Information Systems Development with Anticipation of Change
Focussing on Professional Bureaucracies

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Abstract
The problems associated with the development of hospital information systems and their implementation in organizations have been the subject of much literary debate. The perspectives taken in regards to this phenomenon are often similar to the debate in IS design in general, in that the overseen social and organizational factors of IS implementation are mainly addressed.

However, from our experiences in applied research projects we claim that the specific organizational structure of hospitals as professional bureaucracies requires specialized development methods.

This is the subject of this article. First, we will establish that hospitals represent a special organizational type. We will then draw conclusions regarding the requirements for specialized IS development approaches. Third, we will discuss limitations of existing approaches and introduce the Anchor method. Anchor supports the intertwining of anticipation of IS induced organizational change and IS development by the provision of participatory techniques, processes and tasks suitable for professional bureaucracies.

1. Introduction
Despite the perceived potential of Hospital Information Systems (HIS) to enhance the performance of healthcare organizations, several articles describe the low acceptance and slow diffusion of HIS in hospitals or the failure and discontinuations of HIS projects. Observers and analysts attribute this to various causes related to different perspectives.

First, HISs obstruct and alter traditional practices, patterns and routines. They affect the cooperation within the professional relationships between individuals and groups. Second, frequent difficulties in HIS projects such as the lack of system integration or frequent interruptions and delay in the implementation processes overshadows its discernible improvements and benefits. Third, the implementation process itself is an extensive source of difficulties since it depends heavily on the integration of the system into complex, organizational settings as Anderson relates [1]. "Past experience suggests that efforts to introduce clinical information systems into practice settings will result in failures and unanticipated consequences if their technical aspects are emphasized and their social and organizational factors are overlooked" (pp. 89). Similarly, in [11] Heek et al use a model of conception-reality gaps and argue "that the greater the change gap between current realities and the design conceptions (i.e. requirements and assumptions) of a new healthcare information system, the greater the risk of failure" (pp. 96).

All this does not seem to be specific to HIS. In general IS design literature emphasize that the critical issues involved in organizational changes induced by IS are social and organizational in nature and not solely technical. Recent socio-technical approaches appoint towards new efforts to overcome the dichotomy between the "hard and soft" [17]. The conflicting theories – technological determinism and theories on the social construction of technology – seem to be still unrelated. Impacts of this are all over visible and experienced in practice.

However, presently there is a greater awareness, disturbance and movement in this direction. Recent literature on approaches to increase organizational productivity which are rooted in deterministic methods using business process reengineering and workflow, emphasize the importance of involving stakeholders and marketing projects throughout an organization [18]. The appreciation of the particular aspects of white color work (like flexibility) in comparison to mass production [19] or simply the importance of understanding that IS projects change social interactions, communication, cooperation and decision making are addressed. A critical analysis of the failures and shortcomings of implementation of IS shows that these approaches are “…creating a rational organization far away from any kind of possible natural organization” [24] (S. 33).

None the less there are difficulties remaining. The discussion concerning situated activity in organizational processes and the benefits resulting from flexible human responsiveness began as early as 1987 [26]. Still, the challenge lies in the attempt to represent work reality as well as organizational reality and to decide which of these aspects are relevant to design [23][15].