Towards User-Oriented Control of End-User Computing in Large Organizations

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Control is a major issue in end-user computing. The migration of responsibility, resources and authority from IT departments to user departments is frequently seen as a loss of power by the IT departments and an erosion of cost control by senior management. Reactions to this situation tend to focus on technology and formal control mechanisms. This paper contrasts such an IT-oriented view with a proposed, alternative user-oriented view. An IT-oriented view of EUC focuses on the problems it causes, the technology it requires, the methods that should be used and the means of limiting, controlling and standardizing. An user-oriented view of EUC focuses on the problems it solves, the user's task and the organizational environment. The paper advocates a shift in EUC research away from the technology and the IT issues towards the political, social and cultural issues associated with the users. EUC problems are, in the main, organizational problems requiring a research approach which addresses dynamic issues emerging over a period of time. As a basis for such research, the paper proposes a dynamic model for EUC in which the progression of EUC within an organization is visualized as a series of inference loops.

INTRODUCTION

The advent of end-user computing (EUC) catalyzed by increasingly simple technology and increasingly sophisticated users has brought with it both solutions to problems within the information technology (IT) departments and new problems. While providing one solution to the so-called applications backlog, it has created new problems of control for the IT department, which, in some cases, has led IT departments to avoid supporting EUC, and consider outsourcing end-user training, the support of PCs and networks and the help desk. EUC has led to an increase in the workload of the IT department, a growing application backlog as EUC systems require repair and support from the IT department, and increasing conflict between users and the IT department as the IT department seeks to rein in the uncontrollable proliferation of EUC.

At the heart of these problems lies the issue of control of EUC. Robson (1997, p. 382) refers to EUC as user-controlled computing. Responsibility, resources and authority over IS move away from IT departments into user departments. EUC within the organization is affected by politics, culture and power within the organization. Reasons for the proliferation of EUC may include the wish to wrest control of IT from the IT department and to concentrate power within particular departments. The shift of control over IT resources to user departments has been associated with the duplication of computer applications, incompatibility and lack of integration, and low quality systems (Taylor et al., 1998). However, over-control of EUC by the IT department leads to alienation of end-users and conflict (Beheshtian & Van Wirt, 1987). Many organizations consider the solution to the lack of control of EUC to be the exertion of more control from the center. This IT-centered view of EUC sees EUC as a problem to be solved through standards, auditing, and financial control mechanisms which seek to make end users behave like IT professionals. Literature within the EUC field emphasizes the need for management of EUC by the IT department through the use of restrictions on users (Alavi, Nelson and Weiss, 1988; Beheshtian and Van Wirt, 1987; Ngwenyama, 1993; Taylor et al., 1998).

This paper firstly defines the IT-oriented approach to EUC control based on published research (Taylor et al., 1998). This is then contrasted with a user-oriented approach to EUC. A research agenda for studying EUC development from a user-oriented point of view is developed and supported by a model. It is concluded that research in EUC needs to address user motivations and the dynamics of end-user development within an organization.

AN IT-ORIENTED APPROACH TO EUC

If inadequately managed, EUC may become a source of problems. Valuable resources within IT are diverted to support amateur users who produce badly-written systems of no strategic value. There is a constant battle to halt the prolifera-
tation of various and incompatible platforms, to control spending, and to deal with problems caused by bad design and nonprofessional approaches to application development.

The case study described in Figure 1 illustrates some of the problems. An IT department focused on mainframe and large systems alienates the individual end-user whose needs are not being met. The availability of cheap PC technology provides a means for those users to take control of their computing needs. Through word-of-mouth and by example, the use of small packages spreads throughout the organization. IT finds itself faced with needs for support from a whole class of users who were previously excluded from organizational computing. The IT department is ill-prepared to meet the needs of the changing customer base. End-users consequently seek support elsewhere including non-IT departments and informal networks (Govindaraju and Reithel, 1998).

The response of IT to such loss of control may be to adopt an authoritarian attitude by creating organizational rules for the use of PCs; for example, removing hard disks from PCs on client-server networks so that users must store applications on a central server; placing restrictions on the purchasing of computers; blocking access to organizational databases unless the EUC applications which may derive data from these databases have been audited and approved; and refusing to support nonstandard systems and software. Such IT-oriented solutions arise from the perception that the control of EUC is an IT problem. It is not seen that the IT department’s problem may be the user’s solution. Discussion of an EUC research study will further illustrate this.

