



A STUDY ON REPRESENTING COLLABORATIVE WEB DESIGN PROJECT PROCESS AS SHARED REMINDER

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ABSTRACT:

The features of current web design project (WDP)s are so complex and long lasting that projects need effective collaboration. For this reason, Intranet/groupware/extranet is used for managing some projects. Practically, this can not be common ground for collaboration because it isn't designed for process management. Even though firms may have this system, project staffs want to physically share information and confirm decisions using a whiteboard. It is hard to find practical and detailed Web Design Project Processes (WDPP) that designers want to follow because designers treasure and seek ambiguous situations.

The purpose of this study is to build a visual WDPP as shared reminder for consensus in WDP management. This study included literature research of process model and field research of industry practice. As reverse re-engineering is important to understanding how products function, the problems of the current WDPP were investigated through in-depth interview analysis. It was investigated in particular because due to the incidence of communication errors attributed to lack of documentation. This inadequacy makes it difficult to share information and knowledge because of a lack of a common platform to share information and store the database. For a typical project,

the WDPP consists of six stages: initialization, conceptualization, visualization, implementation, verification and maintenance. The representation of a WDPP has the properties of modular system, multiple and concurrent activities, feedback, and collaborative work. The process was analyzed according to its method, including the stages, roles, inputs and outputs, information formats, and factors in the decision making. It makes it possible to recognize what kinds of products are produced from the process to build a database and to produce a document that is robust enough to withstand organizational changes. It allows for systematic control of its own projects within and outside the firm, accumulating information for the firm through the database, and facilitating communication. Furthermore, it can be applied to assess the progress of the project via a checklist, and then it will reduce trial and error repeated for every project that has been done. Therefore, a visualized process will effectively improve a web design project. This study proposed a standard of WDPP that can be widely applied to the design field, particularly medium and small enterprises focused on IT businesses. It can be applied to companies which do not have their own mechanisms in place, and will be a benchmark for comparison with their own methods in which the company has a process of open standard web design.

(Keyword) Collaboration, Web Design, Process, Visualization Communication

1. INTRODUCTION

1-1. BACKGROUND OF STUDY

This study is originated from two simple ideas: first, Offline integrated media is still powerful and second, people are visual oriented. Online media has not successfully replaced traditional media channels such as newspapers. People still want to read a newspaper on the cozy sofa or in the subway. It is important to ensure computer mediated eBiz projects meet human needs that one is more comfortable tangible or physical things than intangible things. For example, PDAs are useful to manage personal schedules. However, sticky notes are sometimes much powerful memory joggers than complex digital organizers.

Here is second idea: people are visual oriented, people enjoy reading Greek/Roman mythology. However, they have difficulty recalling the relationships among the various gods/goddesses because there are too many of them. Family tree of god/goddess helps us to visualize Greek/Roman mythology. Some training manuals are so dense with information that reading them is too time-consuming and tedious. Sometimes diagrams of job flow are more helpful. Similarly, a simple map can be better than detailed written directions in how to reach a destination while path finding.

Likewise, the features of web design project (WDP)s are so broad and long lasting that jobs need effective collaboration. For this reason, Intranet/groupware is used for managing complex collaborative jobs. Practically, the intranet can not be common ground for collaboration because it isn't designed for process management. Even though firms may have an internal intranet, people want to share information and confirm decisions using a tangible whiteboard in an office as a physical product. Figure 1 shows comparison between virtual (digital) world and real (physical) world. Online version of information is efficient to search, however, this version often get lost, forgotten, or overlooked.

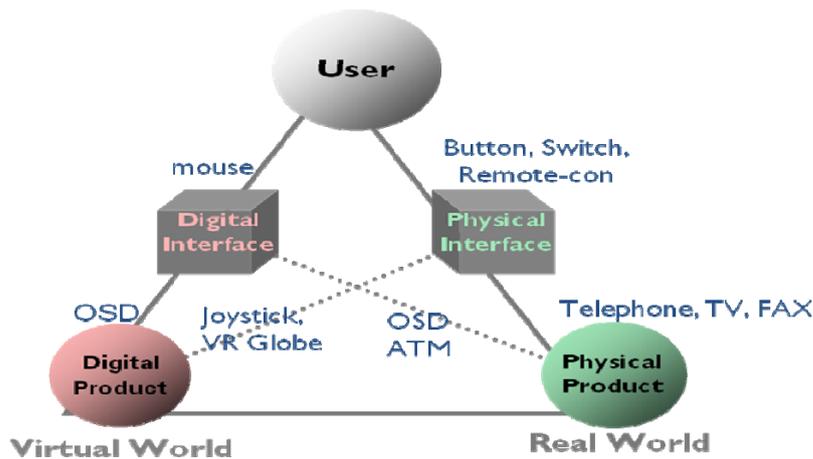


Figure 1: Virtual World and Real World

A large enterprise systematically manages the project including the supply and demand of manpower for the development of marketing products by introducing groupware or intranet/extranet. However, it is uncommon that an enterprise has a special purpose platform to build the software from the standardized working processes and methodology for the field of design.

The web design project process (WDPP) helps to eliminate the need to start the design process from scratch. This research had been done to assess process toward a benchmark and in depth interview of project managers for the web agencies. It was very hard because the detailed design process belongs to the core know-how and is not open to the public. It is recognized that the necessity of a platform in very recent days, however, it is very hard to make WDPP because the designers do not want to risk leaking proprietary information related to the internal design process of the enterprise.

The importance of various certifications and institutions¹ that evaluate the value of the enterprise will increase in assessing a small design firm in which the WDPP is significant to the firm. From this point of view, this common ground is necessary for the development of detailed and definite WDPP produced for eBusiness products by small and medium firm.

¹ ISO Certification, GD Mark Acquired, Certification of a Venture Enterprise, Certification of Inno-biz enterprise by Small & Medium Business Administration, Certificate of Promising Small & Medium Information-Communication Enterprise by Minister of Information and Communication, Etc.

1-2. OBJECTIVES OF THE STUDY

The objective of this study is to represent a visual WDPP suited to a web design firm as a common ground. It reduces the communication time between the participants for a design project, and accumulates information and knowledge. In this study in terms of web design, the scope of the study is restricted as a WDP in order to produce a feasible detailed result.

