

**Contemporary Trends in the Regenerative and Sustainable
Built Environment:
Technical and Managerial Aspects**

Workshop Proceedings

**Novel Energy for the Regenerative Built Environment : Technical and Managerial Aspects 3-6 March
2014 (Supported by the TUBITAK)**

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Preface

As the world's living conditions are deteriorating, the need for the regenerative and sustainable built environment is increasing. Establishment of the regenerative and sustainable built environment requires interdisciplinary work and research. For this reason, our workshop "Low carbon Buildings and Communities in the Sustainable Built Environment" supported by the British Council Researcher Links as well as our workshop "Novel Energy for the Regenerative Built Environment: Technical and Managerial Aspects" supported by the Turkish Science Foundation (TÜBİTAK) play an important role in bringing the academics from various disciplines together. This workshop proceedings book provides the proceedings of these two workshops.

We would like to thank all participants for their contribution to our workshops which will act as an efficient tool for enhancing our collaboration.

We would like to thank the British Council and the Turkish Science Foundation for supporting and enabling these workshops.

Kindest regards,

Prof. Marjan Sarshar
Dr. Anton Ianakiev
Assoc. Prof. Begum Sertyesilisik

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Contemporary Trends in the Regenerative and Sustainable Built Environment: Technical Aspects

AgiLean Innovation Process – Innovating through Collaboration and Knowledge

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Abstract

Construction is perceived as a conservative industry which is resistant to change. This characteristic causes the limited applicability of innovation management approaches. The industry prefers to have incremental innovations on the project level, i.e. small improvements. Radical innovations are more related to business management issues. To this point, however, there have been little propositions, which focus on implementing innovation management on the business management level. An organisational system which wants to manage innovations in construction businesses needs to consider this conservative character of the construction industry. The aim of this paper is to propose such an organisational system. The proposed system consists on the two components. Namely, on the one hand on an organic system, which is agile and a network-like structure. The agile system is composed only by volunteers. On the other hand it consists on the traditional mechanistic system that is rigid and on place already. The organic system runs in the background and does not disturb the mechanistic one, which is responsible for the daily work. Hence the volunteers of the organic system will excite other areas of the company, if they are successful with their innovations. This in turn will create a companywide movement. Hence the combination of an organic agile and a mechanistic lean organisational system, results in a new business organisation which is mechanistic “AgiLean”, i.e. agile and lean at the same time. The AgiLean organisational structure follows three principles, which are collaboration, innovation and the accumulation of knowledge. These three principles on place will result in a learning company.

Key Words: *Business Management, Innovation, Innovation Management, Organisation.*

1. INTRODUCTION

Meanwhile the construction industry is characterised by extreme competitiveness and low profit margins (Polat and Donmez, 2010). Each construction project is unique in its circumstances. This causes additional pressure as knowledge and experience cannot be directly transferred to other projects (Winch, 1989; Pender, 2001). The result is that the construction industry follows a different logic when compared with other industries. Construction has its own culture, which prefers to benefit out of experience rather than radical innovation. Hence Pries and Doree (2005) argue that the construction industry favour more incremental innovations rather than radical as the focus of the construction companies is to improve their own technology and related processes. Dulaimi et al. (2005) elaborate in turn

that innovation, regardless of whether incremental or radical, is driven by problems in the construction project. Miozzo and Dewick (2002, p. 991) state that „[...] *innovation requires a sustained effort, the outcome of which is uncertain*“. Hence given that the project team has only one chance to manage a construction project successfully as it is a unique endeavour, the result is that project participants might not want to undertake uncertain actions. Therefore when compared with other industries, the circumstances which construction projects are exposed to, created an image which is best described through buzz words such as “conservative”, “backward” and “low technology industry”.

On the flipside of the same coin innovation or being innovative is a synonym for competitive advantage (Sexton and Barrett, 2003a; Dulaimi et al., 2005; Gambatese et al., 2011; Cernea et al., 2013). Sexton and Barrett (2003b, p. 626) define successful innovation “[...] *as the effective generation and implementation of a new idea, which enhances overall organizational performance*”.

Hence practitioners of the construction industry perceive the need for being innovative (Gambatese et al., 2011). Cernea et al. (2013) argue that the innovation management strategy should be more related to business management and should be placed on the business organisation level. To this point, however, there are little innovation management strategies, which focus on construction companies. The aim of this study is to propose a conceptual approach for promoting and managing innovations systematically in huge construction companies⁴. To achieve this aim, the proposed approach is based on the two systems methodology of Kotter (2012). Hence, in the next two sections, the paper will conceptualise this approach to an innovation management context for construction companies. Finally conclusions will be drawn and areas for further investigation will be recommended⁵.

