Ideas of Building Design Information Management Platform

XIAO Jin-hua YU Sui-huai Wang Hai-jun
Industrial Design Institute
Northwestern Polytechnical University
Xi'an, China
e-mail:xiao7_7@sina.com

Abstract—**Compared with the mature and powerful information management platform which is used in finance, engineering and other fields, the information management platform used in design field seems obviously lack and inadequate in the information society . Building the design information management platform can effectively control the design process, ensure the design projects working smoothly, be used especially prominent in collaborative product design , and can accumulate and reserve more design resources for future. The paper gives four ideas to build design information management platform, and illustrates Feasibility Analysis, finally summaries design team and company can build their design data management platform according to their own circumstances and conditions.**

Keywords : design information; design information management; design platform building; cooperative design

I. INTRODUCTION

It's homework for professional designers to collect and sort design data. The idiom, so-called" An army marches on its stomach", could be more appropriate to show the importance of design information management for designer to complete a project successfully. Compared with design teams, design companies, enterprises, design data management is relatively simple, purely personal behavior for designer, but the work of managing design data for design teams and enterprises is clearly more difficult, because it involves many human "blocking" factors.

II. PURPOSE AND MEANING OF BUILDING DESIGN INFORMATION MANAGEMENT PLATFORM

To explore the issue of design information management platform, we need to define the scope of design information. These design information include two aspects: Firstly, the conventional design supporting data including design resources obtained from the Internet, books, magazines and other channels; secondly, project-driven design information including from the project beginning to the end (such as various types of documents, images, creative sketches, presentation files, engineering documents, evaluation documents, etc.) [1].The paper focuses on building a project-driven design information management platform.

With people's quality of life improving and growing increasingly intensive economic competition worldwide, people gaze at design urgently and frequently that can change people's lives and enhance the competitiveness，so people are starting to focus on the management of design information as a matter of course, The management of design information itself also appears more practical significance. It embodies in the following. Firstly, it is a platform for design teams, companies and enterprises to show comprehensive design strength, the platform information the more detailed, the more convincing; Secondly, it's a valuable intangible assets, is a follow-up knowledge repository, if necessary, designers can also find more creative inspiration in the repository; thirdly, for the dynamic and long-term, distributed collaborative design project, design information management is particularly important ,especially the arrival of information society, collaborative design and providing remote design services may become one of the main trends in design services in the future. In the process, effective management to design information is the key to ensure the dynamic design service quality and level. [2]

III. IDEAS OF BUILDING DESIGN INFORMATION MANAGEMENT PLATFORM

Mentioned before, this article will focus on project-driven design information management, including all design information from project start to end, several ideas are proposed.

A. Real-time dynamic network design information management platform Constructing

Building this platform needs a strong database support. In the collaborative design services, real-time dynamic network services platform is a very good communication platform between design service side and being served side. Sometimes a small mistake would lead the whole design and development to be wasted, cause unnecessary losses of each other, and further affect the cooperation between the two sides. Therefore, the data of this platform are detailed and fully as possible, especially during long-term cooperation relationship. That design information is real-time and effective is the key to ensure design services smoothly and establish a good cooperation relationship of each other. Distance is the difficult barriers to cross in collaborative design, thus rise to other problems which lead to actual implementation in the design process difficult to continue. These problems, big or small, sometimes are fatal problems to cause design failure. Network information

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platform building makes up the fatal flaw in collaborative design, the building frame shown in Figure 1.
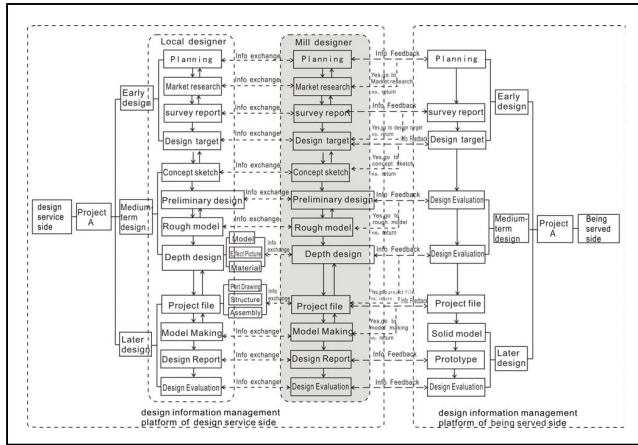