It is possible to manage the production situations by means of the accurate definition of the processes of the project that help reduce the processing times and grasps a clearer understanding of the progress situations. Moreover, the communication errors can be eliminated through the process of exact grasping and presentation by the developer of the enterprise for the requirements of the client

As a point of creative design, this study is not directly related to the process of creative thinking. And the process discussed has much more to do with content management and collaborative information structuring than with creative/innovative design. However, the reference to the accumulated information and partial reuse of that reduces the R&D investment and times for the initial research. It also makes it possible to concentrate more energy for the creative thinking. This shortens the timeline for success.

When digital era started, people heavily pursued digital technology and thought this technology was magic to solve any problems. However, as times passed, people could define limit and merit and demerits of digital technology. People tired of this and tried to combine this with analog or physical features. This (Figure 2) shows that status of change from digital product to analog product and vice versa. Here comes with concept for "Turning inside out technology (Preece, Rogers, Sharp 2002)". Some similar case shows this concept. This study which made a WDPP for physical consensus is example of B. Expensive project management program is so difficult and so detailed that many people forget about this application and deal with printout or whiteboard in physical working environment.

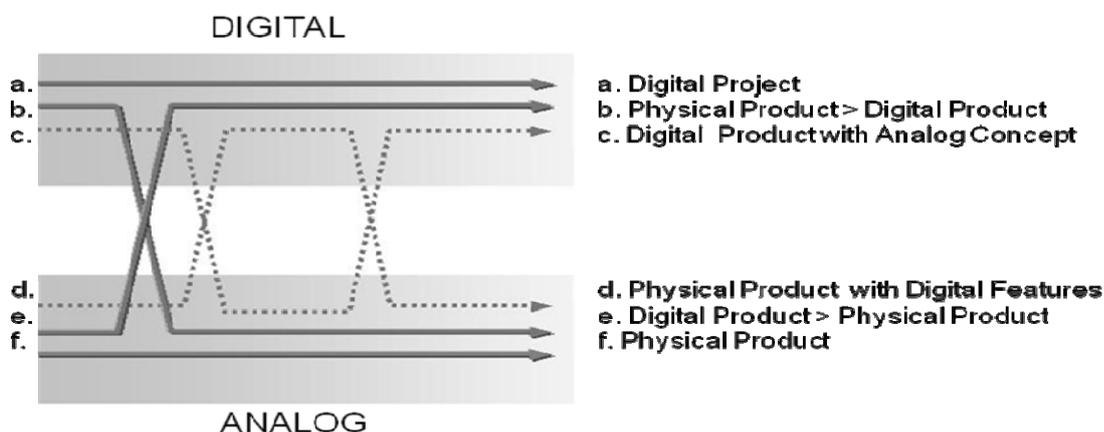


Figure 2: Digital and Analog Conversion

1-3. PROCESS AND METHOD OF THE STUDY

This study analyzed projects systematically based on the output of the web design firm as follows: the products of the WDP by the web design agency firm, in-depth interview on the process of methodology for other design agencies and the general methodology defined by the theory of design.

An analysis that includes personal ability, work propensity, role in an organization, and communication between clients and internal staff was performed to identify a web design through in-depth interviews of 20 people with the designers as the central focus. The 15 most successful projects among 100 or more sites produced by the web design firm that participated in the production of a WDPP were selected based on an assessment of results. The interim and final products of the WDP, communication materials (e-mail and its accompanying documents) between the clients and the web design agency are investigated in this research.

This study developed a diagrammatic representation of the sequential procedure by recording the steps and forming a principle of production during the consultation. In addition, it went through a modification process by searching for an error from the applications for a real project based on the produced process that was built from the experiences of building web sites and research for other company's know-how, through well-intended interchanges as a great part of it.

The documents produced for the requirements of a client or produced for design agency's own purpose were separated, and then a template was produced taking into account the frequency of use and importance. In addition, the communication flows of the decision line in the Intranet and within/outside the firms are also investigated, and the template is mapped by following the phases of the process.

2. ANALYSIS OF THE CHARACTERISTICS OF EDESIGN PROJECT

Following are the facts that came from the interviews and surveys.

2-1. HABITUDE AND PERFORMANCE OF A WEB DESIGNER

A designer has a preference for the black box design process (Figure 3). Even among his/her colleagues the designer doesn't want to reveal the design output until she/he has finished it. In addition, a designer often avoids task of documentation and hopes the main job that a person would want to do or could do is creative work instead of monotonous and repetitive work.

Although the need to communicate present design requirements may not be fully satisfied, the communication gap generally will easily be mitigated with a visual representation of the process.

The ability to adapt and update for specific technical issues will be required for a web designer to execute a design that will be widely used. A project will be processed inside the organization because a large part of the project will be performed by cooperation with a technical team. Moreover, the nature of web design results in less stress on the final output because it is easier to modify post completion compared with traditional industrial product, such as prints or production materials. In addition, design is always required as a manner of interaction that is different from paper media.

Black Box Process



Systematic Process



Conjecture/Evaluation Process



Hybrid Model

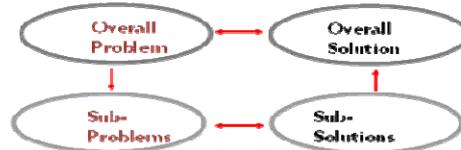


Figure 3: Process Models

2-2. CHARACTERISTICS OF WDP

Generally, the work of design includes visual representation but also includes an ideal concept such as informational architecture, flowchart, relational concept and other things, which cannot be expressed visually. It is hard to use the design B, C, and D used in the project A repeatedly, and the repetitive use of the design is often regarded as a lack of originality.

WDP tends to be rote and time consuming work, such as program coding, image cutting and editing, and numbering of icon designs. Therefore, several designers frequently may work together on the same operation, and the designer may not perform the program coding in some cases.

