

WEB ENGINEERING: EMERGING DOMAIN EMPHASIZING ITS ROLE AND POSSIBILITIES IN MSC-INFORMATION SCIENCE SPECIALISATION

Prantosh Kumar Paul

FBAS, Bengal Engineering & Science University, Howrah, West Bengal, India

Email: prantoshkpaul@gmail.com

ABSTRACT

The background of Web Engineering are webpage, website, web design, website development combined these are called as Web Engineering. However Web Engineering may also treated as application and integration of Engineering and Technologies in website designing and development. Broadly Web Engineering is also includes content management and dissemination. Virtually, Web Engineering has two perspectives; in one perspective Web Engineering is a professional field and in another perspective, it is an academic domain or field. As an academic field still Web Engineering is available in some of the Information Technology/ Computer Science departments. Though, it has controversy as recognition of a separate field. Information Science department may be a place where separate or specialized Web Engineering programme may be offered. This paper is talks about Web Engineering; its role, characteristics, and value with special reference to possibilities in I-Schools or Information Science Departments.

Keywords: Web Site, Web Page, Web Design, Web Development, Web Engineering, IT, Computing, Degrees, Universities, Information Schools, Information Science Department, Information, MSc-Information Science [Web Engineering]

INTRODUCTION

Web Engineering is actively promotes systematic, disciplined and quantifiable approaches towards successful development of high quality, ubiquitously usable web based systems and application. Web Engineering is actually nothing but methodologies, techniques, tools and their integration and application in Web Development; which is supports their design, development, evolution, and evaluation. Web Engineering earlier not treated as an academic domain or field; it was just considered as professional or practiced field. But several workshop, seminar, conference and university programme initiated in Web Engineering [02, 03, 10]. The promotion of www conference conducted in several parts of the world. Web Engineering as an academic field first initiated in 1999 in the first ICSE workshop. In Web Engineering, web based information systems and applications are pervasive and non-trivial.

The prospect of web as a platform will continue to grow and it is worth being treated specifically. Web Engineering has certain characteristics that make it different from traditional software information systems or computer application development. Web Engineering is also referred as Web Technology and specially offered with science and engineering in some of the universities [11, 12].

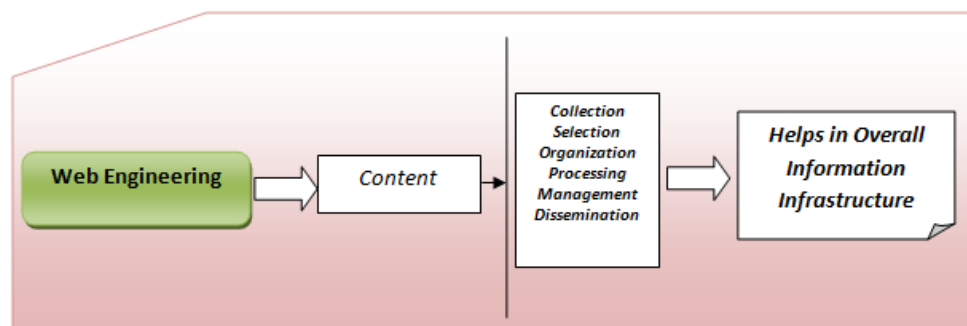


Fig: 1. The way for building Web based Information Infrastructure

OBJECTIVES

The main aim and objective of this study is includes

- To learn basic about Web Engineering and its characteristics;
- To find out main fundamentals of Web Engineering including its role and values;
- To learn about Information Science and I-Schools and their basics;
- To find out traditional Information Science programme and nomenclature;
- To draw a possible and probable domain of Information Science with Web Engineering/ Technology specialization.

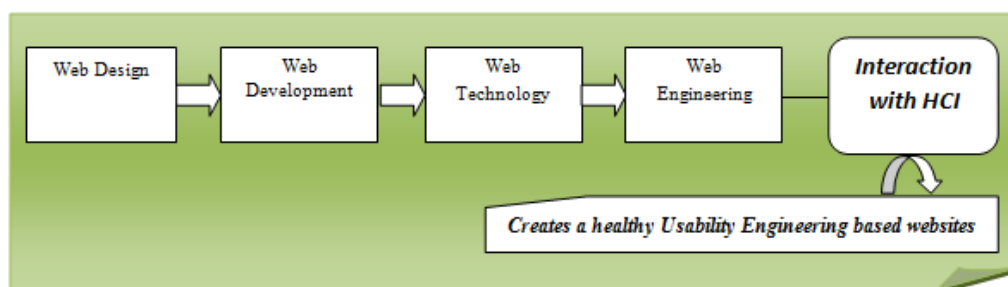


Fig: 2. The way for building Usability Engineering based Information Infrastructure