The questions addressed in Taylor et al. (1998) concern some of the problems of EUC and conclude that part of the solution lies in the adoption of a systems development methodology by the end users. Based on case studies of 34 organizations, they identify duplication of effort, low quality of end-user developed systems, and the lack of training of end-user developers as key problems. The research focused on IT departments and interviewing IT staff about EUC. This work provided a widespread and intensive survey of EUC within UK organizations from an IT viewpoint. It highlights the IT-oriented focus of EUC research.

The questions addressed in this work concerned the nature of EUC development and included:
- How is the development and maintenance of end-user computing applications carried out?
- How is the quality of end-user computing projects assured?
- How are end-user computing projects supported by the IT department?

These questions reflect the concerns of the IT professionals which may not be those of the users. The researchers used the case study material to identify several strategies for using information systems methodologies in the development of end-user computing projects: End-users should develop and maintain systems to the same standards as IT departments. They should adopt a ‘cut-down’ version of the IT department’s methodology, tailored with the help of IT advisors to be contingent with the end-user department’s needs. There is an underlying assumption that the solution to EUC problems is the same as that for IT department computing problems, namely the application of methods and standards: EUC problems will be solved if end-users become closet IT professionals. The advantages given for the adoption of methodologies in EUC are the reduction of duplication of effort and maintenance problems, the improving of quality, security and recovery, and the aligning of IT department and EUC systems (Taylor et al., p93). These may have been seen as advantages from the point of view of IT who are

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**Figure 1: Case Study: BIS Health Care**

BIS Health Care is a wholly owned subsidiary of BIS UK. Based at Swindon, it is the European center for pharmaceutical manufacturing, employing 600 people on four sites. The IT Department consists of three sections:
1. Operations. Deals with running of the mainframe, management of user authorizations, and support of mainframe applications.
2. Database. Manages the Health care customer and product databases.
3. Information Center. Provides user support for in-house mainframe applications and user-programmed mainframe applications, particularly user-programmed database queries. Limited support of some PCs for technical users in the Research and Development areas has been provided in the past.

IT operations centered around the support of a mainframe running DOS/VSE. In the last year as a result of the reorganization of European operations of BIS, the mainframe has been moved to Reading. This has catalyzed a move towards increasing use of PCs, which is causing serious problems for the Information Center. The nature of the average user has changed. Rather than in-depth technical support for a few specialist packages, broad support is now required for users with limited computer knowledge. The number of calls to the Information Center has increased dramatically, leaving the staff over-stretched.

The number of PCs within BIS Health Care is unknown. Many departments have purchased PCs for staff on internal capital budgets without the knowledge of the IT Department. Requests by the IT department for information on numbers of PCs have been ignored, and new PC users are ‘emerging from the woodwork almost daily’. Relationships between users and the IT department are difficult. One user described the IT Department as ‘a bunch of user-unfriendly, customer un-focused techno-freaks.’
interested in how computing is done. They may not be of relevance to users who are interested in what is done and why.

In summary, an IT-oriented view of EUC focuses on the problems it causes, the technology it requires, the methods that should be used and the means of limiting, controlling and standardizing. A good outcome from EUC is defined in terms of the technical quality of the resulting application, the extent to which it follows the rules laid down by IT and the extent to which it integrates with IT’s technology strategy.

A USER-ORIENTED APPROACH TO EUC

If an IT-oriented view of EUC focuses on the problems that EUC causes, a user-oriented view focuses on the solutions it provides. Control remains with the users and EUC problems are treated as organizational problems, not IT problems. For example, the duplication of applications and the redundancy of data that is often associated with EUC may be seen not as a result of a lack of IT standards and methods to be resolved by the imposition of control by IT, but rather as a symptom of an organizational problem. System duplication indicates organizational failure, not lack of involvement by IT. In one hospital, duplicate systems emerged as a result of organizational culture and politics: different specialties wished to assert their autonomy through the development of their own applications, and the control of their own data, raising barriers with other specialties and management (Hackney & McBride, 1995). Duplication of effort may arise from the hierarchical structures prevalent in organizations. Solutions to the duplication of systems may involve the restructuring of the organization and the establishing of better communication channels.

End-users tend to develop computer systems to solve problems of immediate concern to them. These immediate problems need rapid solutions, so time is a significant factor. End-users cannot wait for IT to produce systems (Fahy and Murphy, 1996). End-users may be uncertain as to the solution to the problem and wish to experiment. EUC may involve establishing information needs in order to reduce task uncertainty (Blili et al., 1998). The focus of the end-user is on the goal and not the means to the goal. In user-oriented EUC, quality considerations should focus on the quality of the solution and the resulting benefits rather than the quality of the tool produced to achieve that solution. An IT-oriented focus on code quality, documentation, backup and recovery misses the point of the end-user system.