2-3. WDPP AND ORGANIZATION

The ratio of the production period of WDPP is longer by two or three times than that of the product design process. As shown in (Figure 4), a digital design (software, multimedia, web,

motion graphics) follows the general order though frequently overlap. In addition, modification is easier because the final outputs are released through the server using intangible work. This is more efficient than traditional product design where modifications may have a more significant adverse effect on completion.

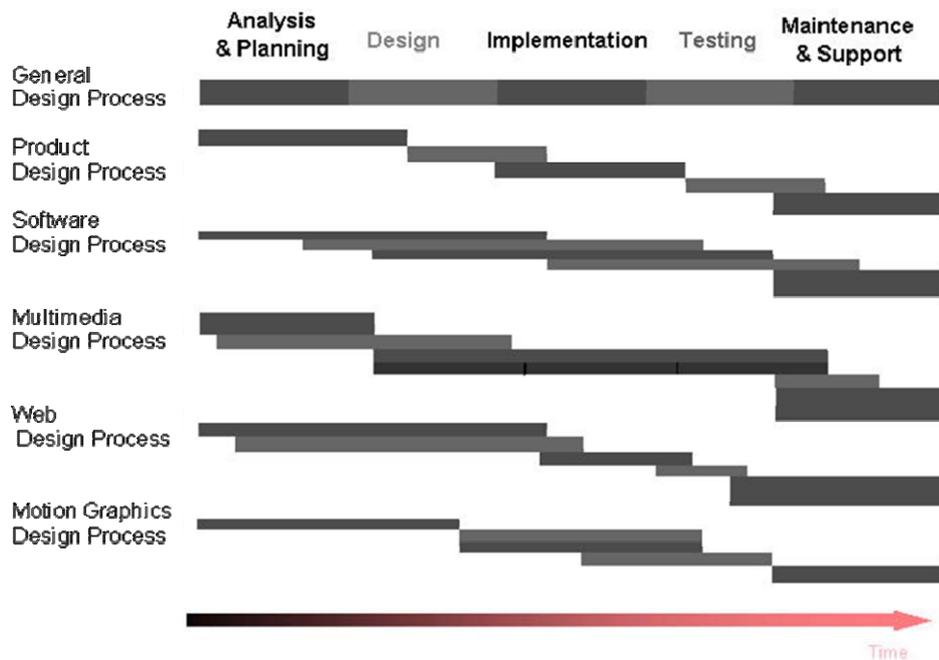


Figure 4: Comparison of the processes

Usually, the organization of a web design agency consists of the marketing management, strategy and planning, research and development, and the design discipline. The relationships among the internal staff members, clients, outsourcing partners, and operations are summarized as follows (2004)

Phase 1 Initiation: Closely related to the Sales/Marketing, client

Phase 2 Conceptualization: Emphasized on a role in the planning and strategy organization

Phase 3 Visualization: Works of the design organization

Phase 4 Implementation: A role in the technical organization takes the lead

Phase 5 Verification: Related to the research and development organization

Phase 6 Maintenance: The sales marketing is mainly connected with the collaboration for the team of design and development.

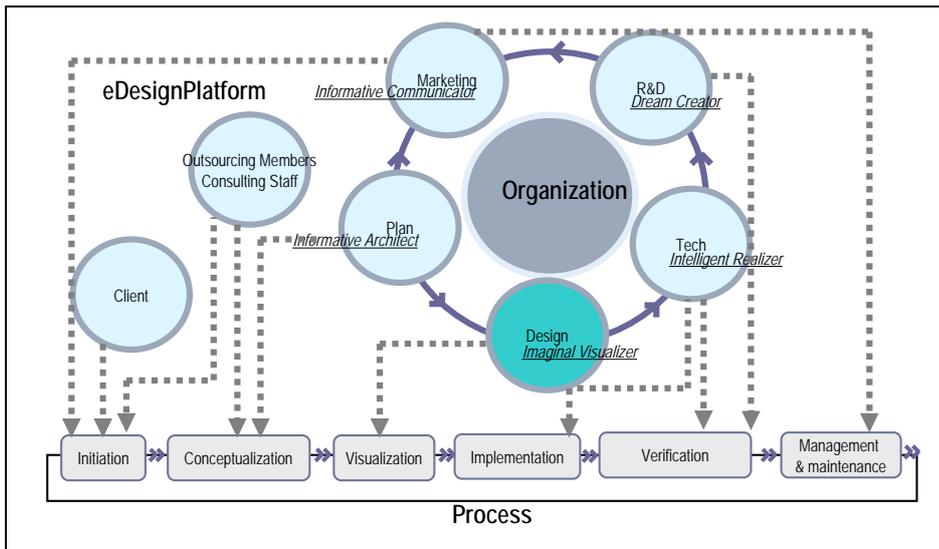


Figure 5: Relationship between the organization and the process

2.4. ANALYSIS OF THE PROGRESS OF WDP

In this phase, the collections of materials by the field research, in-depth interviews for the working-level, and comparative analysis for the project proceed. The results of an analysis of the work flow of the field operator and selected problems are produced. As a result, the problems reviewed by the enterprise are categorized by the client and internal issues as follows.

2-4-1. ISSUES ON THE CLIENT

Communication errors from the client are the most important and frequent in every field of business. These can be classified as: errors in original communication, interpretation errors by project participants, changes in requirements over time, and errors in transferring of facts to the outsiders.

One of the biggest challenges for the field operators is that they are often faced with client requests to make revisions to requirements without going through a proper procedure. This results in material and resource costs but also the lowering in the designers' enthusiasm. However, the needs of the client are accepted in the end. This issue becomes a legal dispute between the two. Therefore, it is important to set the scope of the project, to conduct a formal meeting at the time of decision-making, and it is necessary to document the scope with the agreement signed by both parties.

Generally, a field operator manages various schedules for each project at the same time. In this situation of the unilateral prolongation or shortening of the schedule, the client will have a huge effect on the quality of the project.

There is trouble managing the schedule due to communication delays or failure to inform the operator in charge in the case of necessary changes and approval of the client. Various ways and methods are used to communicate for each side, such as not only face to face meetings, but also a mailing list, Instant Messaging service, conference call, mobile phone, and others.

