

THE PRESENCE OF CHANGE MANAGEMENT IN THE SYSTEM MANAGEMENT PROCESSES

Tudor IRIMIAŞ, Adrian PÎSLĂ
Technical University of Cluj-Napoca

Abstract. The significance of the paper is the creation of a conceptual bridge between the system engineering and the change management process through highlighting the features of the system management. This paper underlines the importance of understanding the company as a continuous changing system and highlights the efficient influence that an appropriate managing system may have on the technological trend. Under these premises of the enterprise seen as a continuous changing system, the change management gained additional attention in research and practice, due to the vast and various changes that occur on a systems' integrity because of the accelerated technological development. Due to the coexistence of the technical and the managerial area present in the systems of a company, some fundamental aspects of the change management process in system engineering are to be brought into discussion. Whenever a system is designed or a system is being modified, the understanding of change management tools, models and features is fundamental.

Keywords: change management, systems management, system engineering

1. Introduction in systems management

According to the specialized IT encyclopaedia PCMAG.com [9], the systems management can be defined from three viewpoints:

1. As software which manages computer systems in an enterprise; it can enclose the activities of software distribution, user profile management, version control, backup and recovery, printer spooling, job scheduling, virus protection and performance and capacity planning.

2. As a management process focused on systems development, which includes systems analysis and design, application development and implementation. From this perspective, the system development cycle is considered a necessary approach, which will be further analysed in this paper, in the subsection 2.3.

3. As the management of the computer systems within an organization. Used in this context, the term refers to the entire IT organization or just to the data centre management.

In order to accomplish the goal set by this paper further reference will be made on the second point of the above-mentioned definition. A comparison between the system development cycle and the change management process will be undertaken.

In the third chapter, the paper will bring into light the importance of the systems engineering in

understanding the bondage between the technical field and the managerial field. Wherever a system is active and functional there is someone who is using (managing) this system in order to achieve his or her goal. This paper will discuss further the point of view of the systems engineering where the action of using change management in parallel with the systems management brings value to the business of an enterprise.

Change management in the domain of systems engineering is the process of requesting, determining attainability, planning, implementing and measuring, and evaluating changes that occur in a system. It has two main goals: supporting the processing of changes and enabling traceability of changes [1, 2].

Our belief is that by understanding and putting into practice the change management theoretical aspects during the process of making a change in a system, a successful development of an information system can be achieved. The fact that the efficient integration of changes to a system requires mutual effort of both the users and the technical staff, gives the present paper an unique viewpoint in bringing into light synergies between the systems management and the change management process.

2. The enterprise as a continuous changing system

2.1. What is systems management for an enterprise

In order to successfully build and efficiently implement a system in an enterprise some important key facts have to be taken into consideration. In the initial stage, the enterprise has to be understood in its organizational aspects, its internal and external flows (papers/documents, financial, human) and its culture. The primary goal of the systems management, as all other management types present in an enterprise, is to create value for the enterprise in order to fulfil the premises needed in the process of striving for sustainability. This can be achieved if the entire business concept is analysed in order to identify strengths and new opportunities that can be transformed and improved into new strengths. From the viewpoint of systems management, this can be achieved through designing information systems that can support and implement the ideas for business improvement.

2.2. Connections between change management and systems management

Change is today's motto and represents as Heraclit from Ephesus stated, the only constant of this universe. Implications and facts that "Tomorrow" will bring get more and more unpredictable and blurrier. The present world is the world of the global empires, like Microsoft where the organizational forms of networking and global businesses are driven by the technical processes, development and innovations and by the international competition.

Change is a social process that comes implicitly with a certain amount on resistance. Change is understood by people as uncertain and as a violent rupture from the past and the old habits. That is why changes can be difficult and discomfoting and require courage, eagerness of progress but also the capacity of managing and permanently improving the entire complex change process. Under these circumstances the systems management is only successful if the steps of the change management process are taken into consideration and put into application.

Within the framework of this paper, change management is referred to as a way on how changes to a system are managed so they do not degrade the system performance or availability. Change management is critical in today's

circumstances of users' interactions and feedback possibilities created by the Web 2.0 era [6, 7, 8]. This decentralized, network based environment permits users to induce many changes themselves. Change management brings the system's stability by effective identifying and planning for prior implementation of changes.

Change management remodels the profit driven approach of the managers by bringing into light the aspects of the new social, environmental dimensions, which strive for business sustainability and appropriate use of the concept of systems management.

The goal of change management in the context of systems management is to coordinate and drive the processes of the information technology and the human factors embraced in the change process, in order to successfully and efficiently implement the planned changes.

The first issue that has to be taken into consideration is, as prior stated, the crafting of a plan for handling changes to a system. This may include procedures for handling changes brought into light by defining the change management process and practices. The roles and responsibilities of the IT support staff will be well defined through change management controlling features like: determining who receives the change request, who tracks all changes requests, who schedules the implementation of changes, and what each entity is supposed to do [3, 4]. After determining the change requests and the responsible entities for dealing with it, the defining of the pattern and the needed tools is to be made. Changes to a system then have to be differentiated through determining the types of changes to be handled and prioritised. Some safety or measures can be taken into consideration if changes do not perform as expected or cause problems to other components of the system.

After planning and implementing of the changes, the monitoring of the impacts and influences of the changes is to be made [5]. This action is followed by the evaluation and report on changes implemented in order for the change coordinator (entity responsible for the change implementing process) to see if change implementation planning was sufficient or if changes to certain resources are more prone to problems. When a change has been made, it is crucial that the system information store that corresponds to this change is being updated in due course.