End-user training is a key issue in EUC. Igbaria and Zviran (1996) suggest that computer experience and training are key to effective EUC. Ngwenyaama (1993) recognizes the problem of end-user competence and proposes a solution based on collaborative action learning. Zinatelli et al. (1996) identify computer experience and computer training as key factors in encouraging EUC sophistication. While there is little argument about the importance of training and experience, the nature of that training is open to debate. Some authors advocate an IT-oriented view which focuses on training in the technology, methods and standards. Taylor et al. (1998) suggest training users in MicroSSADM, which is a reduced and simplified version of SSADM (Structured Systems Analysis and Design Method). Other authors advocate training in tools and IS concepts (Alavi et al., 1988; Beheshtian and Van Wart, 1987). User-oriented EUC training should focus on identifying problems and solutions and evaluating potential IT tools. Rather than training that seeks to turn an end-user into an IT professional, training should focus on making end-users better at their tasks through the effective use of information systems, whether these are existing systems or are built by the end-user. IT issues such as database management, backup and recovery should be handled automatically by the end-user computing tool or handled sensitively in the background by IT professionals.

The use of a systems development methodology by end-users may be regarded as an attempt to impose an IT culture on end-users. This culture may be foreign to the users (Ward and Peppard, 1996; Peppard and Ward, 1999). An IT-oriented view of the advantages of the use of a methodology in EUC may be interpreted by users as reasons for not using.

**Table 1. Contrast Between IT’s View and the User’s View of the Use of Methodologies in EUC.**

<table>
<thead>
<tr>
<th>IT View</th>
<th>User View</th>
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<tbody>
<tr>
<td>Reduces duplication</td>
<td>Removes my autonomy and ownership of the data.</td>
</tr>
<tr>
<td>Reduces difficulty of maintenance</td>
<td>Removes dependency on me as the system expert, reduces the extent to which I am needed to understand the problem and my creative solution to it.</td>
</tr>
<tr>
<td>Improves quality</td>
<td>Reduces creative input, reduces my ability to develop an evolving solution which reflects who I am (my role in the organization) and my ability to develop my skills.</td>
</tr>
<tr>
<td>Improves security</td>
<td>Reduces accessibility of system, reduces my ability to gain kudos by spreading my clever ideas around the department.</td>
</tr>
<tr>
<td>Improves backup and recovery</td>
<td>Increases time wasted on non-essential, technical activities which I don’t want to worry about because they are not part of the problem I am working on.</td>
</tr>
<tr>
<td>Aligns IT department and EUC</td>
<td>Allows IT to interfere with the way I work, increases IT’s power and control which I am trying to break free of, reduces my independence.</td>
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a method. Table 1 offers a possible user view of each of the advantages given for the suggested use of methodologies by Taylor et al. (1998).

A thesis of this paper is that the control of EUC should remain with the user, and that IT involvement should be limited to providing advice, perhaps through the mechanism of information centers (Guntont, 1988; DeVargas, 1989; Khan, 1992), only if requested. Attempts by IT to control EUC and enforce an IT-oriented approach are likely to generate resentment and fail. Alavi et al. (1988) suggest that EUC control should be enforced through line management and not by IT personnel. Beheshtian and Van Wert (1987) argue that, while IT should suggest standards and controls, it cannot be expected to enforce them since it is unlikely to have the authority or the resources. If IT is to be involved in EUC it may be done by relinquishing control of IT staff to the users. Govindarajulu and Reithel (1998) found that 62% of organizations in their survey had decentralized control for EUC by placing IT staff in user departments. In user-oriented EUC, control of computing activities is taken away from IT which signals that EUC is an organizational issue, not an IT issue.

The removal of EUC control from IT, or any centralized authority, may enhance the risk of complications - system redundancy, data duplication, lack of data integrity. However, this may bring with it increased creativity, the extension of organizational knowledge, and greater opportunity of the creation of strategic information systems (Davenport, 1994; McBride et al., 1997). Effective solutions may be embedded in everyday experience and local knowledge; open experimentation by end-users should be encouraged; ideas should emerge from deviations from standards and from initiatives outside IT's development agenda (Ciborra, 1994).

