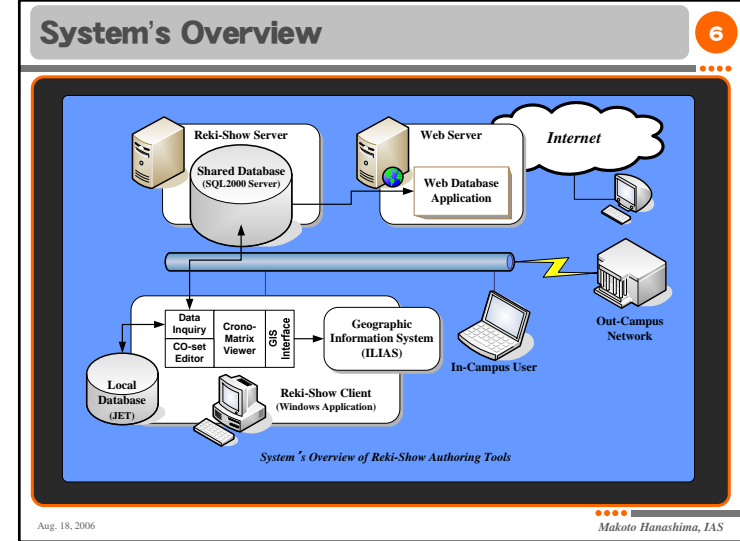
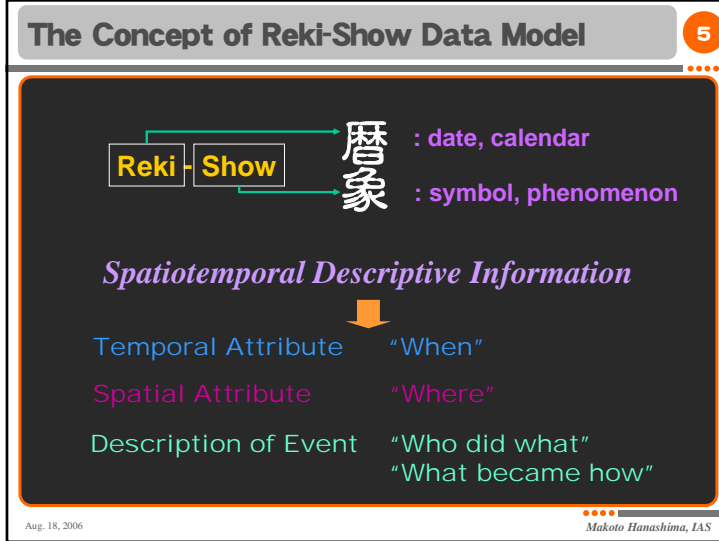
- Since 2002, we have been developing an advanced digital tool for spatiotemporal database, **Reki-Show Authoring Tool**.
 - Founded by MEXT (Ministry of Education, Culture, Sports and Technology)
 - Based in KEIO University, Tokyo

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Introduction : Purpose of System 4

- To provide an **interoperable research environment** for social science researchers
- To construct the framework of **spatiotemporal information database** for social science
- To promote the **data interoperability** in e-culture societies

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Advance in The System Development 9

- **Improvement of CO-Set Editor**
 - Inquiry function (inner CO-Set)
 - Automatic generation of “Relationship Line”
- **Improvement of GIS Interface**
 - Image path is added
- **Data Export / Import by XML**
- **International Version**
 - Adaptation to multilingual encoding (UTF8)
 - User Interface in English

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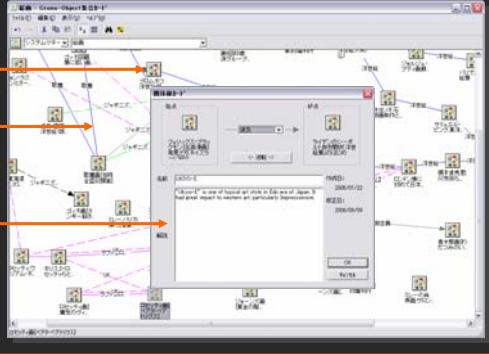
Crono-Object Set (CO-Set) 10

- **Crono-Object Set (CO-Set)** is a logical data structure of Reki-Show database.
- CO-Set is defined as a set of **Crono-Object**.
- **Crono-Object** is a basic class of Reki-Show data model. It includes:
 - Reki-Show data element
 - Place data element
 - Biographical data element
 - Association of data elements (relationship)
- CO-Set mediates each module of Reki-Show Authoring Tool.

