Workflow Management:
A Barrier to Self-Management?

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Our consideration is to what extent workflow management enables or hinders employees' self-management. Introducing computer systems into organizations is associated by some people with increased monitoring and surveillance, centralization of control, and an overall reduction in quality of worklife. Modern approaches to organizational change, however, believe that computers will enhance the quality and working conditions of intellectual labor, freeing humans from routine work and make more time for creative thought (Hammer and Champy, 1993). In this section, the four environments of workflow management will be examined with respect to self-management.

Component 1: Method and Analysis Services

Workflow software may be used to automate a business process without redesigning it beforehand. However, many experts recommend the process to be reengineered first, and then supported by workflow software (Schwartz, 1993; Schnaidt, 1993; White and Fischer, 1994). For redesigning purposes, many workflow software packages come with modeling facilities which help the designer to analyze and to define the sequence of job steps in the process. This may include a special modeling technique and a graphical modeling tool. The important question is: who is to define the process and the sequence of process steps? Analyzing and designing a process by the assistance of a modeling technique and a modeling tool, requires certain skills. These are not skills that office workers usually posses and they may have little interest or time to develop these skills (Koulopoulos, 1994a). Although some process modeling techniques are developed explicitly to be used by those who work in the process, for example the Wall Graph Method (Andersen, 1989), process modeling is usually a task that is carried out by system analysts and system developers. Analytical skills are most likely to be found in the IS-function (Davenport and Short, 1990). This is, of course, a methodological as well as a technical issue, and touches on topics such as participatory design and end-user involvement. In the case of workflow management, some

vendors explicitly suggest that process modeling and design should be done by a professional *business process analyst* (Action Technologies, 1993; Schnaidt, 1993). This could either be an external consultant or a person from the IS-function within the firm. From the perspective of self-management, this is alarming because designing a business process means in fact designing a work environment. The result may be that authority and control is transferred to an external analyst. The important question then is: whose interests will this analyst seek to fulfill?

Component 2: Prototyping and Development

When the process is defined and designed, who is to develop and maintain an workflow application for the process? Most workflow software requires some sort of programming skills in order to implement and change the process structure and the processing rules. Workflow applications are written with a variety of tools. Some workflow software systems make use of scripting languages, others use 4. Generation Languages (4GL), some use conventional high level programming languages, and others use object-oriented CASE-like tools with icon-based graphical user interfaces (White and Fischer, 1994, Koulopoulos, 1994a). Although tools with graphical interface are promising with respect to end-user programming, application development is not a competence that office workers normally posses. It takes an expert to build a workflow application (Dyson, 1992) or as Koulopoulos (1994a) states: "It is important to keep in mind that many business processes are very complex and even with easy-to-use tools for workflow development, end users will not be able to develop enterprise-wide workflow applications. This is one of the wide-spread misconceptions about many new workflow tools, which use graphical tools. Although the specific tools required to create these environments are easy to use, the complexity of designing, implementing, and maintaining enterprise workflow applications still requires the involvement of information systems professionals." (p.143).

The trend in management is toward more and wider variability across organizations, becoming in this way less coherent; instead of implementing a functionally oriented organization, we are encouraged to design process oriented organizations where the process can be optimized or the particular product or customer. Self-managed teams will tend to form the least coherent organizations of all. The temptation to pool development of processes, to try to force a coherence that should not be in the organization, works against this and may degrade the performance of the organization.

Note, that it is a common fallacy to think that an organization is more coherent than it really is, especially since manual processes are virtually invisible. A careful assessment of a organization's coherence is strongly recommended before attempting to determine the cost of implementing workflow. A self-managed team might lose its ability to manage itself effectively if it is required to make use of a process shared with other teams.

Component 3: Execution and End-User

How autonomous is an employee in a work-environment where a computer system (a) automatically calls upon the employee to get him or her to perform his or her part of the process, (b) possesses the rules that enable and constrain the performance of the tasks, and (c) determines the next person in the process that the work are to be routed to? When a process is supported by a computer-based information system, the relationships between the system and the people involved are different than with conventional information systems. In a conventional transaction-oriented information system, the overall process is embodied in the organization and its individuals. The computer assists with the different steps. The individual is in control; he or she operates the system. The system does what the employee wants the system to do. When a process is supported by workflow software, the overall process is embedded in the electronic information system, and this refers out to people for detail execution of the individual process steps. Now the employee does what the computer wants him or her to do. Thus, workflow software represent a shift in focus. Traditionally, the automation of individual tasks and transactions have been important. With the focus on processes, and computer-based support for these, communication and coordination between the individual tasks becomes more important than the tasks themselves. Since workflow software is a

recent technology, and little research has been done on the social aspects of introducing this technology in the workplace, we can only speculate about the consequences for the employees. However, instead of autonomy and self-control, are we risking the introduction of what is called "the orchestration of people by machines"? (Hall, 1992, p.5).

