Chapter 5
Enabling IT Innovation through Soft Systems Engineering

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ABSTRACT
In any Software Development process, and especially in innovation processes, the team responsible for software implementation needs to acquire the necessary knowledge to implement the project and to sustain innovation. However, the implementation team does not always convert innovative ideas into the expected value. The Software Development Process has a complexity that is process-inherent. Soft System Engineering is a response to address this complexity and to support the application of user-driven methods in an open innovation environment. This approach allows the development of a systematic interaction with users to generate new offerings and to improve previous products and services in order to create value and differentiation.

INTRODUCTION
The actors involved in Information Technology (IT) innovation activities are not only software developers. Users of products and services are increasingly present in the IT innovation process. IT innovation is generated by a combination of competencies, which promote advancement of business, society, and wellbeing. The term ‘users’ refers to individual end users, consumers, and social organizations that have an interest in the Software System.

Innovation in IT is motivated by the demand for efficiency and performance; a demand motivated by the XXI century economic scenario. David and Forey (2002) argued that innovation is becoming the sole means to survive and prosper in highly competitive and globalized economies.

IT professionals suffer pressure to innovate, and, besides innovation possibilities being countless, these professionals must not forget that innovation depends on the correct understanding of user needs. Although it might seem easy, the activity of understanding user needs, and problematic situations demanding a solution, must be performed carefully; as stated by Brooks (1987), the hardest single phase of building a Software System is the activity of understanding the problem to be solved. Another issue that brings complexity to this environment is that there are several compa-
nies that do not have Software Development (SD) as its core business, despite having some kind of
IT department. And, as argued by Govindarajan and Trimble (2010) for companies in general, the
IT department of these companies is not built for
innovation; they are built to be efficient. Furthermore, they must deal with day-by-day demands and business pressures to reduce costs and the
delivery time of their on-going activities.

Most companies have IT professionals with
creativity and the necessary technological knowl
dge to implement an innovative idea. However,
the presence of good professionals is not sufficient.
It is necessary to manage this people in a way that
stimulates and motivates the combination of dif
ferent IT disciplines and individual perspectives.
The management challenge is how to go beyond
the traditional SD processes to convert individuals’
capacities into an IT Teamwork, in which its members
work together to build up the understanding of
what is being demanded by users. Likewise,
this management process must also consider the
on-going activities and build an environment in
which innovative ideas about SD can emerge, to
deliver efficiency and innovation in IT processes,
and to support the company innovation process
(Tidd & Bessant 2009; Govindarajan & Trimble
2010; Ries 2011).

This chapter is about Soft System Engineering in IT innovation, with focus in a process that
is user-driven. It is an approach to interact with
users in a systematic way to generate new offer
nings, and to improve IT previous products and
services, in order to create value, differentiation
and to contribute to organizational efficiency and
performance. The success of this approach also
depends on Teamwork management; a management
focused on the Socio-technical System formed by
Teamwork members, users and the Information
and Communication Technology (ICT) used to
support Teamwork practices of user-driven innova
tion in an open innovation environment.

TEAMWORK

Tidd and Bessant (2009) state that the growing
complexity of tasks in organizations is surpassing
the cognitive capabilities of individuals and, conse
quently, asking for a team approach. In
Teamwork, people are interdependent and interact
with each other, teaming up to share information
and to achieve common goals.

IT professionals usually use ICT to interact.
Nowadays, ICT progress creates an environment
in which even when IT Teamwork shares the same
physical space, team members use technology to
interact with each other. When an IT department
has professionals that belong to the Digital Age
generation – the generation that was born and
grew up using computers, and is fascinated by
new technologies – the use of ICT reaches levels
of greater significance.

People interaction mediated by ICT brings
challenges to the management of SD, especially
because the technologies that are currently avail
able do not recreate human work experience as
it occurs in physical spaces, which encourage
cooperative work, and also because there are open
issues about privacy (Bencivenga 1998; Birnholtz,
Gutwin, & Hawkey, 2007). However, ICT is
useful and necessary when there are Teamwork
members that are not in the same physical space at
the same time, or in SD processes in which there
are people who will never meet other members
of the Team in person.

Every SD methodology—be it Agile, Prototyp
ning, Unified Process, or any other method—has
activities that are always present, such as Team
work management and the management of the
knowledge that is acquired through the interaction
among IT Teamwork members, and between these
Software developers and the users that demand
a product or a process. The presence of people
throughout the SD life cycle brings complex
ity to the System, due to the different interests,
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