Growth Model of Local Government Web Sites

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Overview

- Motivation
- Related works
- Concepts related to information space in WISs
- Stages of local government Web site evolution
- Conclusion and future works
Managing information in the “Web era”

- Could customers get information he/she want easily from our Web site?
- How to ensure that information published on our Web site are correct and up-to-date?
- How to control maintenance cost of contents in our Web site?
- Does our Web site match the needs of customers?
- Are we using our money and human resource on RIGHT contents?
- Is our Web site cost effective?
- Are we using our money and human resource on RIGHT contents?
Motivation

- An engineering approach is necessary to deal with complicated large information spaces in Web sites.
- To establish the information governance methodology for the “Web era”, understanding of the mechanism of growth and maturing patterns of information space in Web sites would be indispensable.
- In this research, we try to assess Web based information system evolution from an information perspective instead of the usual systems perspective.
Focused on the information aspect of WISs

- software engineering:
  - Focused on the development, operation, and maintenance of computer programs and data structures, as well as the documents that describe them.

- WISs (Web based information systems) [i]:
  - software is integrated with hypermedia content.
  - In WISs design, development and maintenance, not only information processing systems but also contents stored in those systems are of great importance.

Focused on local government Web sites

- A survey on Japanese local government Web sites was conducted in order to gain better understanding to growth patterns of publicity Web sites.

- Why local government Web sites?
  - Complicated information space which contains miscellaneous information
  - Play an important role in government services
  - Information about the Web site is disclosed
Related works

- Nolan (1979), Earl (1989), Galliers & Sutherland (1991), etc.
  Stages-of-growth models that describe the maturing of information systems in organizations

- Powell, Jones & Cutts (1998)
  Growth model of WISs focused on the information processing system perspective.

  Research on maturity of Web project teams
Concepts related to information space in WISs

- **Web site:**
  - a group of related hyper-media documents and applications, which use the WWW platform as a common infrastructure.

- **content**
  - component of Web sites such as hypermedia documents and applications.

- **information space**
  - **Newby (2001):** The set of objects and relations among them held by a system.
  - McKnight (2000): The objects (real or virtual) to which the individual turns to acquire information.
  - Andrew Treloar (1994) : The location where the human mind interacts with information or communicates it to another.
Dimensions to assess maturity of WISs form an information perspective

- **Static view**
  - the amount and quality of object in an information space
    - Richness of content
  - the way that objects are organized
    - Sophistication of the information structure

- **Dynamic view**
  - the mechanism of change
    - Sophistication of the operation process

- Thoroughly reviewed 20 local government Web sites from the viewpoint of richness of contents and how the information is organized.

- Interviewed managers and staffs in 4 of the 20 local governments to investigate operation processes of Web site enhancement in their organizations as well as the growth path of the Web sites.

- Use the Internet archive, where contents of Web sites are sequentially archived, to investigate the growth path of various Web sites.
Findings of the survey

- Found 4 typical information structure types of local government Web sites was found.

- Grasped several characteristics of local government Web sites, based on which, we were able to purpose maturity benchmarks for local government Web sites from the viewpoint of:
  - richness of content
  - sophistication of the information structure
  - sophistication of the operation process
Maturity benchmarks:
1. Richness of Content

- **Low**: The Web site includes no more than 100 documents, in which only limited information such as address and map of the local government office is presented.

- **Medium**: Basic information on public services is provided. Frequently updated contents such as announcements and event-timetables are included in the Web site. Some detailed information on projects and efforts of the local government, though not much, could also be found in the Web site.

- **High**: Both basic and detailed information on public services is provided. A large amount of contents presenting detailed information on projects and efforts of the local government, as well as contents that contribute to local government services (questionnaires, online application forms) are included in the Web site.
Maturity benchmarks:
2. Sophistication of the Information Structure
Maturity benchmarks:
3. Sophistication of the Operation Process

Low
Web site

Medium
Web site

High
Web site
Common Infrastructure, standardized procedure
## Stages of Local Government Web Site Evolution

Four stages were found in the growth process of local government Web sites:

<table>
<thead>
<tr>
<th>Stage I</th>
<th>Stage II</th>
<th>Stage III</th>
<th>Stage IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Richness of content</td>
<td>Low</td>
<td>Medium-High</td>
<td>Medium-High</td>
</tr>
<tr>
<td>Sophistication of the information Structure</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Sophistication of the operation process</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
</tr>
</tbody>
</table>
Growth path of sample Web sites

Case: A City

Establishing the Web site

Start from Stage II

Web site renewal
Step up to Stage III

Start to operate on the new infrastructure,
Step up to Stage IV
Growth path of sample Web sites

- Richness of content
- Sophistication of the information structure
- Sophistication of the operation process

A City → B Ward → C Ward → A City

D City → A City
Conclusion

- Instead of information processing systems, the maturing patterns of information space in WISs was examined.
- Some concepts related to information space in WISs was discussed and clarified.
- Based on a survey study, typical types of Japanese local government Web sites was illustrated.
- A four stage growth model for assessing the maturity of local government Web sites was proposed.
Future Works

- Examine the growth model purposed through further case studies.
- Develop more detailed and easy to understand benchmarks for local government.
- Study growth patterns of general publicity Web sites of organizations.
Selection of Sample Web sites

- In order to ensure that local government Web sites of various levels are included in our sample, we followed the procedure described below to select sample Web sites:
  - Categorize Web sites of local governments in Kanto area of Japan into 5 groups by scores they got in e-city ranking Japan 2003.
  - Sort local government Web sites in each group by population of the region and choose Web site of local government that has the smallest, middle and largest population in each group.
  - Add Web sites of local governments, which are willing to corporate with us to conduct interviews, to sample Web sites.
Information structure type I: Low level

- The Web site has a very simple structure, in which, most contents are directly linked to the top page.
構成情報

[画面1]

Toshima Islands

[画面2]

ぐらし

[画面3]

村の情報

[画面4]

村の情報
Information structure type II: Medium level

- Some series of contents are well organized and have highly-unified visual presences (for example, FAQ and online ordinance libraries), while most contents have less-unified interface.
Information structure type III
High level (general model)

- Most contents of the Web site have highly unified visual presences except for contents that provide in-depth information on certain projects.
- A mechanism that supports users in information retrieval, which include both organization based navigation and usage based navigation is installed.
Navigation based on user’s viewpoint
Information structure type IV
High level (advanced model)
one could find a clear signature and a hyperlink on each page indicating the bureau that is responsible for the content of the page.

The page of each bureau plays an important role as the hub of hyperlink structure.