2-4-2.INTERNAL PROBLEMS AND THEIR SOLUTIONS

The procedure and report system may not be firmly established for small and medium firms, and then the documentation, which will occur in the project, is not adequate documentation. Documentation is regarded as redundant and unnecessary process so that the design staff regards documentation as a waste of labor and avoids its completion. A template has good solutions that reduce the documentation time of a designer and helps to use and share the accumulated documents, which can be used for a new project as a basic material (Eune 2004).

There is no guide for a proper sharing method of document between the teams or individuals participating in the same project. Therefore, errors in the management or use of the final document will often occur.

Because a team or individuals are to participate in a number of projects at the same time, it is necessary to share and control the schedule to perform the correct tasks at the proper time. It is also critical to perform a confirmation process to verify the schedule each time.

The custody and management of the DB, which includes various documents, products, client information, communication history, and other materials, produced during the completion of a project go through a complicated process and lack of proper application that results in poor usability.

3. ESTABLISHMENT OF WDPP

3-1. WDPP FOR EACH PHASE

The important items and variables are expressed as follows, and the processes for each phase are denoted on the next page. It can be summarized below.

(1) Initiation

This phase arranges the preparations for the project starting or starting phase. The works of this phase are mainly led by a marketer, and a designer has the role of developing a tentative plan for the acceptance of a project. The work of a tentative plan is a very important factor to receive an order.

(2) Conceptualization

This phase establishes the direction and strategy of a web site development. The planner induces a designer to produce a flowchart, storyboard, and information architecture. However, the planner does this job.

(3) Visualization

This phase produces the visualization of the conceptualized results and is mainly lead by designers. In addition, this phase deals with a tentative plan for a web site and graphic works.

(4) Implementation

This phase programs the html/ dhtml/ xml, Database, and CGI with coding and generalizes the multi-media products like video and audio as a type of digital document.

(5)Verification

This phase checks and validates the products before publishing to avoid and reduce an error or mistake. It includes the test of usability, errors, server performance, and other things. The test is performed by some testers who did not participate in the project. In addition, the test stage may also be divided into an alpha and beta version.

(6) Maintenance

This phase corrects the errors after publishing and updates the documentation information according to the changes. It establishes standards for maintaining the documentation to incorporate corrections and the updates.

3-2. CHARACTERISTICS OF WDPP

(1) Modular

After classifying the web design process as the six different phases, a macro view that illustrates and encapsulates the whole span of the process can be developed. The detailed items of the lower part are called a micro view. Each phase is modularized and is going to be omitted or overlapped in the middle phase according to the state of the project.

(2) Concurrent

The process design may show that phase 2 follows phase 1, but it is sometimes nearly concurrent with phase 1 rather than sequential. That is, the next phase of the task may start after the preceding phase passes a certain milestone or percentage of completion rather than delaying the next phase until completely finishing the previous phase.

(3) Feedback

Each phase has feedback loops. The phase of the section will be repeated until completing the confirmation of decision-making for the progress of a process. The major decision-making between the enterprise and the client can be made by the way of presentation (PT).

(4) Collaboration

Collaboration is required between the agency in charge of the project and the client who commissioned the agency. The tasks of the project will proceed through collaboration among the project participant, project manager, marketer, project planner, designer, and programmer. In addition, the disposition of tasks and sub tasks can be accomplished by means of outsourcing where a specialist or expert is necessary.

Structured design process models (stage/waterfall models) have been proposed below, which were to some extent criticized but which still find useful applications in collaborative contexts.

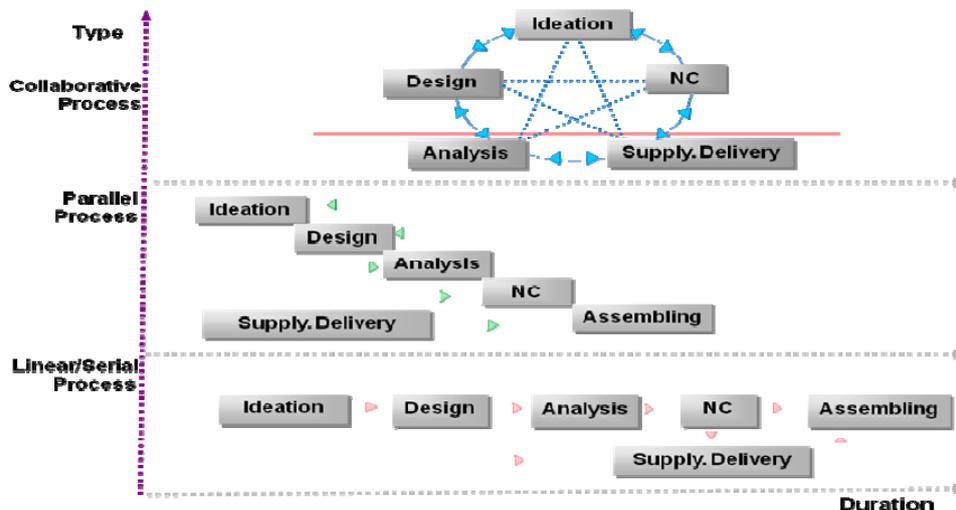


Figure 6: Degree of Concurrent works

3-3. VISUALIZATION OF WDPP

Previous research (Kang, Chung, Eune etc 1998) made a role based process because role of digital design project hadn't been defined, yet at that time. User (white)/ manager (yellow)/ designer (purple)/ programmer (orange)/ engineer (Green)/ specialist (Blue) were involved. Each role was defined as different colors. Process Unit has 5 steps such as planning (P), Design (D), Test (T), and Maintenance (M).