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CO-Set Editor 11

- **CO-Set Editor** is a tool for browsing, authoring and organizing of CO-Set.



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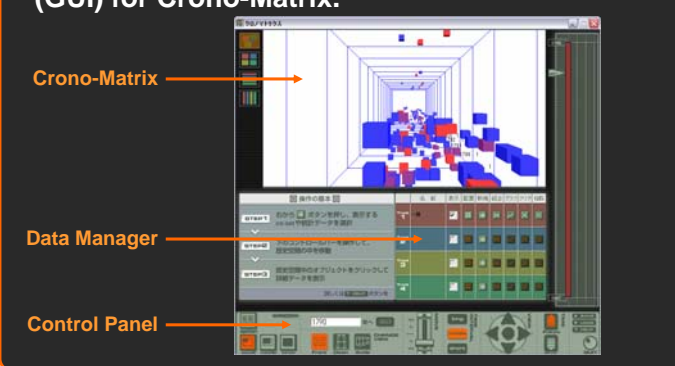
The Concept of Crono-Matrix 12

- **Crono-Matrix** is designed for a visualization of **Spatiotemporal Information**.
- **Crono-Matrix** is a virtual 3D space. The z-axis, depth of the screen, is assigned as **Time Dimension**.
- Other two axes can be assigned as **Spatial Dimension** or **Attribute Dimension**.
- User can put their own spatiotemporal multidimensional data into **Crono-Matrix**, and can visualize by using **Crono-Matrix Viewer**.

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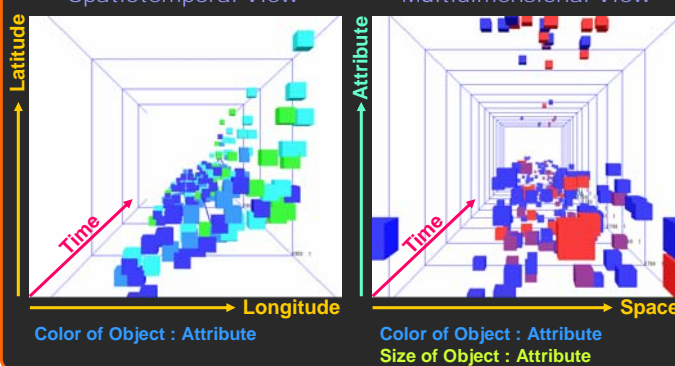
Crono-Matrix Viewer 13

■ Crono-Matrix Viewer is a graphical user interface (GUI) for Crono-Matrix.



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Multidimensional Data Representation 14




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An Example of Crono-Matrix 1 15

■ Visualization of Yukichi Fukuzawa's Logbook

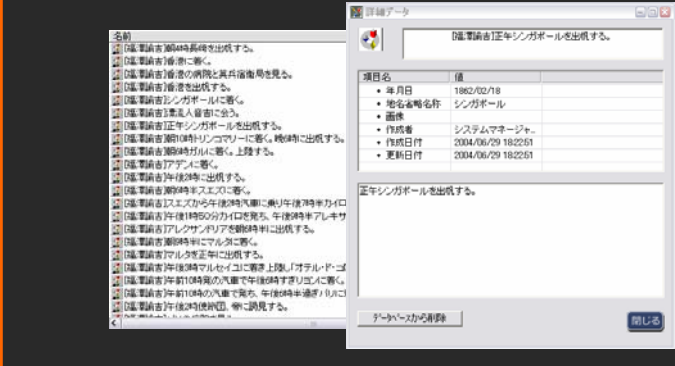
- Yukichi Fukuzawa(1935-1901) is one of famous enlightenment person in 19th century of Japan. He wrote a lot of books for young people and translated various western books. He also founded KEIO University.
- Fukuzawa went a round trip to Europe in 1862 as a translator of embassy. He wrote a detailed logbook of the travel, "Seiko Nisshi".
- This logbook is a good example of spatiotemporal descriptive information.