The final action after the evaluation and report is the possible need for modifying the change management plan to make it more efficient and effective. For example, changes are not applied on time, not enough changes are being processed or changes are affecting the systems availability.

2.3. The system development cycle in the systems management process

The systems development cycle as a cornerstone in systems engineering represents a sequence of events in the development of an information system, which requires the bilateral implication of the user (beneficiary) and the technical staff (builder). It implies five steps which have to be run over during the systems management process:

1. The system analysis and design which brings into discussion five processes:
 - a feasibility study
 - the general design of the informational system
 - the prototyping activity
 - the detailed design
 - and finally the functional specifications,
2. The user sign off,
3. The programming which implies the design, the coding and the testing of the informational system,
4. The implementation though training of the user, the conversion to the new informational system and its installation,
5. And finally, the user acceptance only with good chances of success if gained through change management techniques.

The final step has the goal to create user acceptance. In order to achieve this, first of all, one has to understand what it means to make a change to a system and how a change can be successfully implemented in an enterprise. This can be achieved through constant parallel application of the processes of systems management and change management.

The main principles of the change management process during the system development cycle are:

1. At all times involve and agree support from people within a system (enterprise).
2. Understand where the enterprise is now, and in the case of systems management, in what lifecycle status the informational system is.

3. Understand what kind of added value the new system is going to bring to the enterprise. What kind of measures, at what time and for what purpose will be undertaken in order to get to the wished status.
4. Define appropriate, achievable, measurable stages.
5. Communicate, involve, enable and facilitate involvement from people, as early and openly and as fully as possible.

The approach on systems development cycle through the above mentioned change management principles give a necessary guideline to an effective and efficient implementation of changes to a system.

3. Synergies between system engineering and change management

The features of the change management process will be further discussed in parallel with the steps of the system engineering process. The change management process begins with identifying the potential change and determining the need for that change. This may be triggered by the customer through various actions: launching the requirement for a new functionality of the system, finding a problem in the system, requesting a change.

Because of the potential change put into light, an analysis of the change request has to be made. This can be understood as an opportunity to create business value from using the information technology. In order to make a decision, a feasibility analysis on three levels is needed. The three levels are technical, economic and organizational, which give the technical feasibility of the change and the change costs and benefits.

After dealing with the change request and the analysis of the feasibility of the change, a decision will be made. This precedes the process of planning the change which is created for the implementation of the change. The actual implementation follows up through execution and propagation of the change. A testing and monitoring action is needed in order to measure if the induced change reaches the standards of the change request. These steps having been taken, a system update and status release follows. The change is being reviewed and closed in order to foster the status quo of the system.

However, this systematic approach to inducing changes to a system is based on the

change management process which helps keeping, controlling and monitoring the order of the events.

4. Conclusions

The aim of this paper is to create and analyse a sort of conceptual bridge between the system engineering and the change management process through highlighting the features of the system management. If the enterprise is presently seen as a continuous changing system, the change management needs thorough attention in research and practice, due to the vast and various changes that occur on a systems' integrity because of the accelerated technological development.

Consequently, change management in the domain of systems engineering is viewed as the process of requesting, determining attainability, planning, implementing, measuring, and evaluating changes that occur in a system. The paper also highlights the fact that the efficient integration of changes to a system requires mutual effort of both the users and the technical staff. From this point of view, the role of systems management is designing information systems that can support and implement the ideas for business improvement. Within this specific frame, the paper discusses the goal of change management in the context of systems management, which is to coordinate and drive the processes of the information technology and the human factors embraced in the change process, in order to successfully and efficiently implement the planned changes.

Therefore, the roles and responsibilities of the IT support staff can be well defined through change management controlling features. A relevant application in this respect was the attempt to present the systems development cycle as a cornerstone in systems engineering. This is perceived as a sequence of events in the development of an information system, which requires the bilateral implication of the user (beneficiary) and the technical staff (builder). More than that, this must be managed as a systematic approach to inducing changes to a system. Furthermore, it should be based on the change management process which helps keeping, controlling and monitoring the order of the events.

References

1. Cummings, T.G., Worley, C.G.: *Organizational Development and Change*. South-Western Pub, ISBN 13: 9780324260601, 2004
2. Crnkovic I., Askund, U., Persson-Dahlqvist, A.: *Implementing Product Data Management and Software Configuration Management*. Artech House, ISBN 1-58053-498-8, Norwood, USA, 2000
3. Dennis, A., Wixom, T.H., Tegarden, D.: *System Analysis and Design: An Object Oriented Approach with UML*. John Wiley & Sons, Inc., ISBN-13: 978-0471413875, New York, 2002
4. Hamer, G., Champy, J.: *Reengineering-ul întreprinderii. (Enterprise re-engineering)*. Tehnica Publishing House, București, 1996 (in Romanian)
5. Tanțău, A.D.: *Fundamente ale schimbării organizaționale (Fundaments of organization change)*. Available at: www.ase.ro. Accessed: 2009-05-12 (in Romanian).
6. ***: *On change management*. Available at: [http://en.wikipedia.org/wiki/Change_management_\(engineering\)#cite_note-0](http://en.wikipedia.org/wiki/Change_management_(engineering)#cite_note-0). Accessed: 2009-05-12
7. ***: *On systems engineering*. Available at: http://en.wikipedia.org/wiki/Systems_engineering. Accessed: 2009-05-12
8. ***: *Collaboratively Implementing Product Lifecycle Engineering Changes Using the Microsoft Office System*. Available at: <http://www.microsoft.com/office/showcase/engineeringchange/default.aspx>. Accessed: 2009-05-12
9. *** <http://www.pcmag.com/encyclopedia/>. Accessed: 2009-05-12