

THE FEATURE CONSIDERATION AND PLAN FOR DEFINITION SYSTEMATIZATION OF CLIENT'S REQUIREMENT

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Abstract

The construction starts its business by receiving the order from client and owner. The client presents requirements and related information so that the desired result can come out while the designer and the builder express and implement the building according to set objectives and goals of project based on information on project environment and presented requirements. Because the construction project makes decisions on such objectives at its early stage and previous stage becomes the situation for decision making of next stage as the computation to implement decisions get performed. Accordingly, this study has mentioned necessity of requirement analysis and systematization of construction project, analyzed the work of construction's early stage and resented a plan for objective of construction project requirement definition model in which requirements engineering has been applied and using it while making decisions on designing.

Keywords: Client, Programming, Briefing, Requirement, Requirements Engineering

1. Introduction

The construction projects are job-order production method in which the production activity of each expert gets started by receiving orders from client and business owner. The client presents requirements and related information so that the desired result can come out while the designer and the builder express and implement the building according to set objectives and goals of project based on information on project environment and presented requirements.

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The client shall participate in the project from the order and plays the role of user through the process of producing architecture. At the level of company, it determines that the origin of the profit which is the aim of company is customer and endeavoring the efforts to understand the customer. Therefore they think that company's ultimate task is customer satisfaction and they are seeking the customer satisfaction through extending all the business activity according to customer. With this point of view, the definition of client's requirement which this paper emphasize is the beginning of customer satisfaction in construction industries. Therefore, clarifying the requirement of client at early stage of project is essential core which derives the client's satisfaction.

This research has decided that the definition on construction project requirements (architectural requirements, economical requirements, physical requirements and legal requirement, etc) which become objectives and standards in performing the project for the prompt and reliable decision making by participants including the client must be clear and such effort must be accomplished from a stage prior to planning. Accordingly, the requirement analysis and necessity of definition at the early stage of construction are mentioned and a systematization plan of client requirement definition in which requirements engineering is applied has been suggested.

2. The General Features of Client's Requirement

The requirement is basis for all projects and defines not only the things that a stakeholder such as user, customer, supplier, developer or company wishes to gain in a potential new building, but also the work which this building must accomplish in order to satisfy these things. Because the development project which couldn't set its basis on requirements has his possibility of failure, the requirements would have to be regarded as the method of progressing toward set destination.[1]

Buildings are the order made products which is based on the requirement of the client which is main customer of construction industries and building project starts from the order of client and final purpose of architecture project is laid on the client's satisfaction. Thus the acknowledgement of the client's requirement is very important. The requirement which is found at this shall be the criteria of process of decision making in counter-design proposal, review process and design process in architecture design process as shown in the fig 1.

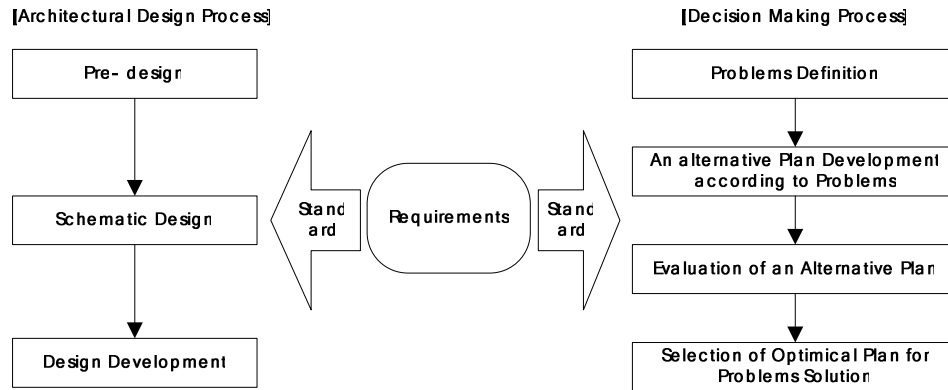


Figure 1 : The effect of Requirements

The requirement which the client suggest includes the environment of project, contract method, client's organization and usage of building and it varies on the individual characteristics and surrounding situation. These requirement shall includes the matters which shall be the conditions for requesting the some matters and performing the design as well as the matters which client desire to obtain through the addressing the project.

The features of the requirement which is obtained at architecture project are as follows. The requirement of the architecture project shall include conditional information regarding such basic condition as law, limitation, site and the necessary information which suggests the desired level under such conditional information. If the conditional information is not checked at the pre-design stage, the matters which are not considered at design and construction shall be found later and long term feed back shall occur. It may cause increase of cost and extending of construction period. The necessary information is related with client's favor and function, quality, cost and other matters which is considered to be important during the design. When we review the recent trend of construction industry, there are following problems and limitation in the requirement which client suggest to designer.

① limitation of expressing the requirement

Client expresses the unreasonable and broad requirement such as "cheaper cost, faster, larger and better" without considering the situation of building.

② Strict requirement

If client requirement is too materialized and client desires it to be reflected on the building , the creative design of designer shall be difficult.

