Chapter 65

An Organizational Study into the Concept of "Automation Policy" in a Safety Critical Socio–Technical System

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ABSTRACT

Although automation has been introduced in all areas of public life, what seems to be missing is a reflection at the organizational or societal level about a policy of automation. By this the authors intend appropriate declarations made at the level of rationale, future plans and strategies to achieve intended goals and most importantly how those achievements will impact on various aspects of societal life, from legal responsibilities to moral and socio economic issues. Implicit in this is what is expected of both the human and technical system actors. In some public spheres these issues are becoming quite controversial because automation opens up possibilities of profound structural re-organization; however, people lack a discussion across and within different work domains to help us review methods or even methodological principles needed to gather and organize knowledge towards the construction of automation policies. This paper uses the UK Air Navigation Service Provider in the Air Traffic Management Domain known as NATS, as a case study to illustrate an example of an organization currently undertaking critical self-reflection about automation policy or the lack of such, along with the illustration of some unresolved deep concerns raised by the development, introduction, and continued use of automation.

INTRODUCTION

Although automation has been introduced in all areas of public life, from production to tertiary and service sectors, there is an ongoing debate in different research and in different industrially oriented Fora, about long term implications of developing ever complex software applications. Debates span from software

engineering to societal/organizational/individual long-term consequences and implications of pervasive development of information and communication technology (ICT). From the software engineering perspective, software components are becoming increasingly complex and entail variable and unpredictable workloads for IT professionals. Modern IT infrastructures are distributed and heterogeneous making the business of IT management too complex and costly. "Autonomic Computing" helps address this complexity by creating self-governing computing systems that can anticipate and resolve problems with a minimal or no human intervention (Gentzsch, Iwano, Johnston-Watt, Minhas, Yousif, 2005; IBM, 2006).

From a more business oriented analysis point of view, the impact of ICT has been considered in its most radical consequences referred to as "business process reengineering" (BPR) where the roles, norms, standard, procedures and ultimately culture are expected to deeply change in order to meet the requirements of the newly redesigned work-system (Nasim & Sushil, 2010). Highly qualitative approaches have been developed to capture the experience of those affected by BPR. The aim of these studies was to show, among other things, that the attitudes and response of those affected by BPR reflects conflicts and contradictions that are inscribed in the capitalistic logic, unveiling the conflicts inherent in the arrangements that characterize our everyday workplace (Moreno, 1999).

Considering now more specifically the domain of air traffic management in the western world, what seems to be missing is a reflection at the organizational or societal level about a *policy of automation* (see for example HALA! Position Paper, 2012). By this we intend a declaration of rationale, future plans and strategies to achieve intended goals expressed not longer at a level of a single mission (like "gate-to-gate trajectory management" in air traffic control), but how these achievements will impact on various aspects of societal life, from legal responsibilities to moral and socio economic issues. While in some public spheres these issues are becoming quite controversial because automation opens up possibilities of profound structural re-organization, we lack a discussion across and within different work domains that help us to review methods or even methodological principles needed to gather and organize knowledge to the construction of such policy. For example, current concerns about the deep changes to be introduced in the British Public Health sector would likely benefit from a more open discussion about the relationship between automation and higher level societal goals (see Rasmussen & Svendung, 2000; Rozzi et al., 2010).

This paper uses NATS, the UK Air Navigation Service provider for air traffic management as a case study to illustrate an example of an organization currently undertaking critical self-reflection about automation uses along with the illustration of some unresolved deep concerns raised by the development, introduction, and continued use of automation.

While the previously raised issues intend to set up a background against the current investigation, they are not specifically addressed by the data collected. While raising questions related to management and construction of what we named an automation policy we are not claiming to address them directly. More precisely there are two intersecting themes we aim to discuss in this paper as they both relate to the data collected. The first, as we briefly discussed refers to the articulation of current views and issues about the role of automation in a large sociotechnical system. Our initial claim is that these issues form a part of an automation policy. The second, less emphasized theme, is whether such an investigation about values and views of a particular process as expressed by middle management can be discussed within the organisational culture literature. While this theme will not be further developed in the discussion of the findings, we wish to open a debate about some of the main controversial issues in the literature. If the study was taken any further and generalizes to other safety critical domains, the main controversial

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