Process Module Unit

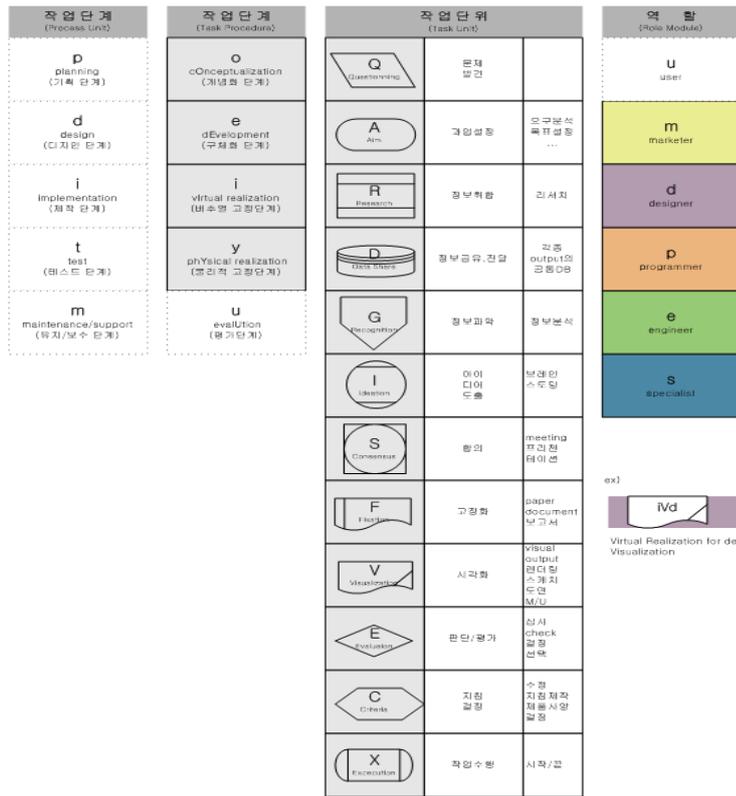


Figure 7: Legends for role based process

Task procedure has 5 steps such as conceptualization (O), development (e), visual fixation (I), physical realization(Y), and evaluation (U). ivd represented that visual realization (i) for designer (purple) in Design phase (D). The order of sign is Task procedure, Task Unit, process unit and color.

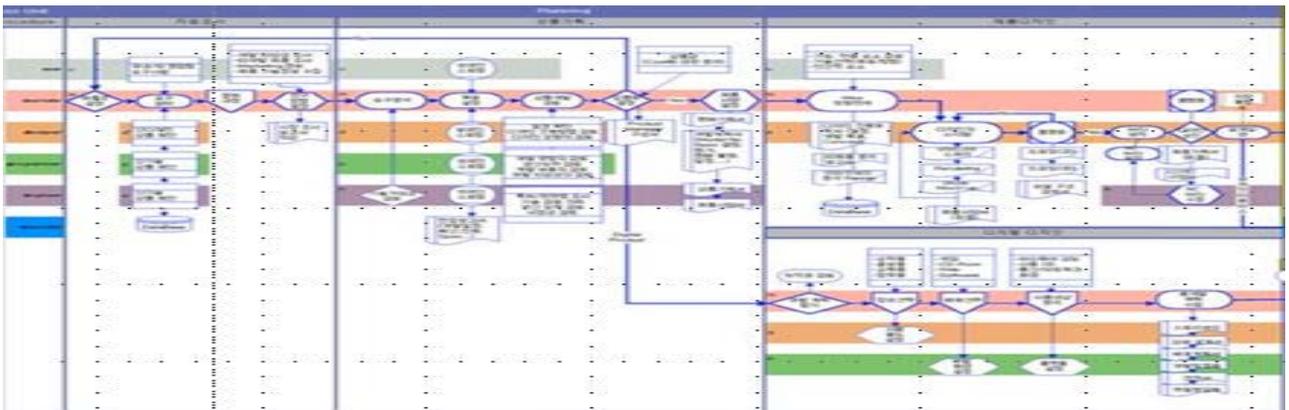


Figure 8: Role based process

Here are characteristics of new WDPP for input and out based process. Detailed explanations are as followed.

(1) Phase

The phase of the WDPP consists of the six phases as follows: Phase 1: Initiation /Phase 2: Conceptualization /Phase 3: Visualization / Phase 4: Implementation/ Phase 5: Verification/Phase 6: Maintenance. Each phase has included four or five micro views as a detailed section.

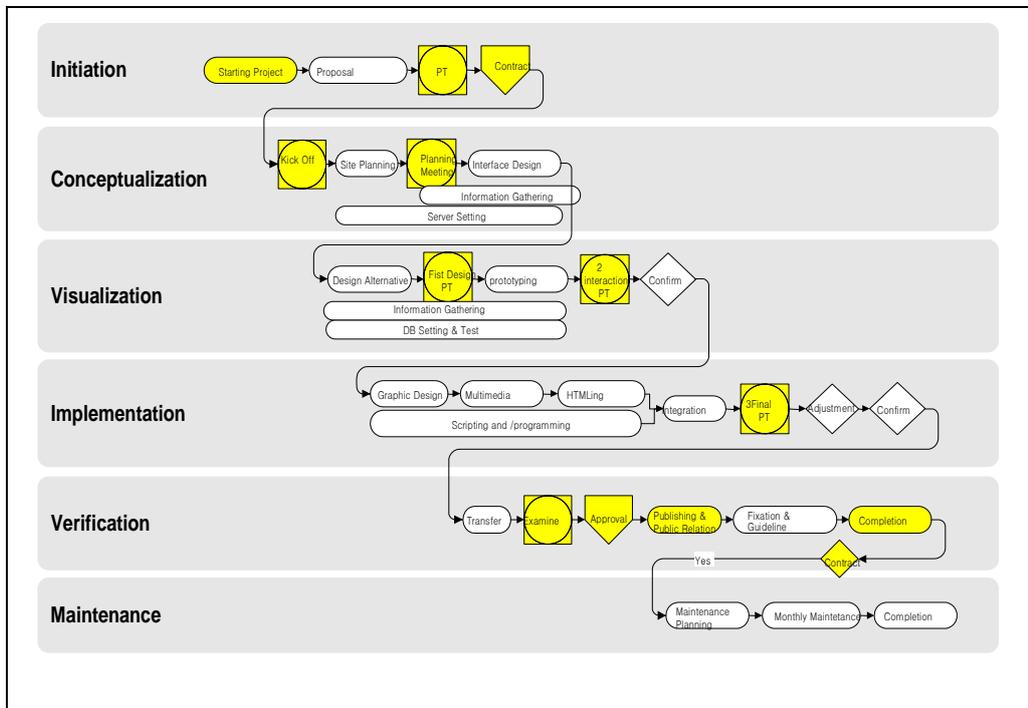


Figure 9: Phases of the web design process

(2) Role

In the course of a project, the roles of the client(C) and agency (A) are clearly distinguished, and the opinions of the client in the phase of an important decision-making process are reflected in the project. This can be distinguished by the colors in a web design process. The assignment of tasks/steps/functions in the agency consists of the marketer (marketer=M), researcher (researcher=R), consultant in charge of the special consulting (consultant=T), planner in charge of writing the proposal and information architecture (planner=N), designer in charge of the graphic works of GUI and interaction (designer=D), programmer in charge of the construction of the database with coding (programmer=P), and specialist in charge of the sound editing, photography, script, and other works (specialist=S).