Web Engineering: Fundamentals

Web Engineering is actually nothing but the integration of science, technology, engineering principles, tools, methods and procedure in website design, development and modification. This is an interesting field responsible for healthy website development. however, it is important to note that, Web Engineering is also includes interface designing of some other devices such as ATM Interface, Mobile Interface, Laptop Interface , Computer Interface and

so on. Though traditionally Web Engineering convey as online and offline development of webpage for official and personal uses. Web Engineering is the largest stakeholder of web-space domain [06, 10]; where smaller gradient is website then webpage; then web design. The next stage of web design is web development. However, the last stage of web-space is treated as Web Engineering / Technology. As Wikipedia mentioned, Web Engineering is suffers problem in academic recognition; peoples in other traditional discipline [such as Software Engineering] to recognize Web Engineering as a new field. There are several things fall under Web Engineering domain and practice- web process and project management, web requirement modeling, web system design discipline, web system implementation, web system testing, semantic web applications and so on[07,11].

The Web Engineering professionals are called Web Engineers, Web Technologist, Web Master, Web Graphic Designer and simply Web Developer. For large organization team of web professional are needed; however for small organization a web master and even contract/part time web developer is enough. Web Engineering as an academic domain offered in several Engineering and Technology schools around the world with BA/BS degree.

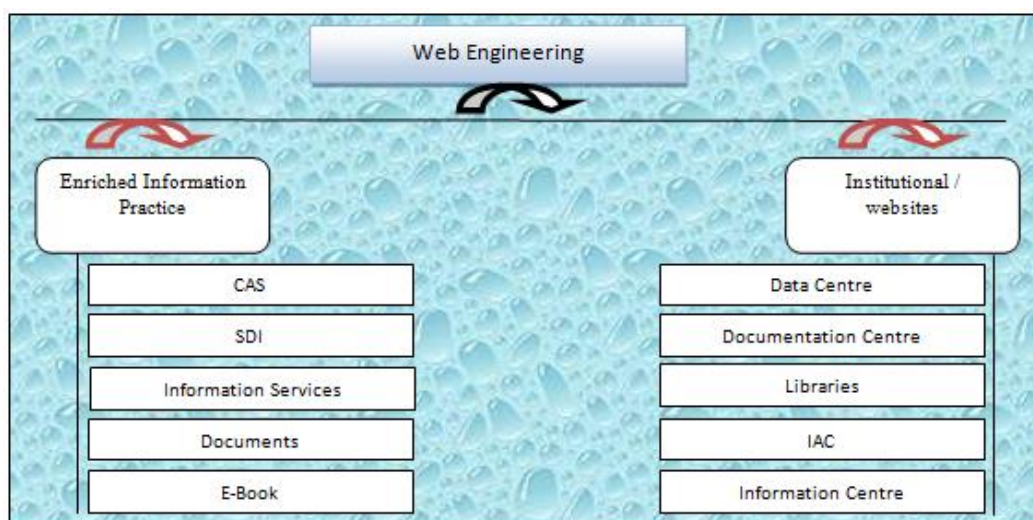


Fig: 3. The use of web engineering in the Information Infrastructure

Web Engineering applications in Information Science Domain

Information Science has several places where it is possible to utilize Web Engineering as a tool. We know that, Information Science is an interdisciplinary field dedicated to several information activities such as collection, organization, processing, management and dissemination and conventionally applied for several organizations such as information centre, documentation centre, data centre, information systems and knowledge grid [13]. However, today the traditional working space of Information Science changes rapidly and several organization and fields adopt Information Science principles for better information systems and infrastructure development and building. The applications such as:-

- The traditional information centre deals with bibliographic services and website may be utilize for online and offline bibliographic database services;
- The design and development of OPAC and similar interface need the affiliation from Web Engineering/ Technology;
- The online availability of Information Services, Reference Services and even Referral Services are also possible to offer by websites;
- User awareness, user study, user feedback, details of collection and services are possible to get from websites;
- Intra Communication within information centre; and information centre to others communication depends on Web Engineering;
- Modern Information Services such as CAS, SDI, DDS need a sophisticated website;
- Online Education, E-Learning are possible with website;
- The user friendly websites, interface depends on Web Engineering which is powered by the Usability Engineering;
- Design and development of learning community in web 2.0 platform is depends on web technology;
- PDF and stored lectures [Audio/Video] are possible to disseminate among the students or business houses with the help of dynamic feature added websites.

Information Science Degree and Traditional Nature

Information Science is actually an academic domain and professionals practice field. Information Science traditionally originated from information field; such as Documentation Studies, Information Studies. However, advancement of IT and Computing changes the entire dimension and scope of Information Science. Information Science is actually combination of so many fields such as Information Technology, Management Science, Information Studies, Communication Science, Mathematical and Statistical Science, Documentation, and Cognitive Science and so on. The differences between IT/ Computing with Information Science is, IT is involves in IT product design and development and technical specification; where as Information Science is mainly responsible for the application of IT and Information in academics, business, community and people [14].

