



Assessing the suitability of current briefing practices in construction within a concurrent engineering framework

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Abstract

Concurrent engineering (CE) is seen as a key to the integration of the construction process. Its implementation in the construction industry requires an adequate assessment of existing practices within the industry to determine the kind of processes and tools that need to be developed. This paper focuses on the briefing stage in the construction process, which is used to elicit and represent client objectives for a project, and assesses whether the current practice of briefing is adequate within a CE framework for design and construction. Using case studies and an industry survey, the current process of briefing was assessed against pre-defined requirements for briefing within a CE context. It was established that current practices are not adequate, and the paper therefore concludes with recommendations on the development of a suitable methodology for briefing within a CE framework. © 2001 Elsevier Science Ltd and IPMA. All rights reserved.

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1. Introduction

1.1. Concurrent engineering in construction

The integration of the otherwise fragmented construction process is generally seen as a key to improving the efficiency of the construction industry [1,2]. Efforts at developing strategies for integrating the construction process have involved the use of information technology and the adoption of various concepts from the manufacturing industry such as Concurrent Engineering (CE) [3–5]. CE is defined as a systematic approach to the integrated, concurrent design of products and their related processes, including manufacture and support [6]. This approach is intended to cause developers, from the outset, to consider all elements of the product's life-cycle from concept through to disposal, including quality, cost, schedule and user requirements. The rationale for

adopting CE in construction, which has been the subject of several publications (e.g. [3–7]), is based on:

- the benefits arising from the use of CE in manufacturing with up to 70% reductions in product development time [8];
- the fact that construction can be considered as a manufacturing process, with respect to the repeated *processes* that are involved in the design and production of products in both industries; thus, concepts (such as CE) which have been successful in bringing about improvements to productivity in the manufacturing industry (as a result of *process* re-engineering) can bring about similar improvements in the construction industry [2,9,10];
- the direct relevance of the goals and objectives of CE to the challenges that currently face the construction industry (i.e. effective integration of the construction process, client satisfaction with respect to costs, time and value — see Table 1) [2];
- the fact that some practices in construction (such as “fast-track” construction) have some similarities with CE [9,11].

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Table 1
The rationale for adopting CE in construction

| Need for change in construction | Goals and principles of concurrent engineering |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>The need for change in construction is brought about by the uncompetitive nature of the industry, and the inability to fully satisfy its clients with respect to costs, time and value</p> <p>Integration of the construction process is seen as one of the most important strategies to improve the notoriously fragmented construction industry</p> <p>Emerging strategies for improving the construction process are inadequate; they only address one aspect of the problem, resulting in ‘islands of automation’ as in the case of computer-integrated construction strategies</p> | <p>The goals and objectives of CE include: customer satisfaction, competitive business, reduction of product development time and cost, improvement of quality and value</p> <p>The use of CE facilitates the integration of the members of the product development team, and the manufacturing process, thereby improving the product development process</p> <p>As an amalgam of other methodologies, tools and techniques, CE provides a framework for not only integrating the construction process, but also the various tools and technologies that are used in the process</p> |

The realisation that CE offers significant potential for improvements in construction, has led to various efforts to develop appropriate tools and techniques for its implementation in the industry. A common feature of these research activities is the focus on communication and information management tools to enable concurrent working among construction industry professionals [12]. However, since CE is focused on the ultimate satisfaction of the client, it is to be expected that implementation efforts are focused, at least at some initial stage, on an aspect that directly deals with clients: the understanding of their requirements, and the integration of these with downstream processes such as design. It is also suggested that the effective management of client requirements can encourage CE by supporting communication across disciplines regarding design constraints and trade-offs [13]. The issue of client requirements is therefore, considered vital for CE implementation in construction [14].

1.2. Client requirements and CE implementation in construction

The elicitation and presentation of a client’s requirements for a project (otherwise known as ‘briefing’), constitutes the initial phase of the construction process (from the industry’s point of view). This stage provides the initial link between clients (i.e. the persons or firms responsible for commissioning and paying for the design and construction of a facility, and all the interests they represent) and the industry, and is very important for project success and ultimate client satisfaction [15,16]. This is because it is very difficult, if not impossible, to design and construct a facility that fully satisfies a client without a good brief that clearly and unambiguously states those requirements [17]. However, there are indications from literature [2,17–20] that the current process of briefing is inadequate even within existing procurement systems. This suggests that the implementation of CE, without due consideration of this important phase of the construction process, will result in a CE framework with weak ‘foundations’. This paper, therefore, assesses the suitability of existing practices for eliciting

and representing client requirements within a CE framework for design and construction, as a precursor to the development of an appropriate tool for the processing of client requirements within that framework. A conceptual framework for CE in construction is described and the requirements for the elicitation and presentation of client requirements within that framework are defined. This is followed by a discussion on the current process of briefing, and an assessment, using the previously defined requirements for eliciting/presenting client requirements in CE, of whether briefing practices are suitable within a CE framework. The paper concludes with a brief description of a methodology that could facilitate the effective processing of client requirements within CE.

2. Framework for CE in construction

Fig. 1 shows a framework for understanding the concept of CE. It shows the relationships between the goals, objectives, strategies and tactics (i.e. tools and technologies) of CE [21–23]. Various tools and techniques (e.g.,

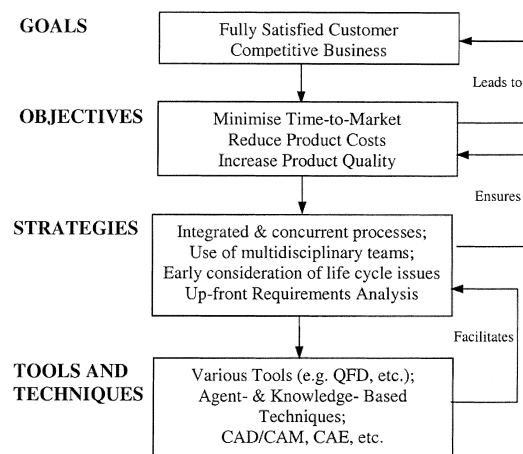


Fig. 1. A framework for understanding the concept of CE (adapted from Brookes and Backhouse [23]).

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