In summary, a user-oriented view of EUC focuses on the problems it solves, the user's task and the organizational environment. Technology is provided unobtrusively as a background tool supporting the end-user in delivering business benefit. A good outcome from EUC is defined in terms of the business quality of the solution provided by the end-user (the extent, for example, to which it reduces costs, increases efficiency and increases customer satisfaction), and the extent to which it contributes to business goals.

**RESEARCH QUESTIONS FOR USER-ORIENTED EUC**

We argue that a reframing of EUC research is required. Both the subject and the method of research need to change. EUC needs to be viewed from a user's point of view as well as an IT point of view. While IT-oriented research is important, too much of the survey work within information systems has solicited only the views of IT practitioners and largely ignored the views of users (Galliers et al., 1994). While IT-oriented research on EUC focuses on IT problems (Taylor et al., 1998), user-oriented EUC focuses on end-user's needs (Fahy and Murphy, 1996). Important areas of research concern the user's motivation, the nature of user tasks, and the role of the user within the organization. The IT-oriented research questions of Taylor et al. (1998) are replaced by user-oriented questions:

- What has motivated the user to start EUC?
- What are the user's objectives in doing some programming?
- What is the user's attitude to computing, to the IT department, to information?
- What is the primary focus of the problems the end user is tackling?
- What are the problems that EUC solves?
- How do those problems relate to the business's corporate objectives?
- Why do end-users ignore standards and guidelines?

Research in EUC should focus on motivation, attitudes, the development of experience and the triggers which cause or promote end-user computing developments. EUC emerges over time. Therefore, a research approach is required which addresses the dynamic issues and discovers the emerging patterns and influence on the end-user's activities and attitudes. Static studies based on surveys or interviews will not reveal the complex and developing interactions which change the way computing is carried out within an organization. Longitudinal studies are required which build up a history of the development of EUC within an organization and demonstrate the emerging, cyclical patterns (Weick, 1979). Static studies, even when taking a case study approach (Taylor et al., 1998; Zinatelli et al., 1996) may not provide the rich detail required to interpret EUC development.

EUC arises from the complex relationships between groups, individuals and technologies. The motivation for EUC needs to be determined and the effect of EUC on user motivation analyzed. EUC may increase satisfaction in work through providing self-expression, self-determination and intrinsic job satisfaction. Users can influence job design and determine their own information requirements. They can increase their skills, deriving satisfaction from the expression of those skills and from self-expression. It can be argued that EUC leads to greater job variety, complexity, autonomy and responsibility, which may lead to greater job satisfaction (Katz and Kahn, 1978).

Interpretive studies are required which seek to examine the dynamics of EUC. These studies must ask how end-users produce change in their environment and identify areas of organizational change requiring further attention. The user of IT in mediating such change needs to be examined. EUC studies must understand how end-users interpret their organizational environment and impose structure on it, how they differentiate between figure and ground (Weick, 1979), which is between what is seen as interesting, important and worthy of focused attention and the background information that is assumed, taken for granted or ignored. The use of EUC may
help in retaining and formalizing the end-users’ interpretive
structures; and their understanding of their roles, processes
and customers.

A DYNAMIC MODEL OF EUC

The progression of EUC within an organization may be
visualized as a series of inference loops (Weick, 1979) which
develop over time. Effects within loops are amplified and
small factors may take on great significance as EUC evolves.
The following describes a theoretical model which seeks to
explain the interactions which influence EUC within an
organization, described in terms of inference loops. The
attributes describe discrete events; the arrows connect events
and represent influence. Weick (1979) also describes these
events as variables which can have a variety of values. These
inference loops bear some similarity to the causal maps used
in comprehensive situational mapping (CSM) (Offodile and
Acar, 1993; Georgantas and Acar, 1995). In CSM, nodes
represent influencing functions or attributes and arrows repre-
sent influencing vectors and are given a signed magnitude.
However, in CSM, causal maps support decision making,
whereas Weick’s inference loops support sense making in
complex social situations within organizations.

Figure 2: Technology Development
(+ indicates one attribute causes increase in another, -
indicates one attribute reduces another.)

TECHNOLOGY IMPROVEMENT

A key element of EUC is the availability of the technol-
gy. EUC requires cheap technology that is easy to use. Figure
2 illustrates possible inference loops based on the following
attributes:

• Technology Accessibility. The ease of procurement and
  use of IT, influenced by the low cost of workstations,
  the ease of implementation, and the ease of end-user system
development.

