



Changes and change management in construction and IT projects

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ABSTRACT

Modelling for change management in construction might benefit from experiences from other industries. This study compares reasons for change as well as change practices in interorganizational relationships in construction and information technology. Sixteen contractual relationships have been studied through a questionnaire and interview survey conducted among both clients and providers. Project-type relations are contrasted with more continuous service support contracts. More than their providers, clients tend to ascribe high change frequencies to an increase in technical understanding during projects. Early provider participation is associated with lower change frequencies, while the strength of incentives is less influential. The ease of transforming changes into new projects varies between technologies. Irreversibility is important, as well as relations between pre-investigations and the successive revealing of initial conditions, together with the life-cycle of formal and informal communication. Findings can be used for transfer of agile practices.

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1. Introduction

How changes in construction projects originate, are negotiated and resolved has attracted many investigators. A growing number of empirical studies of why and how contracts are renegotiated throw light on the reasons for change and on the patterns of change management in individual projects. Researchers increasingly see a potential for model-based systems to make the handling of project changes more efficient [1–4]. A successful design of change models needs a basis for understanding why changes arise and current ways of managing change.

Better insight into the relations between underlying technologies and changes should support the interpretation and transfer of change management procedures between different types of projects and between different industries. The project typology developed by Shenhar and Dvir [5] and Shenhar [6] partly relies on degrees of technological uncertainty associated with a low-technology to high technology scale, where construction belongs to the low end of the scale and the software industry at the other end, but this simplification might not be efficient in a project change perspective.

In their proposal for modelling building projects, Isaac and Navon [4] argue for learning from how requirement traceability is practiced in software development projects. However, there is more to be learnt from a comparison of IT and construction. Construction projects usually result in goods that are immobile and durable, and this is reflected in their typical production processes. There is an issue of hidden faults that might be discovered only after several years of building use.

Construction technology changes slowly over the years. There are significant environmental consequences of most construction projects. The organization of production is typically based on numerous and specialized subcontractors, who might work together for the first time. Carried out outdoors, construction projects are subject to many types of external disruptions. IT projects, on the other hand, have results that often are highly and globally mobile even if tailored to a specific and localized use. There are similarities with construction: many software projects leave durable results, and some hidden defects may take time before they emerge as evident to users. However, information technologies develop rapidly; access to novel technological solutions can be a reason for the existence of a software project, and sometimes, technology shifts so quickly that it presses for change in ongoing projects.

An increased depth of the industry comparison of what different technologies imply can be achieved by having a control population of corresponding business services within the two industries. Since parties to project contracts may expect to meet in future projects, the difference between project contracts and support service contracts, as well as the corresponding models for change management, should not be exaggerated.

Therefore, in the present investigation, the aim has been to compare change management (reasons for change and change practices) in contractual relationships in construction and information technology, relying on pairwise interviews with both clients and providers. To support the analysis, there has been an equal number of parallel interviews in contractual relationships for the corresponding business services: management of built facilities, in order to match the construction projects, and IT support services to match the software projects investigated.

The structure of this paper is as follows. In Section 2, the literature is reviewed, locating the interesting gaps in knowledge and

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