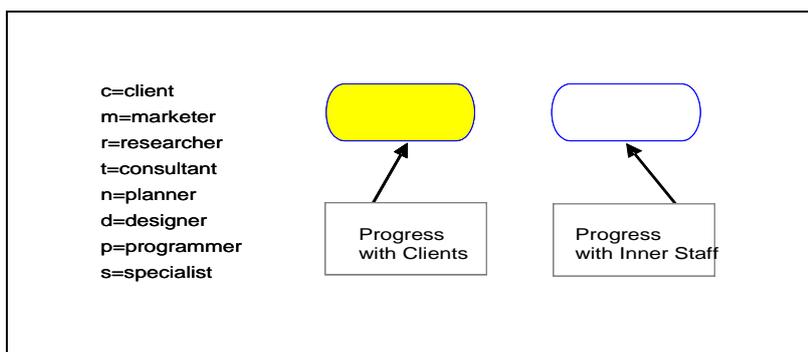


Figure 10: Assignment of the role

(3) Data Flow

The classification of whether it is an input or output is illustrated by its position. In the process diagram, top is input and bottom is output. A series of tasks becomes a procedure, the upper side of the task is the input source, and the output data will be produced by the performed task. The internal side based on the task is for the client, and the external side is for the agency. The information given in the output between the client and the agency is different, and the information accumulated in the agency will be produced by DB as the know-how of firm and kept internally.

IfA= Input from Agency / IfC = Input from Client

O2C = Output to Client & Agency / O2A = Output to Agency

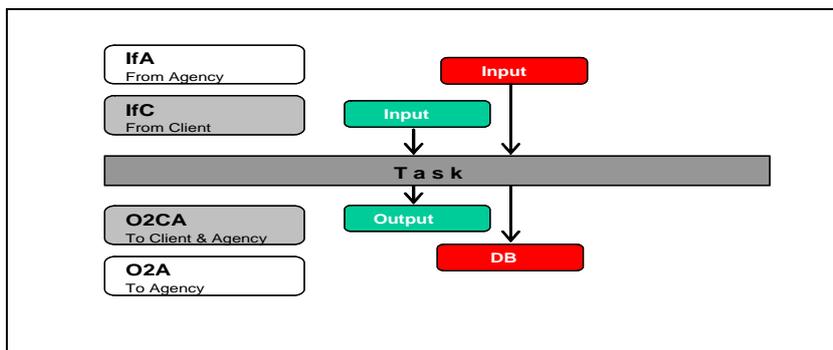


Figure 11: Data Flow for the input and output

(4) Format

The decision-making during the project consists of two types; an external confirmation between the client and the agency and internal confirmation by the agency only. The external confirmation is required a conference meeting, consensus through presentation, evaluation for the selection, contract for the contract / approval / inspection, regulations, and criteria for the selection of various influences.

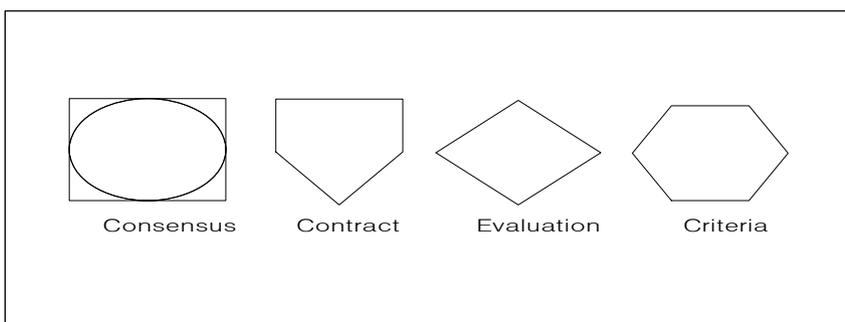


Figure 12: Classifications for the state of decision-making

Visual/ Written Document: Classified by the elements of design, which include pictures, animations, and other graphics, and text-oriented documents

DB/ Non DB: Classified whether it need to be stored into knowledge DB or not.

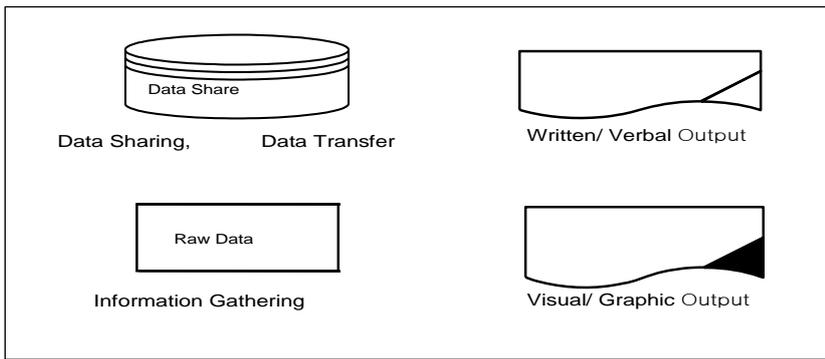


Figure 13; Classifications for the Information format

4. CONCLUSIONS AND FUTURE STUDY

After this research, WDPP can be used in the real project in concrete and practical level. This study tried to find a solution that would construct a process to improve the communication and sharing information in a WDPP. In order to analyze the problems for the existing WDP environment, the current difficulties between internal staffs and the external clients who participate in a project were investigated through on in-depth interviews. It was known that sharing information and knowledge is hampered because there is no easy and convenient common platform to share information. It can be concluded that a standard shared form will help reduce miscommunication between project members.