• Technology Availability. The extent to which the end-user
  has access to PCs and workstations.

• Technology Awareness. The knowledge that the end-user
  has of what IT is available and how it can influence her
  work tasks.

• Technology Acceptability. The extent to which the use of
  IT is an accepted part of work practice and is embedded in
  the end-user’s tasks; the extent to which the use of IT is a
  natural element of the end-user’s role and the extent to
  which IT use is an organizational norm.

• Management Support. The extent to which management
  encourages the use of IT by their subordinates and the
  extent to which they encourage end-user developments
  and initiatives. This will be influenced by the management’s
  awareness of the technology.

• Technology Spread. The extent to which IT spreads with
  the organization. This might be examined by looking at
  changes in the number of users that have Ps or workstations
  on their desk.

• Technology Development. The way the technology is
  used within the organization, the maturity of information
  systems support, the development of the technology plat-
  form, the provision of better development tools.

• Technology Publicity. The extent to which the organiza-
  tion is exposed to publicity about changing technology in
  the popular and trade press, through word of mouth and
  through supplier advertising including supplier visits and
  trade fairs.

The availability of the technology is necessary but not
sufficient for the uptake of EUC. There must be group
acceptance of the technology and the establishing of an
environment in which the use of computers is seen as socially
acceptable. Social acceptability may emerge from manage-
ment support, strengthened by the rules, norms and interpre-
tations placed on the technology. We must ask: how does the
management interpret the role of information technology
within the organization and its use by end-users?

Figure 2 illustrates the positive influence of the attrib-
utes on each other. For example, increased technology
availability and technology publicity may lead to increased
technical awareness and consequently increased manage-
ment support. It should be noted that the figure also suggests
a decrease in one attribute will lead to a decrease in another.
Thus reduced technology availability and reduced technol-
ogy publicity may lead to reduced technical awareness and consequently reduced management support.

**IT DEPARTMENT INVOLVEMENT**

The role of the IT department is crucial to the development of EUC. Figure 3 identifies some suggested causal influences based on the following attributes:

- **Demand from Users.** The demand for new IT development from users as represented by development project requests, information system usage, involvement of end-users in systems development.
- **IT Department Overload.** The size of the gap between the number of requests for development, maintenance and support work from end-users and the available development resources, both staff and capital, to meet the demand.
- **IT/User Culture Gap.** The extent to which the IT and business functions within the organization are aligned in terms of strategy, organizational goals, empathy, professional respect, geographical location and knowledge of the business.
- **IT Support.** The level of IT support provided to users to enable them to fulfill their organizational roles effectively and efficiently, as perceived by the end-users themselves.

- **EUC Development.** The extent of development of end-user systems within the organizations and its departments, as suggested by the number of users involved, the amount of time spent by users in system development, the size of the resulting systems, the extent of usage of those systems and the importance of the systems to the organization.
- **Autonomy.** The extent to which the end-users have control over their IT budget, the selection of IT systems, the way they carry out business processes and the outcomes of those business processes.
- **Time Required.** The amount of time required to deliver a new information system development, in terms of actual time needed, which is affected by the size and complexity of the system, and elapsed time, which is also affected by the availability of resources and the waiting period before a project can begin.
- **Competitor Activity.** The extent to which the organization's competitors are using IT to develop new services and enhance existing services.
- **Customer Expectation.** The perception of customers as to the level of service the organization should provide and the types of service. This is influenced by what competitors are providing and by their use of IT.
- **Service Demand.** The demands placed on the organization in terms of the volume, level, quality and complexity of service provided.
- **Problem Complexity.** The complexity of the problem for which end-users are developing a computer-based solution, considered in terms of number of data items, algorithm complexity, number of processes and interactions.
- **Solution Searching.** The amount of effort expended by end-users in researching the use of information systems to provide solution to business problems.

Technology improvement may lead to increased demand for IT services. This in turn may lead to IT distancing itself from the user in order to minimize the resources being directed away from major operational IT projects. However, in a dynamic environment the effect of a factor may change suddenly. For example, while initially the lack of IT support increases EUC activity since demands for systems are not being met by IT, when the end-user subsequently hits development problems, the absence of IT support may act as an inhibitor of EUC since the user cannot proceed without advice and expertise which is not forthcoming.