Component 4: Management Control, Administration, and Simulation

An important aspect of the concept of self-management is the ability of employees to monitor their own work and performance. According to modern management theory, workers should monitor themselves, and not be monitored by managers (Butler Cox, 1991; Hammer and Champy, 1993). However, this could be a challenge in an environment where workflow software is used. Many such systems provide facilities that allow managers to monitor the work of individuals, and to gather statistics about individual tasks as well as for the entire process (Durham, 1992). The ability to monitor a process in order to find out instantly the processing status - who has it, and how long it has been waiting for its current process step - is a basic requirement for all but the simplest systems (Silver, 1994). Logging every process event is another feature that provides management with statistics and reports about the process. Some workflow systems provide reporting facilities directly, while others simply log events and update database tables for use by external report generators (Silver, 1994). One of the 'state of the art' workflow systems, ActionWorkflow, has, as an example, the following facilities (Action Technologies, 1993):

- Supervisory tool: "managers of a business process can obtain the business process status in his/her organization, both on demand and through generating regular reports as part of the process structure. Questions can be asked such as: "who is late in this task?"" (p.12).
- Business Process Performance Monitoring: "the overall performance of a business process can be queried and monitored. "Hot spots" and problem areas can be identified in order to improve the process. The manager can ask questions such as: "What is the average delay of the credit checking task?", "What is the average processing time during the month of April?", "What is the throughput for John Smith?"" (p.12).

When recent management theory, e.g. BPR, that workflow software developers like to associate themselves with, supposes that monitoring is something that should be done by employees and not by managers, why then are management facilities such as those described above included in current workflow software? Is there a gap between theory and practice? Monitoring work has always been considered a management activity. From a capitalistic perspective, capitalists only purchase the labor power of their employees, and it is up to management to ensure that this labor power is utilized efficiently. Monitoring employees by the help of computers is thus a logical extension and consequence, and may be too important and too useful to ignore (Attewell, 1991). It is not unlikely to believe that monitoring ambitions continue to exist and that in workflow software, managers find a powerful ally.

References

*Action Technologies (1993): *ActionWorkflow, White Paper. Components and Architecture*, Action Technologies Inc., Alameda, CA, US.

*Attewell, Paul (1991): Big Brother and the Sweatshop: Computer Surveillance in the Automated Office. In *Computerization and Controversy*, *Value, Conflicts and Social Choices,* eds. Dunlop and Kling. San Diego, Academic Press, pp. 236-256.

*Butler Cox (1991): *The Role of Information Technology in Transforming the Business*. Butler Cox plc, Research Report 79.

*Davenport, Thomas H. and James E. Short (1990): The New Industrial Engineering: Information Technology and Business Process Redesign. *Sloan Management Review*, Summer, pp. 11-27.

*Durham, Tony (1992): Workflow, groupware and re-engineering, *IT Horizon*, vol. 1, no. 3.

*Dyson, Esther (1992): Workflow, *Release 1.0,* 30. September.

*Hammer, M. and J. Champy (1993): *Reengineering the Cooperation: A Manifesto for Business Revolution*. New York, HarperCollins Publishers.

*Koulopoulos, Thomas M. (1994a): *The Workflow Imperative. Using Workflow Technology to Create Adaptive Organizations & Enduring Competitive Advance*. Boston, MA, Delphi Publishing.

*Schwartz, Jeffrey (1993): Get More From Work-Flow Ware, reprint from *CommunicationsWeek*.

*Schnaidt, Patricia (1993): Action Technologies Creates A Workflow Methodology To Make Creative Business More Efficient, *LanMagazine*. March. Reprint.

*Silver, Bruce (1994): Automating The Business Environment. In *New Tools for New Times: The Workflow Paradigm. The Impact of Information Technology on Business Process Reengineering*, eds. White, Thomas E. and Layna Fischer. Alameda, CA, Future Strategies Inc.

*White, Thomas E. and Layna Fischer (1994): *New Tools for New Times: The Workflow Paradigm. The Impact of Information Technology on Business Process Reengineering*.   Alameda, CA, Future Strategies Inc.

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