

## Chapter 6.3

# Investigating Trust Relationships in a Healthcare Network<sup>1</sup>

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### ABSTRACT

Public hospitals currently face an ever increasing demand on their resources, and there are many attempts at streamlining processes and patient flows. However, in many cases, optimizing processes is not enough, as ‘soft’ factors such as the relationships between hospital wards influence how efficiently the resources needed to treat patients are utilized. These factors are often ignored when attempting to improve patient flows. In this chapter, the authors describe a case study investigating the relationships between an acute stroke ward and a specialist stroke rehabilitation ward of a large metropolitan health service. The motivation for this study was the hospital management’s interest in improving commu-

nication and collaboration across wards as a means to optimize hospital processes, and thus, patient care. To assess the relationships between the two wards, the authors examined the patient handover process that links the wards’ activities and applied the Trust-Confidence-Distrust (TCD) framework of Gans et al. (2003), which was developed to model trust relationships in social networks, to examine the trust relationships between the wards.

### INTRODUCTION

Public hospitals are under a lot of pressure to improve both their efficiency and service quality, and many hospitals have therefore been spending time and effort to optimize their processes. For

example, Ramakrishnan et al. (2005) note that attempts to reduce the lengths of waiting lists for elective procedures and long stays in emergency departments often focus on policy setting, clinical process mapping, or capacity models of patient flows. However, perfectly well-designed processes can run less than smoothly if they fail to address the human side of patient movement through a hospital. In many cases ‘soft’ factors such as the relationships between hospital staff in different wards along a clinical pathway will determine how efficiently the resources needed to treat patients are utilized. In many situations these factors are ignored when attempting to improve patient flows.

In this paper, we describe the application of the Trust-Confidence-Distrust (TCD) framework defined by Gans et al. (2003) to the investigation of trust relationships between two hospital wards engaged in a patient handover process. This case study represents one of the first applications of the TCD framework to a real-life situation with real-life data. Given that the two wards were part of a large metropolitan health service which is more similar to an organization than to the social network described by Gans et al. (2003), we were particularly interested to see which aspects of the framework were still applicable, and which ones were not.

This paper is structured as follows: In the subsequent section, we outline the background of our study. Then, we briefly describe the TCD framework for analyzing trust relationships. Afterwards we give an overview of the case study we performed, including the setting. Having introduced the research methodology, especially the data capture process, we describe our analysis of the trust relationships using the TCD framework. Eventually, we evaluate the applicability of the TCD framework to the context of our case study and briefly sketch future trends.

## **BACKGROUND**

In health informatics, clinical, organizational processes are mainly investigated in regard to how they can be supported or improved by information technology. Even though this is not the focus of our contribution, such analyses presuppose means to describe and model these processes. Due to the focus on information systems, typical process modelling notations such as event-driven process chains (Scheer, 1994), Petri net based workflow notations (van der Aalst and van Hee, 1996), or languages like the business process modelling notation BPMN ([www.bpmn.org](http://www.bpmn.org)) are commonly used. In (Framinan et al., 2005) some have been investigated in the context of business process reengineering of clinical processes. They allow capturing the timely relation of activities and the assignment of resources and responsibilities of involved actors. Also Saboor et al. (2007) propose a method, named MedFlow, to support the systematic assessment of clinical processes focusing on the quality of information logistics. They derived relevant quality criteria from literature, developed an extended process modelling notation based on UML activity diagrams, and evaluated the method in a preliminary case study. Their analysis distinguishes four different process aspects, i.e. control flow, data flow, tool usage, and organizational information. For each of them, a rule-set that represents a “pattern of critical cross-points” was used, to detect weak points within these views. A shortcoming of these modelling means is that the human side of the process, the social interaction of the people that carry out these processes and for example, trust issues that are involved, are neglected. When trust is investigated in the context of health informatics, mostly three fields are considered: how to build up trust in online communities or health information on the web (Luo and Najdawi, 2004; Song and Zahedi, 2007), trust issues in the context of electronic health records (Smit et al., 2005), or regarding the physician-patient relationship.

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