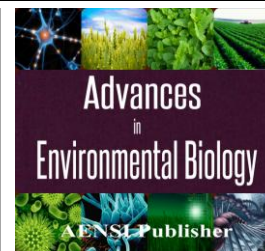




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Proposed Study of Information Communication Technology (ICT) Works Interface Strategy for Construction-based Project

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ABSTRACT

The purpose of this research is to formulate and develop an ICT works interface strategy for construction-based project in construction industry. ICT works interface framework will be developed based on requirement engineering approach and work interface mapping. One of the major issues in delivery of ICT works is unavailability of ICT interface strategy and methodology to be referred by ICT contractors or system integrators involved in construction-based project. The problem arise when interfacing processes are not well understood and coordinated properly especially in large scale construction project which has complex tasks of engineering integration. This research is an "action research" where the root of problem is originated from the workplace area of the researcher. This research will identify the common practice of work integration between ICT and engineering, interfacing processes and type of ICT works involved in a construction-based project experienced and managed by KLIA Consultancy Services Sdn Bhd (KLIACS). Qualitative method will be applied where two case studies will be conducted in order to gain information of ICT plan and method used during the project implementation. The expected result of this research would be the creation of an ICT work interface strategy which able to provide interface planning and framework for delivering ICT works involved in construction-based project. It is anticipated that the result would be able to contribute to the improvement of the ICT works interface and project integration as well as the enhancement of the project quality management system of KLIACS. It would also become part of references for the company to manage ICT works for its entire construction-based project. The result is also expected to benefit the government, ICT players as well as construction industry especially project managers and system integrators.

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INTRODUCTION

This research paper is an introduction to the current research is provided. Firstly, the background of the problem at the researcher's workplace is described. Subsequently, the problem formulation comprising research questions, objectives, scopes, and significance of the research are described respectively.

A part of that, this research also will undertake an in-depth investigation of literature reviews into the issue of fragmentation in construction ICT delivery. The aim of the literature review is to gain a comprehensive understanding of the KLIA Consultancy Sdn Bhd existing practice of ICT work implementation, particularly in the planning and design process and its implementation related issue (Research Objective 1), as well as to identify the key factor and interface requirement that associated with ICT in construction delivery (Research Objective 2). The process involved a comprehensive literature review of secondary sources of data including project progress report, variation order, frameworks, and principles that particularly related to ICT interfacing to support the primary data for the end research product to develop an interface framework that includes models and methodology for delivering ICT works interface in construction-based project (Research Objective 3).

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Research Background:

KLIA Consultancy Services SdnBhd (KLIACS) is a registered consulting company in Malaysia providing Project Management Consultancy services to the government of Malaysia to manage major national infrastructure construction projects. KLIACS evolved from the KL International Airport Berhad's (KLIA Berhad) remarkable accomplishment in project managing the KL International Airport (KLIA) Project to successful completion.

Based on KLIACS's experiences in managing several mega construction projects, the most common problem encountered by ICT contractors was unable to deliver ICT works as part of the construction project systematically, efficiently and effectively. Lack of experience and knowledge in coordinating and interfacing with multi-disciplinary engineering works in construction environment were among the factors contributing to the problem. Further, the traditional construction process has also been widely criticized for its fragmented approach to project delivery and its failure to form effective teams [4].

Every component in large scale construction project has its own interface acting as a bridge that allows communication and collaboration process with multi-disciplinary engineering works. In project integration, interfacing is the key process and it is the most important aspect of integration. Interfacing is not only focusing on works interfaces but it is more towards mapping the project timeline, technical and geographical coordination of engineering works, and communication among different discipline of consultants and sub-contractors.

The importance of interfacing in integration process makes use of this study to focus on identifying the ICT interfaces and strategy how to coordinate and integrate with the related engineering works. This will also include interface development and mapping processes of the ICT components and works.

In order to have a strategy and methodology which help towards a systematic and improvement of ICT works delivery in construction-based project, a study must be conducted to tackle this problem. An ICT interface model shall be developed to be part of construction's interface processes; hence, most if not all construction projects would be able to coordinate ICT works with multi-disciplinary engineering works. This could also contribute to the enhancement of the interface management of the construction project.

The study shall identify what most type of ICT works involved in large scale construction project. Experiences, resolutions, knowledge and ideas applied during the project implementation shall be collected and recorded, so that, a practical methodology to carryout interfacing tasks with engineering works can be developed and integration strategy can be established.

Research Questions:

Main research question for this study is:

- "What are the common and key interfaces factor of construction ICT works"
- "How to improve ICT works interfacing in construction-based project systematically and coordinatedly".

To answer the main research problem, the following research questions have been defined and shall be addressed:-

- 1) What are the issues need to be addressed by ICT works in construction-based project?
- 2) What are the common interfaces of engineering works in project integration and how the ICT works can be mapped to them?
- 3) What are the interface requirements and mapping processes for the ICT works?
- 4) How to validate the framework to ensure it meets the objectives of the ICT Work Interface?

As a response to that problem, and consistent with needs of the construction industry, therefore, this research focuses on identifying the key success factors for ICT works interface framework in the construction industry. The following section will outline the aim and objectives of this research.

Research Aims and Objective:

The main aim of the research is to formulate and develop an ICT Work Interface Strategy for Construction-based Project in construction industry. The research shall discover and gain information of methods and processes of ICT interfacing practiced during the implementation of the project. Among the objectives specified are:

- a) To explore and discover issues of ICT work interfaces in one of the mega projects that currently or recently implemented by KLIA Consultancy Services Sdn. Bhd.
- b) To examine interface requirements and mapping processes of ICT works and engineering works in the selected project.
- c) To propose and develop interface framework that includes models and methodology for delivering ICT works interface in construction-based project.
- d) To experiment and evaluate the improvement and practicability of the interface framework.

Research Aims and Objective:

According to Philips & Pugh [5], research is the process of finding out something you don't know, and a systematic and methodical process that increases knowledge [1]. On the other hand, research methodology is a systematic and orderly approach taken towards the collection and analysis of data [2]. After careful consideration of the nature of the research problem, an action research will be adopted for this study.

Action Research (AR) is the most appropriate research method to be applied because it is a site-based research. Furthermore, the researcher is also the practitioner in which he will examine his own organizational practice, systematically and carefully, using this type techniques of research method. Furthermore, AR is a case study methodology which involves an exploration within a bounded system with small sample. For the purpose of this research the KLIA Consultancy Services Sdn. Bhd. will be selected as a case study.

Research Scope:

An ICT Work Interfacing strategy using the ICT work interface framework as the approach in construction-based project shall be the end result of this research. As such, the study shall be focused on the following scope:-

- a) *Interface Requirement and Definition*– to determine what type of integrated works involved and how the interfaces should behave.
- b) *Interface Design and Mapping* – is one of the key process area of interface development and it will be emphasized in this study. Interfacing enables the comparison and matching process occurs.
- c) *Interface Framework Development* – to set out interfaces planning and how the integrated works are expected to be carried out.

Conclusion:

This study concludes that an integrated project interface can act as a bridge that allows communication and collaboration process with multi-disciplinary engineering works. Accordingly, a study on the ICT works interface framework is very significant as an attempt to address the ICTworks interface issues and problems as well as a first step towards establishment of ICT delivery strategy for construction-based project. Based on the case studies to be conducted, the researchers would know and understand what are the common functions, features, components involved and methods used in works interfacing. With further research, it is hope that, this would enable us to develop a practical ICT works interface framework as part of project integration instrument for most large scale construction project in Malaysia. ICT Works Interface Framework once established, it should become a reference and guidance to government agencies and developers in Malaysia.

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