2. THE ORGANISATIONAL STRUCTURE

Kotter (2012) made a distinction between two organisational systems. The first organisational system is the traditional group hierarchy, which is shown in the following diagram.

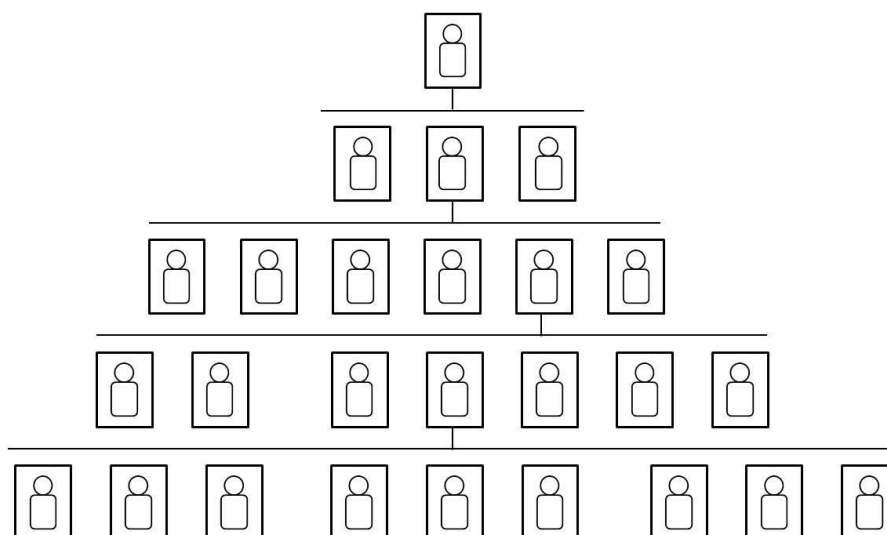


Figure 1. Traditional group hierarchy (adapted from Kotter (2012))

⁴ Within the context of this paper are huge construction companies defined with more than 10 billion Euros turnover.

⁵ The author wants to emphasise that the content of this paper is purely theoretical, i.e. the presented approach(es) within this paper are not related to any construction company.

The above shown hierarchical organisational structure suits quite well to manage the daily operative work. This organisational system, however, is also at the same time too conservative and rigid to be used for managing changes.

Same applies for managing innovations. Similar to quality management, innovation management is not a standalone activity. It needs to be lived from both, top-down and bottom-up directions. Hence implementing a culture, which makes out of ideas successful innovations, is also a change management process. Womack and Jones (2003) elaborate that for managing the change management it is useful to work with so called „light houses“. These light houses are small units where the implementation of the change (in this case innovation management approach) has been successful. These small units will create successful results. These results in turn will cause a group wide movement.

Innovation management requires also a cultural change. Hence it makes sense to start with a small group of volunteers. These volunteers support the overall process, create initiatives and find new supportive members. These volunteers will be the light houses, who will be used to excite other divisions of the group for managing innovations. This can be illustrated with the following figure.

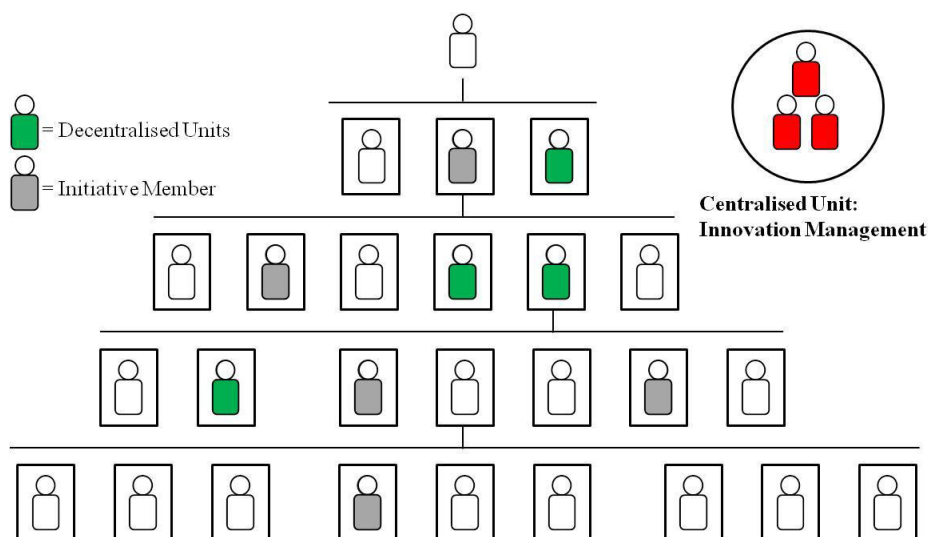


Figure 2. the lighthouses of the traditional organisation (based on Kotter(2012))