After analyzing the projects which participated directly or indirectly, the study concluded that most WDPPs can be largely classified by six stages: initiation, conceptualization, visualization, implementation, verification, and maintenance. In addition, the problems and improvements were examined through the diagrammatic visualization of a process, which was intuitively dominated by a long experience without a fixed and systematic process had been hampered by lack of process. The explanatory notes were produced by considering a visualization method for each stage, role, input and output, information format, and factors for decision making and reflecting the characteristics of an web design project that require a production strategy for the visualization of an WDPP as a manner of modular system, frequent and concurrent occurring, feedback, and joint work. Moreover, it was configured to support the understanding of a process by the additional explanation for the works and issues for each stage.

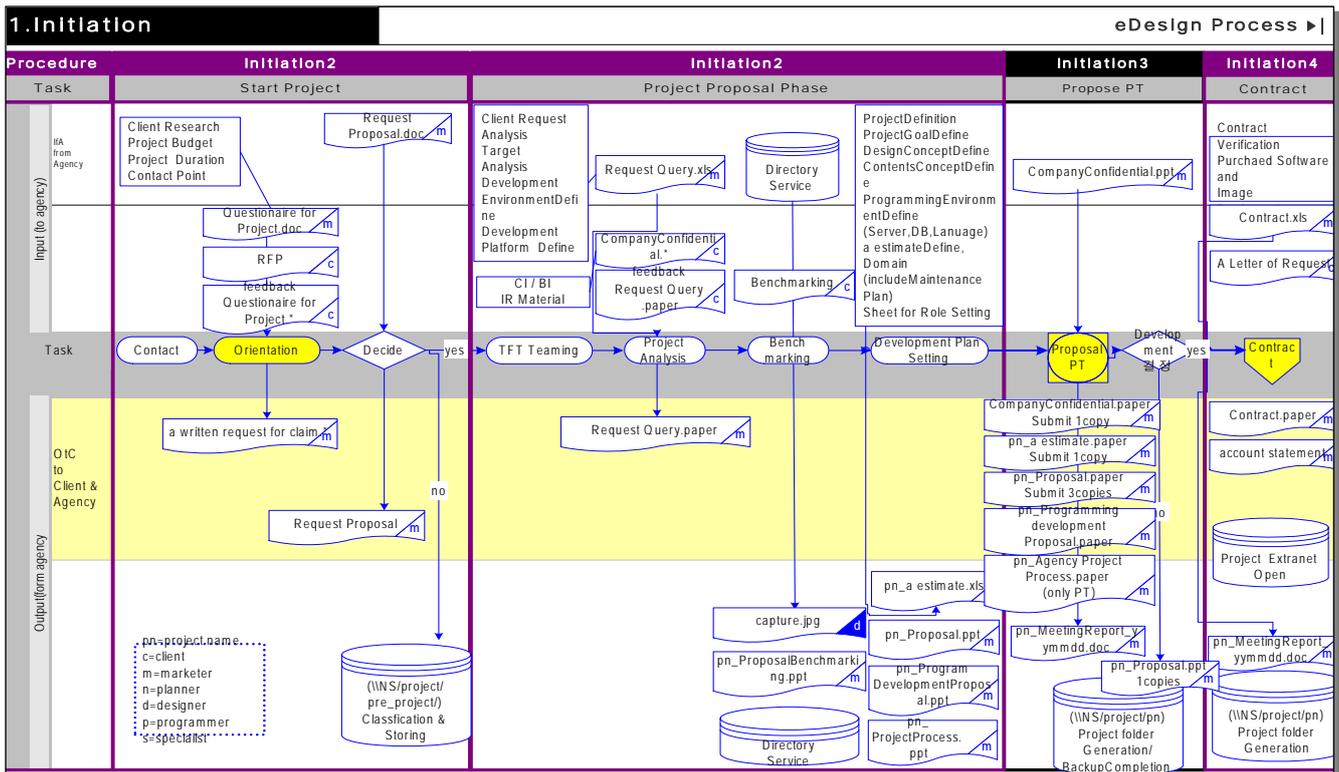


Figure 14: sample of partial WDPP

In a viewpoint of creative design, this study is not directly related to the process of an expression of design as mentioned earlier. However, it makes it possible to concentrate more energy on the creative conception by shortening the time that is invested in the initial research by means of the reference of the accumulated information and reusing partially. It means that the success will be achieved earlier. Moreover, whether the enterprise has a methodology or not in the competition for getting an order between the web agencies is to control the result of the presentation for the competition. In the case of communication between the enterprise and the client using a tangibly shared WDPP, the client's needs are carried out without any serious delays or problems, and the client's satisfaction can be remarkably increased. In addition, the evaluation of this study is possible to compare the input times for the existing project before and after the application of the web design platform, used manpower, client satisfaction, and other things. Using WDPP, project members could get same vision and share project progress through using visible WDPP in real world.

An IT related firm would like to develop a self-methodology and process for the core competition elements in spite of the great cost. However, a methodology or process is not open to the public because the know-how is an intangible asset for the enterprise. Therefore, this educational-industry study is an important issue for the opening of the development process of a design enterprise that develops to observe secrecy while allowing developers to veil themselves of existing tools.

It makes it possible to get a detailed process methodology, which may be applied by many small design related companies that do not have their own process yet. Further more, it can reduce the possible repetitive error for every project. The firms own web design process can be compared with the results of this study.

As mentioned in the introduction, the certification system is a scale of the evaluation of an enterprise. Whether the enterprise has a self-methodology and systematic process or not is an important issue for the evaluation for the certification system. It was shown that the results of the study are forceful for the ideas of marketing for the enterprise from the survey after getting and finishing the project.

Whether the enterprise has a methodology or not in the competition for getting an order between the web agencies is a particularly important factor in its competitiveness. In the case of communication between the firm and the client using a fixed process or template document, the client's needs are more likely to be carried out without serious missteps in the project, and the satisfaction can remarkably be increased.

