Introduction

Health care providers such as hospitals, GPs, but also related parties such as laboratories, care homes or therapists nowadays more than ever have to collaborate to provide the best possible care in an efficient way. In order for these collaborations to succeed, information exchange (e.g. patient data) is crucial (Nictiz, n.d.). These collaborations require attunement on different levels between organizations: on the level of strategic decisions, between health care processes, regarding the structure and content of information, how applications should be connected and regarding ICT infrastructures (ibid). For example, the strategic decision of a hospital board to collaborate with satellite labs often turns out not to be simply a matter of adopting one standard information system by which information is exchanged. ICT literature refers to this phenomenon as the lack of interoperability. “Interoperability is the ability of different information and communications technology systems and software applications to communicate, to exchange data accurately, effectively, and consistently, and to use the information that has been exchanged” (Iroju et al., 2013, p. 263). For example, patient information from a referred patient from one hospital is manually added to another hospitals’ data base, because different software applications cannot be aligned due to different licenses that hospitals have. In this theme the topic interoperability is approached from both an organizational change (part 1) and an organization design perspective (part 2).

Part 1: taking a change perspective (interesting for Info Science students that participate(d) in Organizational Change course of OD&D; supervised by dr. Berber Pas)

Although interoperability is a topic much debated in ICT literature, less is known about the organizational and managerial aspects that are related to lack of interoperability. When organizations decide to collaborate, their work practices have to be aligned. In the process of tying routines together, (temporary) workarounds are created to deal with unexpected setbacks when setting up collaborative practices. This requires alignment of strategic
decisions regarding collaborations with organizational and healthcare processes all the way down to operational ICT decisions. These increasingly dynamic and complex health care environments require to work in ways that are both reliable and adaptive. Teams, for example those working on ICT solutions, need to aim at the increase of stability (e.g., coming to agreements regarding standards used in software to store data and information) and flexibility (to adapt standardized software and work practices to local situations), all at the same time (Dönmez et al., 2016; Feldman, 2000; Turner & Rindova, 2012). Research questions from a change perspective in this context that might be interesting to investigate are:

- How is alignment between organizations’ routines negotiated to establish interoperability among different actors? (interorganizational decision making, strategic level)
- How are intra-organizational alignment of routines (e.g., between ICT and healthcare processes) established to improve interoperability? (tactical level change management processes)
- How do Chief Medical Information Officers (CMIOs) span boundaries between different knowledge areas and work practices?
- How do ICT workers decide when to fix a temporary workaround as a routine? (which criteria do they use, how is decision making supported, how do they deal with resistance and setbacks regarding what cannot be fixed with ICT?)

**Suggested references for part 1:**


**Part 2: taking a design perspective (interesting for Info Science students that participate(d) in the Organizational Design course of OD&D); supervised by dr. Matthijs Moorkamp.**

Next to an organizational change perspective, this theme is approached from an organization design perspective. Interoperability and its issues are quite often related to (internal) organizational complexity (e.g., Bouamrane, Tao & Sarkar, 2015). From an organization design perspective, internal organizational complexity is often associated with characteristics of division of labor, captured by the organizational structure concept (De Sitter, 1998; Kuipers et al., 2018). Research also shows that many healthcare organizations seem to be confronted with substantial structural design problems, that –amongst other things- challenge controllability of costs (see: Christensen, Grossman & Hwang, 2009). This theme therefore also aims to explore the influence of structural design characteristics on 1)
the type and amount of interoperability issues and 2) ways in which medical staff can deal with such issues. Furthermore, next to a more explanatory and diagnostic perspective, this theme challenges master students to develop design related interventions. More in particular, it is argued that sociotechnical insights may be of added value to dealing with the issues and challenges associated with the concept of interoperability. Possible research questions that tap into a design related perspective on interoperability may look like this:

- How do structural design characteristics influence the type and amount of interoperability issues.
- How do structural design characteristics influence the way medical staff can deal with challenges of interoperability?
- How can a structural design intervention contribute to tackling challenges of interoperability?

**Suggested references for part 2:**