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An Example of Crono-Matrix 1 16

■ Reki-Sow data in the database



| 項目名 | 値 |
|--------|---------------------|
| 年月日 | 1862/02/18 |
| 地名省略名称 | シンガポール |
| 画像 | |
| 作成者 | システムで自動生成 |
| 作成日時 | 2004/06/29 18:22:51 |
| 更新日時 | 2004/06/29 18:22:51 |

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An Example of Crono-Matrix 1 17

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An Example of Crono-Matrix 1 18

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GIS Interface 19

- Crono-Matrix Viewer is able to represent a **spatial information**, however its resolution is not enough for geospatial analysis.
- To complement the geospatial precision, the **GIS Interface Function** is implemented.
- The function generates an interface file for GIS from Crono-Matrix.
- The interface file is formatted as “**SHAPE**” format that is the most popular file format for GIS.

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An Example of the GIS Interface 20

Generated Layer (SHAPE FILE)

Yukichi Fukuzawa's Travel Log

Display with Background Map

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An Example of the GIS Interface 21

| ID | TITLE | PLACE NAME | YEAR |
|----|-------|------------|------|
| 1 | 福島の歴史 | 福島 | 1960 |
| 2 | 福島の歴史 | 福島 | 1960 |
| 3 | 福島の歴史 | 福島 | 1960 |
| 4 | 福島の歴史 | 福島 | 1960 |
| 5 | 福島の歴史 | 福島 | 1960 |
| 6 | 福島の歴史 | 福島 | 1960 |

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Data Interoperability Enhancement 22

- Although Reki-Show Database has unique data structure, it is not so difficult to convert Crono-Object to a XML notation.
- According to the trend of Web society, it is a useful solution that XML is compliant with RSS.
- To describe the geospatial information, GeoRSS is an appropriate enhancement of standard RSS.
- Thus we are developing the Data Export / Import Function to support a data interoperability. This development is in progress.

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Overview of Geo-coding for RSS 23

- There are several specifications for geo-coding
 - W3C Basic Geo (WGS84 lat/long) Vocabulary
 - In some case "GeoRSS" means this specification.
 - GeoRSS is proposed by GeoRSS.org
 - GeoRSS has three specifications.
 - GML compliant
 - Allows major features of GML specification
 - e.g. Point, Polygon, LinerRing, etc.
 - Simple
 - Limited and simple notification
 - Point, Polygon, Line, Box
 - Some Web services that provide geo-coding function are available.

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An Example of Reki-Show Data in GeoRSS 24

```
<?xml version="1.0" encoding="UTF-8" ?>
<rss xmlns:content="http://purl.org/rss/1.0/modules/content/"
  xmlns:gml="http://www.opengis.net/gml/"
  xmlns:taxo="http://purl.org/rss/1.0/modules/taxonomy/"
  xmlns:georss="http://www.georss.org/georss/"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:media="http://search.yahoo.com/mrss"
  xmlns:geo="http://www.w3.org/2003/01/geo/wgs84_pos#"
  xmlns:dc="http://purl.org/dc/elements/1.1/" version="2.0">
<channel>
  <title>Yukichi Fukuzawa's Travel Log</title>
  <link>http://xxx/rekishowfeed/</link>
  <description>Test Feed Reki-Show</description>
  <item>
    <title>Fukuzawa started on a voyage to Europe.</title>
    <link>http://xxx/rekishowfeed/exam01.html</link>
    <description>
      Fukuzawa started on a voyage to Europe. He boarded from Shinagawa harbor.
    </description>
    <category>HISTORY</category>
    <pubDate>Mon, 07 Aug 2006 13:28:54 GMT</pubDate>
    <dc:date>1862-01-22</dc:date>
    <geo:lat>35.64578</geo:lat>
    <geo:long>139.74668</geo:long>
  </item>
</channel>
</rss>
```

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An Example of Data Interoperability 25

