

# Chapter VIII

## Health Informatics and Healthcare Redesign Using ICT to Move from an Evolutionary to a Revolutionary Stage

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### ABSTRACT

*This chapter introduces a framework to analyze the pre-requisites to move from an evolutionary stage to a revolutionary one when using ICT in healthcare. It argues that the degree of transformation should be determined by the role ICT has in the organization when initiating the redesigning process, but also by the aims technology is supposed to achieve. The suggested framework can be used to identify preconditions and areas affected from the implementation and use of ICT providing a structure to evaluate how changes will affect key actors and the organization. The classification suggested to identify different steps of transformation should indicate stakeholders, healthcare personnel, and managers how to refocus their priorities to be able to build organizations that can be adapted to the revolutionary stage to obtain the same benefits that the industry has previously identified from the implementation of use of ICT.*

### INTRODUCTION

The use of information and communication technology (ICT) is becoming a self-evident part of the development and delivery of healthcare services.

In fact, predictions that collaboration and technology would become critical elements of the healthcare industry of the future have proven to be true as healthcare organizations have grappled with the interdisciplinary challenges of implementing

and expanding ICT-systems and IS (information systems) for the support of caregivers.

From systems primarily designed to collect and process data in order to prepare the documents required by the personnel and stakeholders, there has now evolved many applications such as integrated financial functions, scheduling packages, decision-support functions, personnel management, billing functions, financial reporting and statistical reporting capabilities. How healthcare personnel actually manage the health information they search for and retrieve, where they are using these resources, or how they integrate health information systems and resources in their daily work activities are questions that are becoming more and more important in medical informatics research.

However, the more common approaches used to study these issues have been, to our best knowledge, socio-cognitive theories to guide the type of context to include, and the manner in which systematic application motivate individuals behaviors to use ICT and to achieve healthcare goals (Vimarlund & Olve, 2005). Approaches to design ICT systems and business process models to emphasize information-flow and afford insights to the role of health-information management in healthcare processes have often been used to explain the role of personal health-information management in the healthcare process. Activities, strategies, and consequences for the personnel that produce and deliver care services, the economic consequences of their work behavior and organizational pre-requisites that influence the acceptance of new work-routines and the use of ICT as complement at work, the consequences for the stakeholders, and the development of tools that allow to inform future development processes, have until today not accurate been discussed (Vimarlund, Timpka & Patel, 1999). It is therefore rational to argue that it is necessary to continue to pay attention to business processes, reengineering, and organizational transformation when planning and implementing systems in healthcare in order to allocate resources optimally.

In this chapter, we propose a framework to analyze the degree of transformation when moving from an evolutionary to a revolutionary level. We start out from the premise that ICT has a large potential to be useful in healthcare, much of it still untapped. While hospitals are now often equipped with advanced tools using digitized (computerized) analysis and embedded technology for operations etc., ICT based administrative tools used to coordinate activities and communicate knowledge have not yet been generalized.

However, new technology by itself is not a sufficient condition for changes to take place. The potential benefits from ICT are realized only when organizations adopt new patterns of behavior, exploiting new possibilities. In healthcare organizations such changes will involve a number of direct and indirect actors: healthcare personnel, technology suppliers, care centers, and branches of local or central government. Our framework can therefore be used to identify preconditions and areas affected from the implementation and use of ICT, and provide a structure for evaluation of how change will affect key actors and areas of importance for “business transformation.” Without this type of analysis, promising technologies may fail because some actor lacks incentives to make needed investments in competences, technologies, or changed procedures, or does not trust new modes of operation because roles and responsibilities are unclear.

## **A FRAMEWORK TO IDENTIFY TRANSFORMATION: FROM EVOLUTIONARY TO REVOLUTIONARY HEALTHCARE**

Much of the economic benefits from introducing ICT in industry during the past 40 years derive from ‘reengineering’ processes: changing tasks and who performs them. Faced with increasingly costly in healthcare, there are hopes for similar effects in the healthcare area. Using ICT support,

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