The motivation for EUC lies in the need for end-users to overcome problems which affect their day-to-day processes. The complexity of the problem leads to an increase in EUC as the problem solvers seek to develop solutions which reduce complexity and make the operational situation manageable. Problem complexity may be influenced by the availability of improved technology which leads to greater demands from customers. End-users require rapid solutions to problems. Often time limitations motivate the user to undertake her own system development. Both problem com-
plexity and IT overload may be seen as increasing the time needed for a problem to be solved. Increased waiting may increase the motivation to carry out EUC.

POWER DISTRIBUTION

A third series of inference loops (Figure 4) hypothesizes the effect of EUC on power. In addition to the attributes described above, the following attributes are suggested:

- **Control of Resources.** The extent to which the end-user controls the hardware and software platforms and applications. The extent to which the end-user controls the development and usage of local computer systems.
- **Development of New Knowledge.** The rate at which the end-user takes on new knowledge and develops new skills through attending training courses and developing new systems.
- **Computer Competence.** The overall level of IT understanding of the users as shown through the usage and development of information systems.
- **Strategic Applications.** The number of applications built by the end-user which have a significant effect on the organization's business success. The extent to which particular applications built by the end-user are influential within the organization and have high visibility.
- **Power.** The perceived influence of end-users on the distribution of resources, the decision-making process, and the strategic direction of the organization.

Increased EUC may result in increased control of resources by the end-user. This may lead to increases in autonomy and power within the user community. Furthermore, the expansion of EUC may lead to increased computer competence. This may in turn lead to the development of new strategic applications by end-users which may increase their power base within the organizations.

**RESEARCH STRATEGY**

The above model is based on our understanding of the important issues in EUC, drawn from both the literature (Alavi et al., 1988; Hackney and McBride, 1995; Taylor et al., 1998) and our own experience. As such, the model is untested: research is needed to develop it. Since the model describes the influences of factors on EUC over a period of time, the progression of these inference loops may be best studied through case studies developed over time to provide an historical analysis of the progression of EUC. Interviews should be conducted with end-users at intervals over a period of time. The gathering of local knowledge, local stories and local meaning (Colville et al., 1999) will enable an understanding of these phenomena to be built up. We are not advocating that the attributes within the inference loops be necessarily treated as quantitative measurables. They may be used as conceptual guides, sensitizing the researcher to themes that should be developed in the storytelling. We see this as a way of interpreting and understanding processes, rather than developing objective measures. However, we recognize that the model of EUC may be investigated quantitatively by seeking to measure the change in each variable over time.

These studies need to recognize the importance of external influences on the development of EUC, the intimate link between EUC development and organizational dynamics, and the effect of feedback. As a result of case study research, these models may provide a practical basis for directing resources towards EUC, developing an appropriate organizational culture and optimizing the use of information and communication technologies within the organization.

**CONCLUSION**

The advent of Internet technology and the development of Intranets as the basic information infrastructure for an increasing number of organizations may accelerate a sea-change in approaches to IT management. Intranets offer end-users increased freedom from IT-oriented control of organizational computing. Instead of being dependent on centrally defined menus and systems, end-users are free to select the systems they want and to develop their own personalized information environments. End-users may develop home pages which contain information sources which are relevant to their organizational roles, rather than using company-wide systems which may not be of significant value.

The scale of this change may catalyze such a change in information management that end-user computing becomes the dominant form of organizational computing. A user-oriented view of EUC may become essential for both researchers and practitioners. The technological view of EUC control centered around standards, methods and technological audits may not be an appropriate approach to a series of problems which concern organizational context, culture and politics.

EUC problems are, in the main, organizational prob-
lems requiring a research approach which addresses dynamic issues emerging over a period of time (Watson and Wood-Harper, 1996). EUC research must draw out the organizational issues which drive EUC. A user-oriented view may enable a focus on user tasks and problems and the way IT can serve the user and solve the user’s problems, not on the technology and the way the user can serve the technology. User-oriented EUC research may lead to alternative approaches to IT development and support. This may involve the use of component technology, the development of tailorable, evolving systems, and the use of disposable software to solve immediate problems. Flexibility and tailorable may be more important than structure and method. User-oriented EUC should be judged on business value and problem-solving success, not methodological rigor. New EUC research should be business-focused rather than technology-focused, understanding the motivations for EUC and the nature of successful outcomes.

In order to gain empathy and understanding, IT departments must view the development of EUC within an organization from the user’s point of view. If the IT department understands the user’s motivation, both explicit and tacit, it may be able to provide help both technically and managerially. That help must be anticipatory and unobtrusive. This paper identifies a research need, the outcome of which will help IT departments to understand EUC and respond appropriately.

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