Figure 1. Real-time dynamic network design information management platform framework

The platform can establish their own database between design service side and being served side. In the whole project design process, when design service side executes the next design step, if Without the approval by being served side, or when design service side provides each step of the design task, being served side has no timely feedback to cause a delayed schedule, the platform can be locked in these cases, leads both sides unable to make the next steps, and reflects the problems in time. The platform also provides communication and connection between local designers and assigned to enterprises designers. This requires all project members involved of the platform to work together and participate in the management of design information, and through the platform management, we can allocate a specific design duty to a specific person, which also show the management capacity and implementation capacity of design members on the other hand. If the project needs, both project team members can browse the other side data resources in the authorization on the platform.

B. To capture design ideas for the purpose to build design information management platform

For the frequent short-term cooperation projects, design information management focus on capturing good design ideas to be more meaningful, because creativity is the soul of design, the process that accumulates creativities of many design projects is the process that accumulates design wealth and experiences. The platform can provide more information and inspiration for design teams, companies and enterprises when they face Similar or relational design case in the future. In addition, if when we order these designs creative ideas, we can attach the evaluation and further modified proposals in time, the platform Would be better and fully reveals its' function, the building frame shown in Figure 2.

The key, to capture design ideas for the purpose to build design information management platform, is how to select a valuable and further development creative sketches from many design sketches. It requires the design managers keen perceptiveness and judgement, the comprehensive design quality of designers will be significantly improved during they manage the platform.
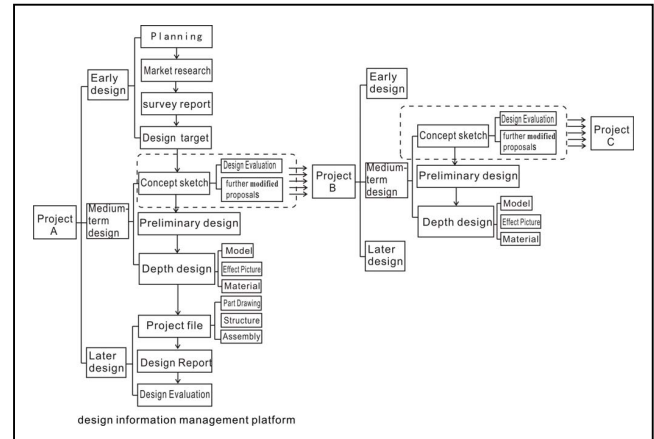

Figure 2. to capture design ideas for the purpose to build design information management platform framework

C. Based on design stage building design information management platform

The platform constructing is relatively simple, because it's only based on the design before, during and after three phases to classify and simply record data, save and recall information, so it's relatively simple, but has the most practical operational, because it doesn't involve human disturbance factors which may emerge at any time on other platforms, and the platform practical significance relatively are greatly reduced, the building frame shown in Figure 3.
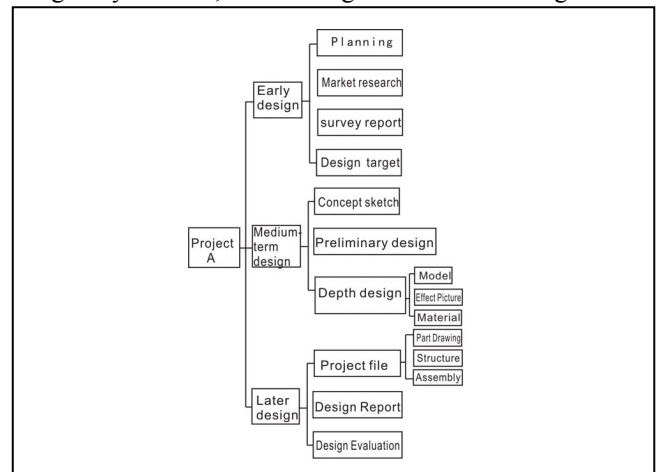

Figure 3. based on design stage building design information management platform framework