③ Excessive and broader requirement for early stage service except the design

They are requesting land procurement, building procurement , project approval, completion drawing, application of building registration and briefing. But these are not related with design.

There are a lot of cases where designer performs feasibility study, site analysis and others without any charge for getting the design contract before contract date. Client considers that granted and requirement the excessive service.

3. The Necessity of Client's Requirement Definition

The requirements of client show differences depending on purpose, contract method and social atmosphere, etc of the project. If this isn't understood specifically at the early stage

of project, the things which even the client couldn't communicate or think of keep on getting discovered while performing the project. If the information on project atmosphere and legal requirements are insufficient or results by stages are different from desired objective of the client, the work and decision making get reversed to influence the work of next stage. In result, the overall project expenses and agenda become increased and the client as well as the service provider becomes dissatisfied with project which couldn't be completed within planned period and budget.

In case the necessity or requirement of client is not clearly examined or the alternative plan itself which can satisfy this has been inappropriately presented, the client wouldn't be able to gain advantages from this afterwards even if the specialist participating in project perfectly completes and delivers the project. It is followed by requiring a method to narrow down the difference coming from the client expressing in their own language although the he has more specific information on his own situation regardless of project type while the specialist providing services related to project expresses with a professional method which client cannot easily understand such as breakdown or blueprint.

Although the requirements of client are reviewed and confirmed in stages from planning to actual designing at an architect's office, the requirements of client doesn't have specific time point and the requirements may be created or changed after reaching the building stage. Therefore, if the requirements of clients are frequently created or changed, there are many cases of designs frequently getting changed or the decision making getting delayed. The fundamental cause for this can be found from the fact that construction planning work itself is not included in the range of cost toward acceptor for the most part and there's a lack of responsibility followed by change of planning by client himself as the standard for compensation is ambiguous even in case of changing the design at the requirement of client. It is also followed by data, legal conditions and field investigation related to project being insufficient at the early stage or the lack of grasping construction project requirements because there's lack of understanding on client requirements.

The problems while performing work related to understanding requirements of client at the architect's office are shown as follows.

- ① There's frequent change of design followed by additions and changes by client while the designing is in progress.
- ② The time and range for accepting client's requirements are not clear.
- ③ In case the requirements of client are impossible to fulfill the requirement standard is higher compared to orderer's budget, there's difficulty in performing the project.
- ④ The details of most designing guidelines are similar without considering special characteristics of the project. (Formal copies without ordering strategy by systematic and specific research and analysis)

4. The Stage for Grasping Client's Requirements and the Work

The prior research and definition are necessary for the grasp of project concept, objectives, conditions and influencing factors at the planning stage of construction in order to perform a systematic project from its initiation to designing and building. This is information that can be gained from client and building site for construction for the most part and could be called an important stage in performing the project because the construction concept and objective defined here become the standard for entire process of project. In the planning stage, when the client (or his agent) performs the work on selection of building site, presentation of project's intention and plan, drawing of funding plan and

budget proposal, summary of facility planning and presentation of conditions, business plan, research on market and building site characteristics and requirement for designing, the designing company reviews designing conditions, grasps intentions of the client and reorganizes through analysis of building site conditions, organization of project's intentions and accompanying circumstances, investigation and examination on facility planning, investigation of legal conditions, gathering and providing information on various cases and research, investigation and financial analysis on business plan and plan for the use of building site.

In case of the United States, while the work similar to construction planning by client and architectural plan of architect's office in our country are performed in programming, the main purpose of programming is to provide necessary information so that the client can make proper planning decisions and this is a tool for conveying intentions such as objectives and requirements of orderer on the projects and intentions by the designer, etc.[2] It is also the information processing system to develop or make information by researching and analyzing planning requirements of the project which is not the significance as simple communication. The configuration of program becomes different depending on items which each project puts emphasis on. For example, the research of project's validity, research of user requirements, functional program and space program, etc can be organized as individual reports or as an integrated program consisted of many programs. The subjects for organization can be prepared according to human factors, physical factors, external factors and specific factors while all programs follow the cycle of definition, examination, evaluation and feedback.

The briefing of England emphasizes on clarifying what the true value to the client is in contrast to the programming which is the process of setting the standard for selection of alternatives by the client.[3] In the briefing stage, actions like strategic briefing, etc to clarify required technology by the manager of client's organization or required evaluation and necessities by project's representative are accomplished. In a client organization where various decision makers exist for the most part, a briefing process which captures requirements of all concerned parties in order to find alternatives to satisfy different objectives is important.

5. The Plan for Systematization of Client Requirement Definition

The construction project requirements also become standards for decision making on designing alternatives as they become criteria for designing in the designing stage. Accordingly, the construction project requirements need classification for transforming them into architectural information in the designing stage. M.A. Palmer (1988) has classified factors to be considered in developing program information as human factor, physical factor and external factor. Based on these factors, classifying requirements which become the choice of client and conditions for construction project are necessary while the classification in quality (performance) and economic efficiency (cost, constructability) for interpretation during decision making of designing stage is also necessary. Also in order to adjust each stage of construction project in overall standpoint, the grasp and definition on influencing factors of construction project in the construction planning stage and transformation into designing standard and conditions in the designing stage are necessary. The requirements engineering which is a theory developed in the field of software and system development is a technological approach on all activities and general rules related to requirements by including analysis and description of requirements performed in

requirements analysis stage as well as extraction, management, validation and maintenance of these things.[4]

Ian Sommerville and Pete Sawyer classified process used in requirements engineering into five stages like fig 2 below.