This study anticipates the application of the process acquired by the study for the small and medium of web design firm. The results of this study are possible to make a modulation by following the illustrations (Figure 15. 16) that are formed as a phase by phase. In addition, it sets a high value on the fact that the selective combinations of the modules according to the project enhance the usability of this study.

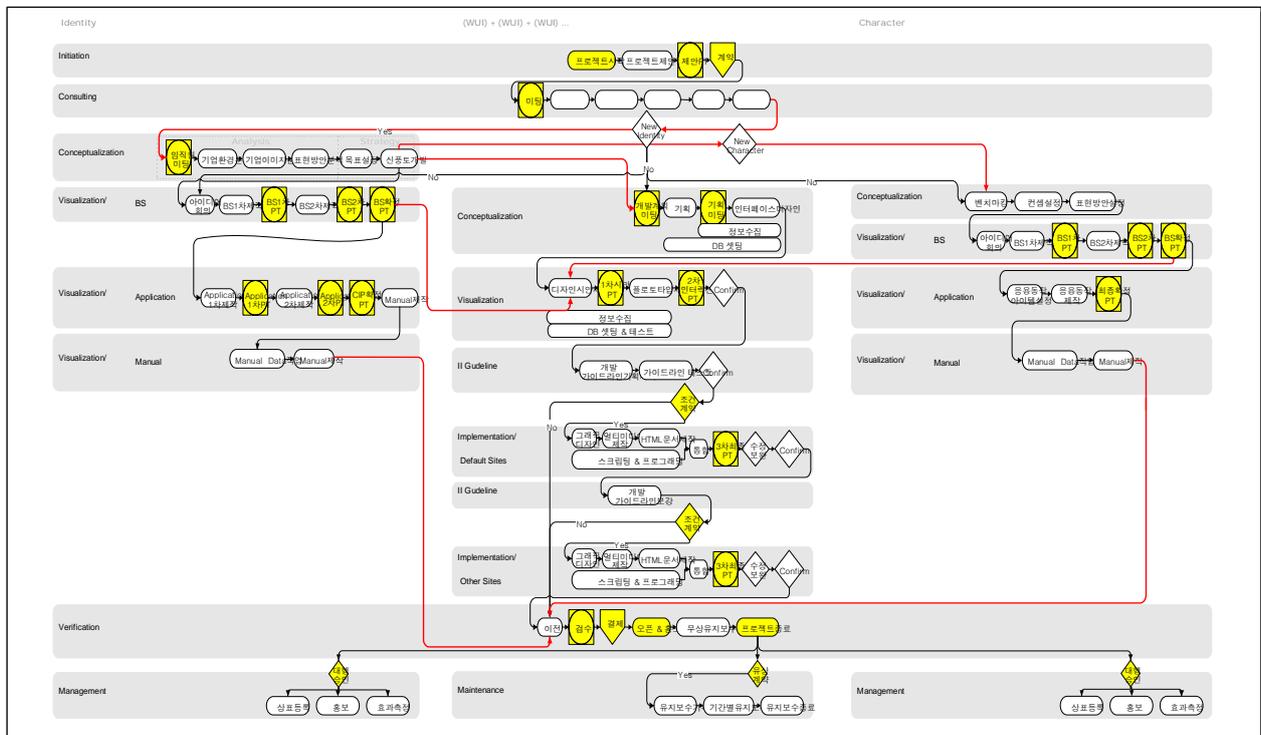


Figure 15: Application of the module of web design process

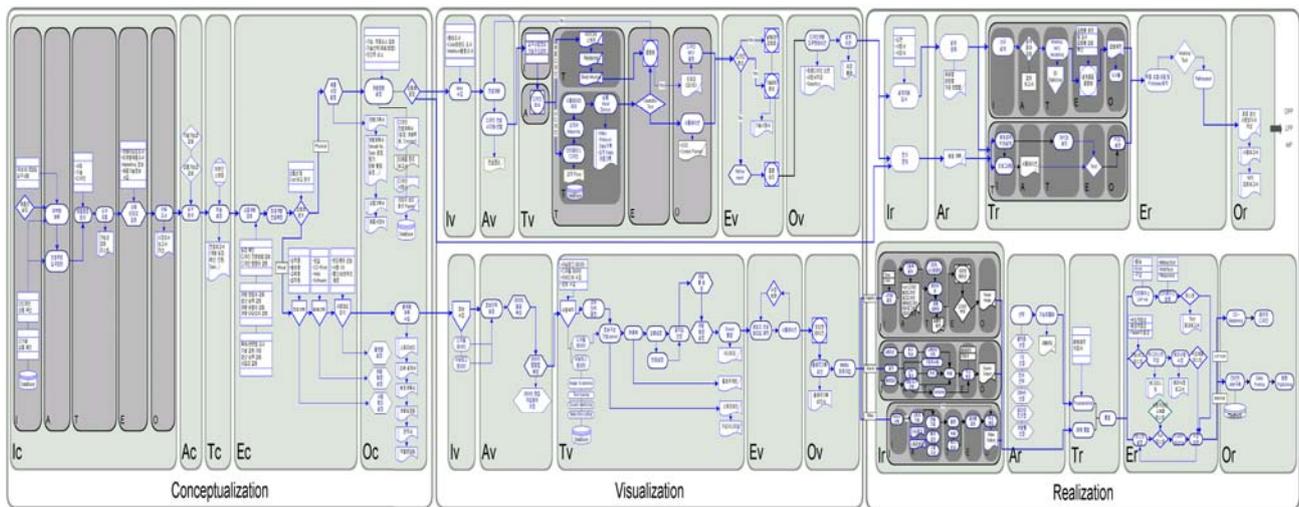


Figure 16. Integration of role base process

The cases of process produced in this study will be expanded to the development of identities and characters even though it is confined to WDP.

ACKNOWLEDGEMENT

This paper originated from three process projects participated by this author herself and associates. One (Kang, Jung, Eune 1998) is comparison of various project and finding influential factors for each process, other (Park, Eune 2003) is about establishing process for prototype of intranet and the other (Eune 2004) is setup of ebiz focused process and providing templates. Project processes are closely related to industry, these three researches had been done as industry-educational collaborative projects.

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