Digital Campus Information Portal content organization based on “Information Architecture”

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ABSTRACT

This paper introduces an information architecture scope and application objectives. An overview of how exactly an information architecture methodology guides the information portal content organization is described subsequently. In the end, Tsinghua digital campus information portal content organization is illustrated as a real case in this paper.

Categories and Subject Descriptors
[information architecture]: information architecture methodology guides the construction of the information portal content organization

General Terms
Management

Keywords
information architecture; digital campus; Information portal; content organization

I. INTRODUCTION

Information portal is an important carrier for information system functions integration display. The integrity of application system data and service provides a personalized access to the information resource.

The initial information portal construction allows users to access the associated application and resource by the way of a single entry, it also makes possible for users to acquire information from mass data. With the development of new web technology applied in various industries, portal construction technique trends more and more matured. People are gradually switching attention from purely emphasis on portal establishment to content analysis, organizing and planning. So that user information resource can be efficiently utilized.

Information Architecture is an exact information organization and management approach. It completely presents the idea of user-centered design and provides an effective methodology for information portal content organization.

II. INFORMATION ARCHITECTURE CONTENT

Information Architecture is proposed by an architect named Richard Saul Wurman in 1975, at the beginning stage, this idea did not attract much attention. With the development of network technology, information acquirement scenario is changing so frequently that information is difficult to be effectively organized and utilized. Information environment and ecological deterioration becomes more and more serious, all these issues attract much attention around the world. Information Architecture stressed “enable information clear and understandable” and “people-oriented”. This methodology puts forward a new approach to solve such issue. While entering 21st century, information architecture becomes a research hotspot in the domestic and foreign information science community.

A. Information architecture concept

As for Information Architecture concept, academic circles so far have not yet reached a complete agreement. With the reference from Mr. Wurman and some other scholars, information architecture can be defined as “ an art and science to meet user needs by the approach of Organizing information and designing information environment or information system architecture”. From a broad point of
view, information architecture is a process that deals with information service and information organization by the approach of reasonable investigation, analysis, design and configuration. It involves in infrastructure and department construction. The fundamental purpose is to construct information path, which enables information visible and understandable, so that people can easily search and manage information.

B. Core content of information architecture

Information Architecture is an intersection of parties: information users (users), information content (content) and Information Organization (context). It completely considers the interaction procedure of user, information environment and information content. When we talk about Information Architecture, subject plays a role of information constructor. Object is composed of data, information (information space) and content structure. Service object is user. The main activity consists of information organization, architecture construction and system design. Approach is a combination of multiple subject technical method, art and science. In the book of “Information Architecture for the World Wide Web”, core element means that information organizing system, labeling system, navigation system and retrieval system.

Table 1: core elements of information architecture

<table>
<thead>
<tr>
<th>Core elements</th>
<th>Description</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Organization system</td>
<td>Information content classification, logical organization, relationship identification, organization solution and hierarchical structure</td>
<td>Reasonable information classification</td>
</tr>
<tr>
<td>Labeling system</td>
<td>Utilize terminology, classification terms and common standardized words to identify and describe information unit and navigation link</td>
<td>Labeling consistency, accuracy, understandability and completeness</td>
</tr>
<tr>
<td>Navigation system</td>
<td>Organization architecture allows users to know their present location and acquire further information content by the approaches of global navigation,</td>
<td>Comprehensive navigation, consistent location and complete location indicator.</td>
</tr>
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</table>

All these elements are not separate, their goal is to help users easily search and manage information. After refined by the four systems of information architecture, website information is able to achieve the four goals: clarity, understandable, valuable and available, good user experience.

C. Information architecture approach

Based on sufficient and available information resource, information architecture allows users to easily sense information content and information location by the well construction of information organization system, Labeling system, navigation system and search system. We only need simple steps and less effort to identify the target of huge information concentration. Generally, two approaches are applied in the information architecture: one is top-down, the other is bottom-up.

From a macro point of view, top-down approach organizes information and collects information resource based on top information Classification system. It determines the information content fields. Top-down approach is established based on the content context and the understanding of user needs. The scope and design blueprint is first identified. The specific content grouping and labeling system design are considered afterwards.

Bottom-up approach organizes information from Micro perspective. It constructs information space based on bottom information. On the base of understanding of the content and the required tools, bottom-up approach will step into the complicated content level and complete content creation and data base construction (including indexing, content grouping, etc.)

III. DIGITAL CAMPUS INFORMATION PORTAL CONTENT ORGANIZATION BASED ON INFORMATION ARCHITECTURE

Digital campus information portal is an integration platform of digital campus application system and a concentrated display of digital information resource. It
acts as an informalization window of digital campus. It effectively integrates the campus information resources and seamlessly integrates various information systems. According to each user’s characteristics and role, a personalized easy-to-use WEB interface is formulated. Considering various types of users (teachers, students, administrators, alumni and social community, etc.), it provides a single entry and personalized information environment, so that user can easily utilize network information resource and acquire a comprehensive and personalized information service.

