

Development Methodologies and Users

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INTRODUCTION

There are various development methodologies that are used in developing ISs, some more conventional than others. On the *conventional* side, there are two major approaches to systems development methodologies that are used to develop IS applications: the traditional systems development methodology and the *object-oriented (OO)* development approach. The *proponents of HCI and interaction design* propose life cycle models with a stronger user focus than that employed in the conventional approaches. Before the researcher looks at these approaches, he or she needs to ponder about the method of comparing and assessing the various methodologies. There are always inherent problems in comparing various development methodologies (The Object Agency, 1993).

It is, in many instances, difficult to repeat the results of a methodology comparison with any accuracy. Since few (if any) of the comparisons cite page references indicating where a particular methodology comparison item (e.g., a term, concept, or example)

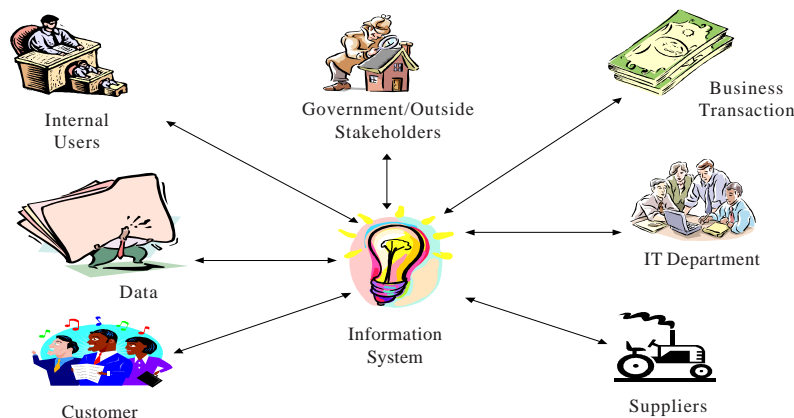
can be found in the methodology under review, it is difficult, if not impossible, to verify the accuracy of these methodology comparisons. The researchers did not compare the methodologies step-by-step, but rather in terms of whether and when they address the human element. Researchers have to acknowledge that methodologies are always in a state of flux. In theory, one thing happens, and in practice the methodologies are modified to suit individual business needs.

BACKGROUND

Development Methodologies

This section gives an overview of the three primary groups of development methodologies and the major phases/processes involved. The aim of all these methodologies is to design effective and efficient ISs. But how effective are they when the wider environment is considered? A more contemporary approach is that the information system is open to the world and all stakeholders can interact with it (see Figure 1).

Figure 1. Contemporary approach to business



Traditional Systems Development Approaches

Under the traditional development approaches, there are various methodologies. All of these approaches have the following phases in common: *Planning* (why build the system?): Identifying business value, analysing feasibility, developing a work plan, staffing the project, and controlling and directing the project; *Analysis* (who, what, when, where will the system be?): Analysis, information gathering, process modelling and data modelling; *Design* (how will the system work?): Physical design, architecture design, interface design, database and file design and program design; *Implementation* (system delivery): Construction and installation of system. We will look at the Dennis and Wixom Approach (2000).

OO Methodologies

Although diverse in approach, most object-oriented development methodologies follow a defined system development life cycle, and the various phases are intrinsically equivalent for all the approaches, typically proceeding as follows (Schach, 2002): requirements phase; OO analysis phase (determining what the product is to do) and extracting the objects; OO (detailed) design phase; OO programming phase (implementing in appropriate OO programming language); integration phase; maintenance phase; and finally retirement. OO stages are not really very different from the traditional system development approaches mentioned previously.

The OO development approach in general lends itself to the development of more effective user interfaces because of the iterative design process, although this process does not seem to be effectively managed and guidelines for doing so are often absent. The authors analyzed three OO methodologies: The Rumbaugh, Blaha, Premerlani, Eddy, and Lorensen (1991), Coad and Yourdan (1991), and IBM (1999) approaches and their relationship to the aspects illustrated in Figure 1.

HCI-Focused Life Cycle Methodologies

The HCI proponents aim to focus more on the human and end-user aspects. There are four types

of users for most computer systems: These are naïve, novice, skilled, and expert users. With the widespread introduction of information and communication technology into our everyday lives, most computer users today have limited computer experience, but are expected to use such systems.

Usability is a measurable characteristic of a product user interface that is present to a greater or lesser degree. One broad dimension of usability is how easy for novice and casual users to learn the user interface (Mayhew, 1999). Another usability dimension is how easy for frequent and proficient users to use the user interface (efficiency, flexibility, powerfulness, etc.) after they have mastered the initial learning of the interface (Mayhew, 1999).

Williges, Williges, and Elkerton (1987) have produced an alternative model of systems development to rectify the problems in the traditional software development models. In their model, interface design drives the whole process. Preece, Rogers, and Sharp (2002) suggest a simple life cycle model, called the Interaction Design Model, consisting of identifying needs/establishing requirements; evaluating; building an interactive version; and (re)designing. Other life cycle models that focus on HCI aspects include the Star Model of Hartson and Hix (1989), the Usability Engineering Life Cycle of Mayhew (1999), Organizational Requirements Definition for Information Technology (ORDIT) method, Effective Technical and Human Implementation of Computer-based Systems (ETHICS), visual prototyping and Hackos and Redish's model (1998). These methods also introduce various strategies for the development of effective user interfaces.

ASSESSING THE METHODOLOGIES

One of the problems with the traditional model for software development and the OO approaches is that they do not, in general, clearly identify a role for HCI in systems development. User interface concerns are "mixed in" with wider development activities. This may result in one of two problems: either HCI is ignored, or it is relegated to the later stages of design as an afterthought. In either case, the consequences can be disastrous. If HCI is ignored, then there is a good chance that problems will occur in the testing and maintenance stages. If HCI is

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