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Chapter IV

Ateleological Development of "Design-Decisions-Independent" Information Systems

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This chapter introduces ateleology as a new paradigm for developing information systems (IS). It argues that the user should be able to modify the information systems' behaviour at run-time, unlike contemporary IS. Such information systems, called tailorable, are able to evolve together with their context to adapt to the constantly changing requirements of their users. Ateleology provides a sound theoretical basis for explaining tailorable IS (TIS) development. Using an innovative software architecture made up of dynamic object-oriented software components, it is shown how an IS can be design-decisions-independent and, thus, tailorable, by empowering the user to control the system's behaviour at run-time. By abolishing design decisions that unnecessarily and irreversibly restrict the IS's behaviour and by deferring them at run-time, TIS is the first and only breed of IS that evolve and adapt to their context, to achieve constant systems development.

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INTRODUCTION

Information systems (IS) are supposed to meet business needs in the context of an organisation that sustainably evolves towards more complex forms in response to the demand for greater flexibility, effectiveness and efficiency due to market and internal pressures. Given the evolutionary nature of the IS's context, i.e., the business /operational environment of an IS, that IS requirements describe, IS have to accommodate context-dependent variations in order to continually deliver added value to the user, in terms of new capabilities which will allow the IS to be a "living system," i.e., to coevolute with the context it has to operate in. IS that are built to an exact specification have no chance to behave like living systems since they can be as much flexible as the initial requirements and subsequent design decisions had specified. This would not be a problem if anticipated changes were the only type of change. However, emergent and opportunity-based changes have been identified (Orlikowski & Hofman, 1997) as major causes for destabilising the business environment.

The end users expect IS to adapt to their changing needs, no matter how frequent or deep these business changes are. Contemporary IS, which are built according to their contractual requirements that are valid only at the time they were produced, are no longer able to satisfy their users. Thus, users are disappointed as the IS implementation guarantees that their operation obeys a fixed set of user requirements which are valid for a specific point of time, the so-called fixed point pseudo-theorem (Paul, 1994). Although it is questionable that a "complete" and "accurate" set of user requirements can be produced (Paul, 1993), today's turbulent business environment renders any IS requirements obsolete after a while, no matter how methodically they were elicited.

Since IS have to function according to some specification, a remedy to the problem of constructing inflexible systems is to skip as many of the design phase decisions as possible during development. These design decisions are deferred and assigned to the end user, who implements new system behaviour at run-time. "Tailoring is therefore initiated by the end-users to continue the design started by the original developers (Henderson & Kyng, 1991), but delayed by a difference in time and geographical location" (Mørch, 1996). This paper explains how tailorable IS (TIS; MacLean, Carter, Lovstrand, & Moran, 1990; Patel, Gardner, & Paul, 1995; Stamoulis, Patel, & Martakos, 1996) satisfy the need for flexible IS that accommodate changing user requirements, so that IS will not continue to disappoint their users (Kanellis, 1996), as it is still the case.

TIS is a paradigm shift in IS development (ISD); as such it is based on a different epistemological foundation from that of the conventional ISD and, subsequently, conventional, inflexible IS. The underlying problem-solving ap-