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Towards a methodology for bio-inspired programme management design

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Abstract

Programmes are a means by which to realise complex change and corporate transformation. In management, the inherent uncertainty and ambiguity of programmes cannot be handled by a mechanistic way of thinking. The organic management system, which has its roots in building analogies between natural and anthropological systems, is said to be a better basis from which to conceptualise programme management. It is argued in this paper that biomimetics, the discipline of using principles derived from living systems for design solutions, can be leveraged to develop bio-inspired programme management solutions. The paper presents an overview of programmes and bio-inspired approaches in management and organisational theory. The discipline of biomimetics is introduced. In combination, these observations are used to conceptualise a process model for the implementation of bio-inspired programme management design based on a biomimetics approach.

Keywords: Programme mangement; Program; Biomimetics; Bio-inspired;

1. Introduction

An early definition of a programme can be found in the Apollo mission terminology handbook of the US National Aeronautics and Space Administration (NASA). A programme is defined as a *"… related series of undertakings designed to accomplish a broad scientific or technical goal. Attainment of such long range goals may be accomplished by implementation of specific projects."* (NASA, 1963, p. 75).

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Programmes of projects used mainly to be concerned with attaining technical and scientific goals. By the early 1990s project management had been adopted in almost all economic sectors and went on to become an inherent part of everyday business in most organisations (Morris, 2011). The number of projects in organisations has steadily increased, so that multi-project settings emerged (Engwall & Jerbrant, 2003). At the same time, the scope of project management application has changed. The project management concept has been extended from large-scale, single-technology projects with a clear goal to the management of business projects, such as organisational development and strategy implementation (Gareis, 1991). The traditional orientation to efficiency targets in project management, manifested in the so-called "iron triangle," was supplemented by an effectiveness perspective in the sense of increasing business value and performance (Morris, 2011). By early 1990s the necessity for horizontal and vertical coordination of multi-project settings became apparent and a more "business-driven" approach to programme management emerged (Morris, 2011; Pellegrinelli et al., 2007). Programmes have become means by which to realise complex change and corporate transformation (Pellegrinelli, 2011), leading to the demand for a situation specific programme management approach based on the organic management system (Burns & Stalker, 1961; Lycett et al., 2004; Pellegrinelli et al., 2007).

The aim of this paper is to outline a systematic approach for the generation and implementation of bio-inspired solutions using a biomimetics approach. The paper begins with an overview of the current understanding of programmes and the need for an organic approach to programme management. Further, in an overview of bio-inspired approaches to management, implementation issues that are stated to undermine the practical feasibility of bio-inspired concepts in management are highlighted. The biomimetics discipline is introduced and a process model for bio-inspired programme management design is conceptualised. This contribution ends with a conclusion and a short outlook on further research.

2. The need for a biomimetics approach in programme management design

2.1. Evolution of programme management

Ferns (1991, p. 149) defines a programme as *"…a group of projects that are managed in a coordinated way to gain benefits that would not be possible were the projects to be managed independently."* Programme management is seen as a coordinating framework for benefit realisation in a multi-project setting. Pellegrinelli (1997) also emphasises the benefit realisation by managing projects in programmes. Further, the author argues that projects can be defined during the life cycle of a programme and be directed towards a common goal by the programme structure. Murray-Webster & Thiry (2000) as well as ISO (2012) define a programme as a collection of related projects and other activities in line with strategic and tactical goals. Business programmes are means by which to realise complex change and corporate transformation (Pellegrinelli, 2011). Uncertainty and ambiguity are the main drives of a more "business orientated" programme management approach (Thiry, 2010). An indicator for complexity in project and programme management is the structure of a given system, i.e. the number of different elements and their mutual interdependencies (Baccarini, 1996; Krallmann, Schönherr & Trier 2007). Generally, programmes include a higher number of elements and complex interactions than single projects (Seidl, 2011). Moreover, strategic goals are often ambiguous and uncertain in nature, i.e. programme targets are not clearly defined (Turner, 2009) and are subject to constant change (Thiry, 2010). Stochastic variation of the programme goals in turn lead to a change of the system elements and their interaction, i.e. a dynamic change in the structural complexity of a system (Williams, 1999). The management of business programmes can therefore be described as a *"…complex process of balancing the (often-conflicting) interests of multiple participants."* (Platje & Seidel, 1993, p. 209)

2.2. Shortcomings in the current programme management approach

In their critical literature review Lycett et al. (2004) state that the standards and approaches in programme management are characterised by an excessive focus on control, lack of flexibility in dealing with evolution of strategy and by an ineffective collaboration between projects within programmes. These shortcomings may be