A. Requirement analysis on the information architecture of digital campus information portal

China higher education information system construction began in 1980s, most higher education’s digital campus construction usually uses traditional system integration model. Due to systems are separated, information silos are formulated. The advanced universities just implements application integration, digital campus application systems are integrated as an unified portal, single login and centralized access to applications is managed. Nevertheless, users are still confused by so many different application system interfaces, they are bothered to seek their own interested information and service from the disordered mass information.

As higher education digital campus construction are gradually entering information integration stage and attempting to step into information system construction, informationlization requirement becomes more and more urgent. Users pay more attention to comprehensive utilization of information resource, and also expect to get an integrated and interested information. That means we need to stress user experience, integrate information organization and cross-system process from users’ perspective.

As a result, we should comply with information architecture methodology and build “user-centered, service-oriented” mindset. All information system and resource need to be integrated as effective as possible. Information content is necessary to be well organized and accurately stated. A reasonable information organization structure should be setup. We need further emphasize scientific management, and finally improve higher education’s core competitiveness.

B. Information portal content organizing procedure based on Information Architecture

By the analysis of various factors (including department, staff, technique, information resource and information system, etc.) information architecture integrates the information service and associated information staff. An orderly architecture is established from the view of technique, management, system and service. This procedure normally consists of several typical stages: concept design, organization information content, access paths to information, information display and release, information content maintenance.

1) Concept design: To achieve the overall objective of digital campus construction, we need to understand service object and scope of information portal and identify what users really want to get from information portal, afterwards, define which content and functionality should be included.

2) Organize information content: Aimed at information architecture goal, let’s imitate the procedure of user’s browsing and utilizing information, and deal with information by collecting, filtering, identifying and grouping. We need to identify the content organizing types based on users’ characteristics. While organizing information, it is necessary to consider hierarchy, reasonableness, and flexibility.

3) Generate access path to information: establish a clear logical structure, fully taking into account the user experience and usability, enable information content be accessible, allows users to know their own location.

4) Information display and release: considering the display and release of information space, we need to generate an optimized interface with beauty, conciseness, clear functionality, easy manipulation and consistent style. And finally make it become the bridge between people and information content.

5) Information content maintenance: while information portal construction is ready, it is necessary to update and monitor information. An investigation of users’ usage status is needed to be emphasized as well. The feedback information should be classified. As a result, information portal construction is considered as a continuous improvement procedure.

C. Case Study: Tsinghua digital campus information portal content organization
Tsinghua University information portal is an important part of Tsinghua University Digital Campus. As the distribution center of the whole university information resource, information portal keeps staff, department, information and work closely together. All “information channels” such as “Announcement”, “department office”, “personal office” are put into one body. At first glance, the network application systems are separate, actually they have been integrated seamlessly, a complete digital Tshinghua is present to users.

1) **Information Portal structure design on user-centered**

Digital campus users are approximately divided into two types: teacher and student. Due to teacher and student concentrate on different information content, information portal structure can organize information resource and service based on user-centered perspective.

![Information Portal Home Page](image)

<table>
<thead>
<tr>
<th>Information Portal Home Page</th>
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<tbody>
<tr>
<td>Teachers Page</td>
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![Office, Teaching, Research, My info, study, Daily activity](image)

**Figure 1. Information portal structure**

All the information that both teachers and students are interested is located at information portal homepage. Teachers page and students page is setup in accordance with their specific needs and characteristics. The access path to information is also divided into public and private levels. Public information can be accessed without authentication, whereas personal information is unable to be accessed until successful login. Student personal page can be further divided into study, daily activity, etc. Both teachers and students can define their own personalized page (my info) based on personal needs.

2) **Organize information content and establish content access path based on user activities**

Following the clues of teacher and student daily work and study, a clear classification and an accurate definition is setup along with a navigation system. Information column name should be consistent with its content, so that teacher and student can quickly get what they need from the information system. In case of teacher, the first navigation level can be divided into: public information, office, teaching, research, personnel, finance and equipment. The second level for teaching can be further divided into: public information, course information, daily teaching, student tutorial, etc. The third level can continue to be divided into any specific work.

![1st level navigation, 2nd level navigation, 3rd level navigation](image)

**Figure 2. Information Portal Navigation**

3) **Information Display Page design aimed at User Experience**

From user's perspective, information technique can help information display easily understandable. A friendly personalized interface allows teacher and student to customize their interested portal tool and web resource. Multiple retrieval entries and search engine enables teacher and student to achieve information from digital campus. Customized push information and self-service allows the system to push information (new mail, new message, to-do, etc) to user.

IV. **SUMMARY**

The service that digital campus information portal provides has much more benefits than traditional campus network. Information portal to some extent can be said a high level of digital campus. Nevertheless, digital campus information portal construction is still a continuous improvement procedure. Especially, both information content organization and planning need more practice under the guideline of information architecture methodology. Digital campus information resource should be fully utilized and finally provides service for teaching, research and management.

**REFERENCES**


