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The Impact of the Workflow Technology on the Software Development Process Model

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A Proposal of Indicators for the Selection of a Workflow Product

For the purposes of this study, the indicators have been classified into two categories in order to group the technical and organization aspects separately. Technological variables cover all the features and functionality's inherent to a Workflow product. Likewise, they include all technical requirements and documentation accompanying the product. Organization indicators encompass company aspects (such as the users using the tool, the implementation, the acceptance) as well as the supplying company (technical support, sales personnel). All these indicators were obtained from a study of each variable and indicator used to evaluate a *Workflow* tool, as defined as follows. A method is further proposed to examine these so as to obtain an integral evaluation on the Workflow software.

Technological Indicators

1. **Availability of Graphic Tools:** These tools are used to graphically design Workflow maps.
2. **Routing Capability:** This consists in the manner how a task is routed to a work function.
3. **The Establishment of Groups:** This refers to the capacity to define a "group" of individuals or work functions, that will collectively develop a task.
4. **Performance metrics:** This is the value-benefit ratio of the tool itself and its performance.
5. **The cost of the product:** This refers to the investment that has to be put in order to purchase a tool.
6. **Queue management:** The quality of declaring a queue of tasks. Instead of sending tasks an individual, they are sent to a queue.
7. **Management of events:** As it's name indicates, this refers to the management of normal and abnormal events within the Workflow operation.
8. **Work load:** This refers to the amount of work each user or group must undertake.
9. **Integration capacity:** This is the compatibility existing between the *Workflow* and other applications, technologies and database handlers (called third party software).
10. **Monitoring:** The follow-up on the *Workflow* processes and tasks.
11. **Simulation:** The ability to evaluate a *Workflow* application comprehensively and on the same computer where it was designed.
12. **Handling of forms:** The capacity to handle data in a specific format, to be sent internally within the organization.
13. **WebFlow:** The capacity to generate *Workflow* process incidents from any "Browser" in Internet or Intranet.
14. **Task management:** Tasks can be based in computers, which frequently imply the processing of transactions and tasks carried out as standard procedures, without being modified by the users.
15. **Process management:** First of all the type of business process has to be identified and located [BSI, 95].
16. **Documentation:** Documentation is considered to be any printed material describing the operation of the application (user's manual).

Organization Indicators

1. **Human factors:** Refers to the needs of the persons within the organization, those using the *Workflow* products as well as those designing and providing maintaining thereof.
2. **Process designers and analysts:** The personnel designing and analyzing a *Workflow* application must be considered equally.
3. **Sales personnel:** Prior to purchasing a tool, the company also studies the salesperson's reputation, his trajectory and recognition in the market.
4. **Technical support:** The technical backup after the tool has been purchased is an essential part of its selection process.
5. **Implementation:** The three *Workflow* implementation conditions have to be met: *Planning*, *Price* and *Concept test*.
6. **Acceptance:** This variable refers to the degree of acceptance of the *Workflow* product within the organization.

Once the indicators have been defined, the next step is to determine how to evaluate them.

The reason for this step is justified by the need to obtain the indicator value which reflects the objective evaluation of the tool, without forgetting the consumer's tastes and needs. A personalized final evaluation is thus obtained where a tool can, for instance, not have as many virtues as another, but meets the customer's needs, thereby obtaining a higher score.

The Relationship Between the Information Systems Development Process Models and the Workflow Technology

In the foregoing sections the relation existing between the *Workflow* technology and Information Systems has been explored. However, relating indicators to the IS depend on the *Workflow* paradigm used, i.e., the processes handled by different sectors within the organization. Although the *Workflow* systems base themselves on the IS to achieve the interaction of information throughout the entire company, the selection of indicators in order to evaluate the IS development tools is different from those of the *Workflow*. Fundamentally speaking, there are specific tools for the development of the IS, such as the CASE tool [Pressman, 93], in which case some indicators coincide with the *Workflow* indicators, such as the graphic and documentation functionality's. Some tools considered to be CASE tools have been designed to achieve other objectives (for instance, Visual Basic) which is merely a *Workflow* tool with the exclusive goal of developing them. This subtle difference makes indicators more difficult to compare. Nevertheless, if the *Workflow* indicators are grouped based on their type, an analogy with the IS types can be defined.

Throughout this paper the arisal of the new *Workflow* technology has been repeatedly discussed as well as its links to the IS. But, in truth, which is the major contribution provided by this technology to the Information Systems? What is its influence? In order to find the questions to these answers, the IS shall once again be studied from the standpoint of the development models, inasmuch as regardless of the methodology applied for the development thereof, the model is the abstract representation of all that the development process of any IS implies.

Thus, the need to study the IS from another perspective, that is, analyzing the contribution afforded by the new *Workflow* technology. Now, what is sought is the automation of processes and the IS are allies in this effort. There is no doubt that two terms so related between themselves must have a certain influence, whether for good or for bad, although in this case definitely it shall be demonstrated that it is for the good. For this purpose, each of the systems development models shall be related to each other, keeping in mind the effect exerted by the various activities carried out by the *Workflow*.

Comparative Analysis of the Contribution by the Workflow Technology to the Quality of the IS Development Process Models

This analysis was based on two dimensions: efficiency-effectiveness and product-process [Rojas & Perez, 95]. This analysis was based on dimensions: efficiency-effectiveness and product-process so efficiency and effectiveness may be seen from two perspectives:

- a. Product Efficiency: Information systems are efficient when they make good use of the resources, i.e.: user-friendly screens, reuse, a good response time, a compact code, optimization in the use of memory, etc. (Pressman , 93).
- b. Process efficiency: Process are efficient when information systems are developed making good use of the resources available to the organization developing the product. also when productivity is promoted, deadlines are met and cost decrease (Pressman, 93).
- c. Product Effectiveness; This is directly related to the customer's level of satisfaction with the service offered by the information system and it's ease of use (Chunie et al, 94).
- d. Process Effectiveness: Propels company towards achieving of getting close to it's objectives. A formalization of this concept is included in the Maturity Model proposed by Humphrey (Humphrey, 89).

It has already been mentioned that the organizations are changing and consequently the mode of perceiving all activities which take place within them.

Conclusions

In order to evaluate a WF tool, technical and organization variables were proposed, each one defined by a set of indicators which constitute their operational definition. The determination of the more important variables depends on the organization in question, whereby the methodology proposed to evaluate a tool is highly oriented to meeting the personal needs of each company.

The collective advantage of using WFs in the various IS development process models lies in the increase in the product effectiveness, inasmuch as the graphical representation of the routing and work coordination within a business process produces a user-friendly software with benefits previously unknown in the IS environment.

Finally a recommendation is put forward to apply the *Workflow* technology to an existing organization which would require it, making use of the proposed indicators and the evaluation methodology so as to select any of the software available in the market, as well as the process model which could best comply with the company's needs, based on the contributions offered by the *Workflow*.

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