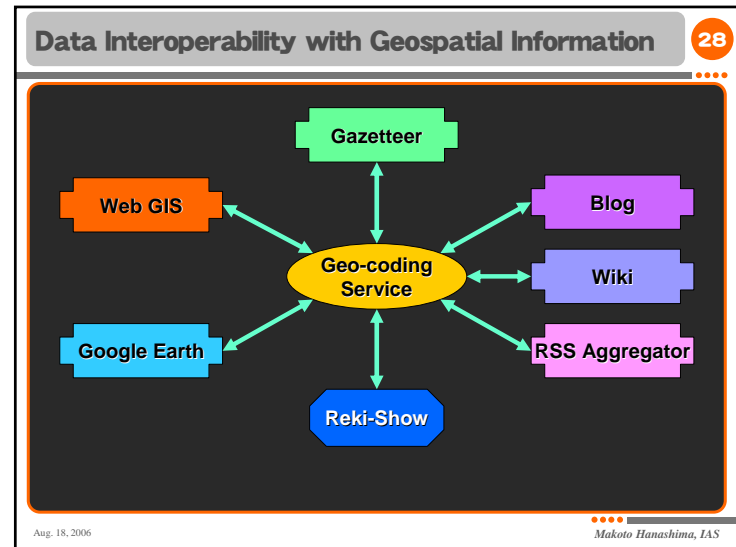
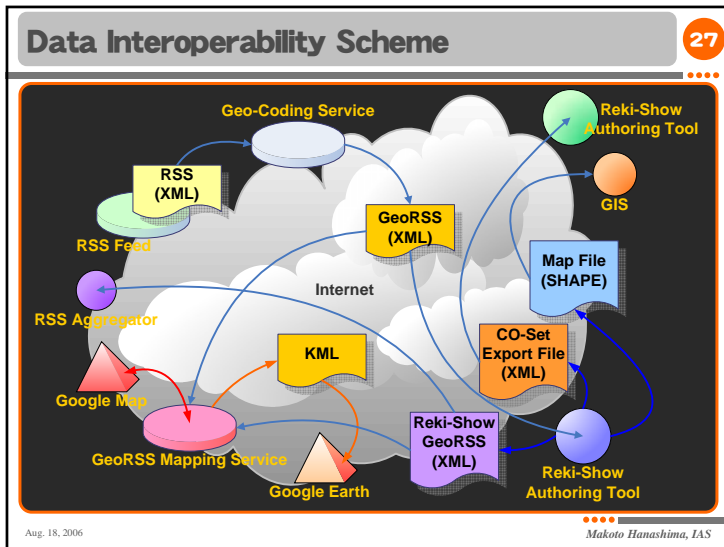
Fukusawa's Log in ACME GeoRSS Map

Yukichi Fukusawa's Travel Log
An ACME GeoRSS Map
Test Feed of Data Show

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An Example of Data Interoperability 26

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An Image of Multi-source Geospatial Integration 29

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The Issues in Data Interoperability 30

- **Geo-coding Issue:**
 - Most of geo-coding services in the Internet are using English (or other western language).
 - It is inconvenient for the societies that use non-western language, since researchers in those countries have to translate all of place name into English before they construct spatiotemporal database.
 - Thus, to promote the interoperability of spatiotemporal information in non-western societies, the geo-coding service that accepts **native language** is highly required.

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The Issues in Data Interoperability 31

- Technical infrastructures for the data interoperability seem to be ready for practical application.
- However, to promote the data interoperability in **e-culture societies**, the geo-coding service that is able to encode place name in **native language** is required.
- **Building a multilingual geo-coding service by PNC members should be helpful to resolve this situation.**

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The Issues in Data Interoperability 32

- **Web Service Issue:**
 - How to find a useful Web service for your application?
 - Few Web service directory is available.
 - How to implement complicate APIs in your application?
 - Hoe to introduce your cool APIs to the Web society?
 - **Organized discussion is required to improve the situation around Web service.**

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Conclusion 33

- Prospected contribution of Reki-Show Authoring Tools for e-culture society :
 - To provide a data visualization platform for e-culture contents
 - To support data interoperability of spatiotemporal information
 - To contribute building a knowledge navigation environment with e-culture society

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Thank You. 34

- Multilingual version of Reki-Show Authoring Tool will be released on late of this year.
- If you are interested in the tool, please check our Web site.
<http://www.fcronos.gsec.keio.ac.jp/>
- Reference
 - georss.org : <http://georss.org/>
 - geonames.org : <http://www.geonames.org/>
 - W3C Semantic Web Interest Group : <http://www.w3.org/2003/01/geo/>
 - Kanzaki, M : RDF/OWL Nyumon, Morikita Shuppan, 2005

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