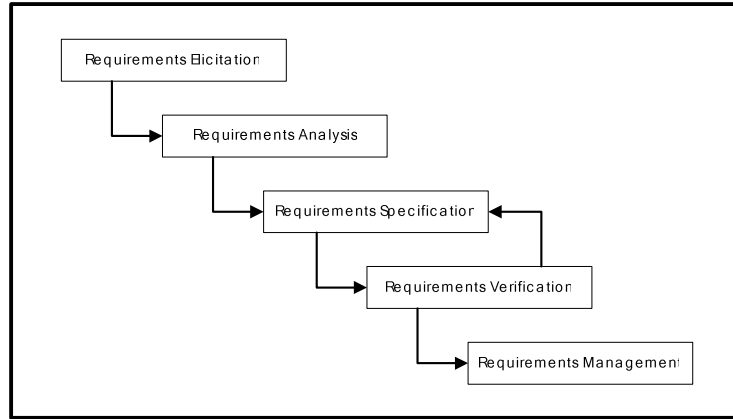


Figure 2 : Process of requirements engineering

For managing requirements, one must recognize what must be done prior to initiation, recognize the types of activities which must be performed and also recognize what relationships exist between these activities. In reality, the plans get changed as they are influenced by many risk factors that are difficult to predict even if above details are identified and planned. When the plan gets changed, the cost and time increase almost inevitably. Therefore, defining requirements is for preventing problems on coming up with solutions according to prior experiences without analysis on what is the exact thing to be gained and what things are necessary in order to gain desired things. Especially, the construction project requirements should be completed prior to initiation of designing by applying them at the early stage of project and must be a counteractive model in which continuous improvement and refinement are possible.

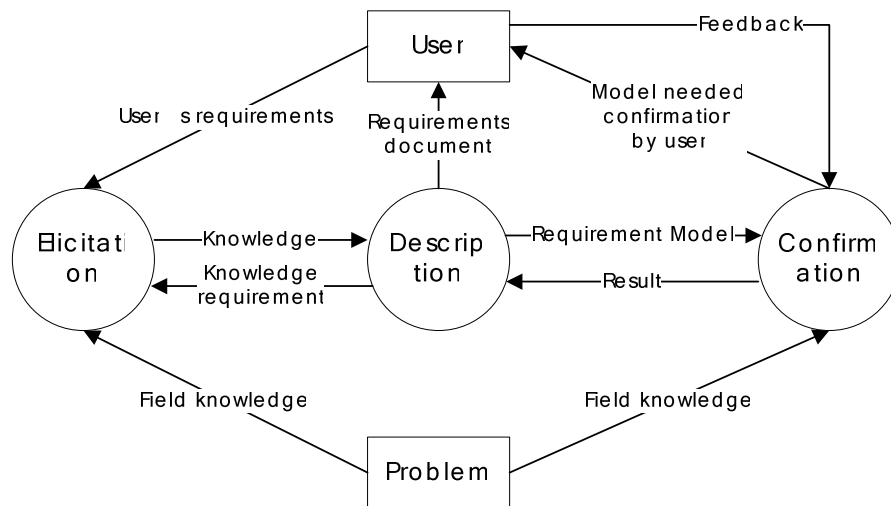


Figure 3 : Framework of requirement engineering

5. Conclusion

The purpose for defining construction project requirements is to raise the satisfaction of client and user toward the building by performing construction planning and designing work which comparatively fall under early stage properly and smoothly. Therefore, developing a design management method to maximize satisfaction of client by systemizing requirements of client and user as well as legal requirements which become an index for examining the insertion of designs and validity of computation is important while this could be called the first step of an effective design management.

By systemizing, the field, items and details on requirements of client and user as well as legal requirements that are necessary in the construction project to apply them in designing and examining the degree of satisfying requirements by comparing the outcome of designing with requirements, the assurance of designing contents is raised. Also, the client requirements definition system which can be reflected in cooperative system and decision making by participants of designing must be prepared, inspire the preparation of designing guideline in which each conditions and special characteristics of project has been considered while implanting a perception that the work related to these things require payments.

Therefore, the significance of this research is at first, that the organization and concreteness of domestic requirements definition are insufficient through the interview with specialist on designing offices so that future theme has been clarified and second, that it has found the path for a process to systemize requirements in the future and the prototype of a basic model. It is estimated that there's enough necessity to perform a research on systemization of client requirements definition in the future to make them as basis for producing constructions with high customer satisfaction and has significance in fundamental theory of this thesis and the dimension of recognizing present conditions.

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