The above figure proposes a way of implementing innovations management in the group organisation. Hence a centralised staff unit can be implemented in the first instance. This centralised unit has a more administrative and managerial role. This centralised unit will then identify decentralised units. These decentralised units will initiate innovation projects that are relevant to their organisational unit. This consequently will result in new members, who want to participate into these projects.

3. BECOMING A SELF ORGANISED ORGANISM

Kotter (2012) argues that a second organisational system will be added to the existing organisational structure. It is important that this system shall not disturb the traditional group organisational system in its daily tasks. The second system needs to run in the background. The centralised unit needs to put decentralised units with similar interests together into groups. These groups will deal with certain technologies. Then initiatives can be caused, where people of their units will be integrated into teams for managing innovation projects. Through this process:

- the internal collaboration will be increased
- interfaces will be eliminated
- the core capabilities of the group will be strengthened

The secondary system is illustrated in the following figure.

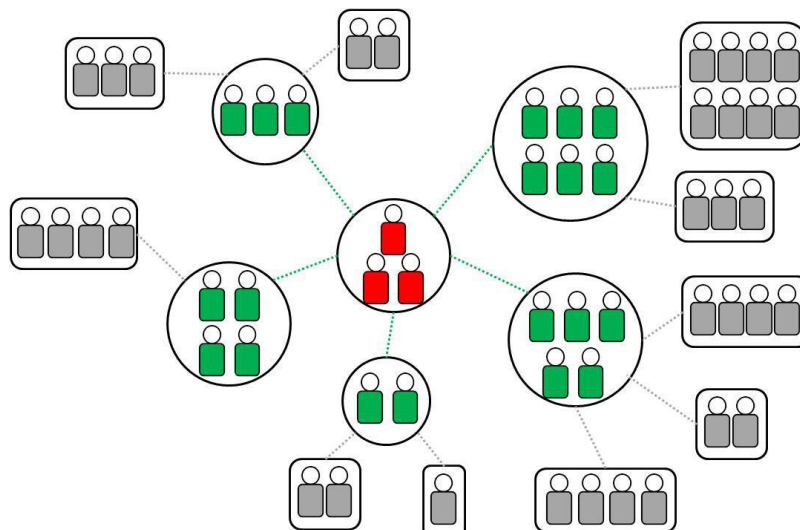


Figure 3. Secondary organisational system (adapted from Kotter (2012))

The above figure shows that the secondary organisational system has flexible network-like structures. Those are very agile. Once the groups are in place, the secondary organisational system becomes a self organised organism, which:

- grows continuously
- has its own processes and mechanisms
- and which works with volunteers from the whole group.

The centralised unit will just report the results.

4. CONCLUSION

Construction projects face meanwhile new problems, which are more complex. Paradoxically these problems are still managed with management methods and technologies which are not up to date anymore. A reason why the industry might be conservative with the adoption of new technologies and methods can be related to the uniqueness of each construction project, which consequently results in that there is only one chance for managing the project successfully. Hence the desire to innovate and develop new approaches is mainly on incremental improvements rather than on radical innovations.

The aim of this paper was to propose one way for managing innovations, either incremental or radical. To do this the two systems approach of Kotter (2012) has been adapted to an innovation management context for huge construction organisations. The system shows that next to the normal company or group organisation, a secondary system will be placed, which will run in the background without disturbing the daily work. To achieve this, first, a centralised innovation staff unit will be placed. This centralised staff unit will identify volunteers. These volunteers will be formed to decentralised units. These decentralised units will be put together to groups with same interests. These groups will find new members and do innovation projects. The result is a self-organised organic system which runs hand in hand with the

traditional mechanistic one. Hence the outcome is a so called “mechaorganic” management organisation, which has been labelled as “AgiLean”. Where Agile describes the organic structure (secondary organisation) and Lean describes the mechanistic structure (primary organisation).

This mechaorganic system is based on collaboration. Collaboration will lead to innovation and further development. This in turn will lead to the accumulation of knowledge. Hence the company will become a learning organisation!

The findings of this paper are purely theoretical. Hence further empirical studies are required to prove the practicality and the implementation of this organisational system.

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