Information Science is more clearly responsible for the people-information-technological interaction and applications. However, Information Science is fundamentally responsible for information processing and management and ultimately dissemination. Several Information Science nomenclatures are evolved over the period but most popular is "Information Science". Information Science around the world may be treated as Applied Science with Social Science nature. Information Science's common degrees are BS/BSc-Information Science, MS/MSc- Information Science and recently some of the university started specialization to this programme as MSc- Information Science [Networking], MSc-Information Science [Information Systems], MSc- Information Science [Information Architecture] and so on[07, 14].

The most advance nomenclature of information field is Information Science and Technology [IST]; which is believes in higher and healthy technological integration in Information and Knowledge Management.

Towards MSc- Information Science [Web Engineering]: Prospects and Problems

Information Science programs recently offered as specialization and the common specializations are MSc- Information Science [Database Technology], MSc- Information Science[Networking and Communication], MSc- Information Science [IS Designing], MSc- Information Science [Library Management], MSc- Information Science[Health Informatics], MSc- Information Science [Chemo Informatics]. Like these, website and web technology may be initiated in the MSc- Information Science degree and the possible nomenclatures may be as follows:-



Fig: 4 Depicted some possible MSc-IS with specialization

We proposed an MSc- Information Science [Web Engineering] programme of 2 years duration with 4 semester mode. The proposed programme listed bellow based on two type of MSc- Information Science [WE] Degree, in first mode degree may be offered in several Information Science departments or I-Schools and specialization may be started from last/ 4th semester. Here good fact is, institutions may run common syllabus for all until 4th semester and at the last semester specialization may be started depending upon students interest. Here, specialization may be conducted at I-Schools or Information Science department by their own/ adjunct or tie up based faculty or may be conduct in the department where more Web Engineering experts are there/ these department may be from IT/ Computing/ECE/ Communication Systems and similar[08, 14].

The course gradients and papers for the proposed MSc- Information Science [Web Engineering] as follows:-

Semester-1

Information and Knowledge [3 Credits]

Information Science and Communication [3 Credits]

Information Management [3 Credits]

Computer and IT Basics [3 Credits]

Information Systems [3 Credits]

Semester-2

Knowledge Organization-I [3 Credits]

Computer and Networking [3 Credits]

Communication Systems [3 Credits]

W LAN and Cisco [3 Credits]

Information Society [3 Credits]

Semester-3

Knowledge Organization-II [3 Credits]

Advance Communication Engineering [3 Credits]

Information Architecture [3 Credits]

Database Development [3 Credits]

Client Server Networking [3 Credits]

Semester-4

Web Development- Basics [2 Credits]

Web Technology and PHP, CSS [3 Credits]

Java Script and VB Script [3 Credits]

Information Science and Web Applications- Future Trends [2 Credits]

Advance Web Engineering [3 Credits]

Project [2 Credits]

Though the full dedicated Information Science [WE] specialization may be offered as follows:-

Semester-1

Information Science

Information Society and Knowledge

Website and WWW

Computers Fundamentals

Information and Knowledge Organization

Semester-2

Knowledge Management

Web Technology and Web 2.0
Semantic Web and Information
Webometrics and Measurement
Information and Web based Applications

Semester-3

Web Systems-Tools and Methods
CASE Tools
Usability Engineering
Knowledge Organization-I
Mobile Computing

Semester-4

Communication and Networking
Database and Multimedia
Knowledge Organization-II
Web Modeling and Web Architecture
Advance Content and Information Management
Project

The full dedicated Information Science [WE] programme requires full support in teaching and technologies; thus sophisticated IT/ Computing department may be helpful for such programme. Here all the papers are deals with 3 credits and total 20 papers [so, total credits are 60; which including theory/ practical and project] where as in first approach 18 papers are of 3 credit and 3 papers are deals with 2 credits.

FINDINGS

- Web Engineering gaining popularity as an academic programme and common programme is MSc-Information Science [Web Engineering];
- 'Web Engineering' this term is not so much popular in academic community;
- Web Development as an industry growing rapidly with several type of dimension;
- Usability Engineering and HCI are gaining popularity in Web Technology;
- Web Technology/ Web Engineering may be offered as MSc-Information Science specialization in I-School for better information dissemination with web focus.

SUGGESTION

- It is important to include Web Engineering gradients higher Usability and HCI principles;

- MSc-Information Science [Web Engineering], the first approach mentioned here may be initiated in the general Information Science department/ I-Schools;
- Web Engineering may be implemented for healthy and sophisticated communication development.

CONCLUSION

Website today considered as mirror of an organization. Thus during preparation of Web Engineering based content clarity, usability is also essential to check out[15]. Information Science has wonderful role for Information Architecture building; which including traditional and web based or electrical. Information Science education needs several academic specializations in its academic programme for sophisticated development of information school. Web Engineering may be an important tool for healthy Information-Community-Technology relationship [16].

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