D. Based on Design process critical control point building design information management platform

To construct this platform is very challenging, It is also very suitable for collaborative design information management, there have their own database between design service side and being served side, but it is different from 2.1 platform which needs some technology support, the challenge is how to find process critical control point precisely from entire project design process, ensure the quality and level of design services, lead design going smoothly. Each case will be different from other development projects in process critical control point, the platform building effectively or not depends on how to master and control these points, and response timely. It provides a sharp question to the managers, namely: in the case of no adequate evaluation criteria, how to measure and clear the key point we find is the right or proper key, because there is no absolute good or bad design evaluation criteria. The uncertainty brings difficulties, but also challenges for design management when they make decisions at critical control points, and the uncertainty is just one of effective ways which exercise necessary management capacity, implementation capacity and sensitivity to be a good designer. For a new Development case, the building frame shown in Figure 4.
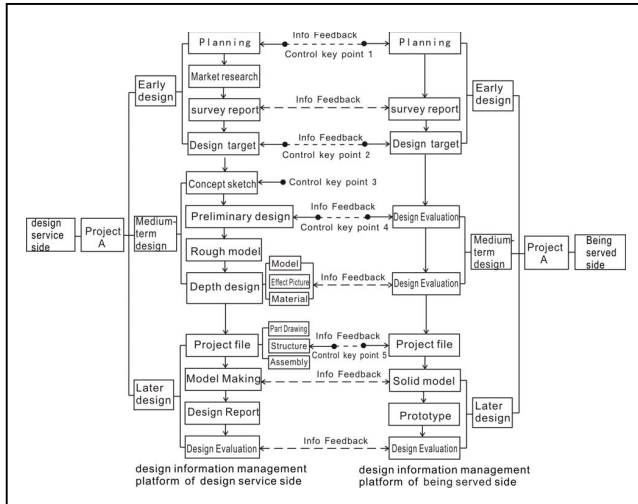

Figure 4. based on Design process critical control point building design information management platform framework

In the platform, clearing control key point is merely clearing a range, therefore the design tasks before and after key points have to be concerned. Here we emphasize that the selection of control key point has no necessary link with its importance throughout the design process, when a small matter is often overlooked or disdained, the design development project is directly or indirectly caused to be stagnant, or even fail due to its negligence, then, the small matter is the first control key point.

IV. FEASIBILITY ANALYSIS ON BUILDING DESIGN INFORMATION MANAGEMENT PLATFORM

The four previously mentioned methods of building platform, they have their own characteristics and advantages. 2.1 platform highlights information real-time dynamic and detailed nature, it needs all project members involved both sides to participate at any time, also needs some technical support to build and maintain a huge database, therefore it's very difficult to implement.

At present, many design teams, companies, enterprises still have more difficulties to construct the platform.

Among four ways to building design information platform,2.3 platform is the easiest and the most feasible platform, but it can play a limited value.2.2 platform is relatively easier to achieve, we mainly need to spend more time and effort in putting early design sketches in order, subsequent works are conventional data management. This platform is the largest ratio platform of input and output to some extent (that putting relatively little effort to maximize the practical benefits)

Compared with 2.1 platform requiring considerable technology support network, 2.4 platform is different from 2.1 platform which focuses on real-time dynamic design information, but to avoid technical difficulties, focuses on the control key points of design stage within our ability, finds out the most influential events and problems which affect the project working smoothly throughout the design process, and timely provides solutions to complete the design projects successfully. So the Platform constructing method has the most development potential and practical significance.

V. CONCLUSION

The purpose of design information management can not be limited to simple data management (Though sometimes it is not complicated), but we can not forget a more important purpose to design information management: that's used for the design. This is the key to building design information management platform. With the help of modern advanced network technology and computer equipment, Design information management platform provides a convenient management platform for designers and project team members which is served to implement the design task effectively, also accumulates more design resources used for the future. It's some strange, but the most familiar to today's many design teams, companies and enterprises to build design information management platform, we hope that more and more design teams, companies and enterprises, according to their own design and development capabilities, R & D needs and existing conditions, select properly and construct a suitable design information management platform, fully display the charm and the value of the platform.

REFERENCES

[1] HUANG Xiao-bo, YU Sui-huai, "Strcuture analyzing of CAID information system on web based collaborating design,"Machinery Design & Manufacture,2005(09) , pp. 127-129.

[2] YU Sui-huai,AN Lin,LU Chang-de, "CAID Cooperating Development Model Based on Internet,"Application Research Of Computers,2004(05) , pp. 32-34.

[3] LUO Run-zhou, LU Chang-de, YU Sui-huai, "Technologies of Establishing the Industrial Design InfoManagement & Inquiry System," Science Technology and Engineering, Vol. 7,Jan. 2007 , pp. 125-128.