Conceiving Scenario-Based IS Support for Knowledge Synthesis: The Organization Architect's Design Challenge in Systems Thinking

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ABSTRACT

This paper examines the idea of creating information systems (IS) support for knowledge work through the elaboration of typical organizational scenarios. Specifically, our research is driven by a belief that the design issues of IS support must be situated in the context of social processes in which, in a specific organizational scenario, a particular group of people can conceptualize their knowledge work and hence the purposeful action they wish to undertake. This provides the basis for ascertaining what information support is needed by those who undertake that action, and how modern information technology can help to provide that support. Thereby, designing IS support for knowledge work requires attention to the purposeful action which the IS serves, and hence to the meanings which make those particular actions meaningful and relevant to particular groups of people in a particular situation. This is often facilitated by the provision of an important enquiry process constantly attended to, and integrated into organizational activities by which IS professionals could learn of the organization's continual adjustments to its changing world. Our discussion here brings forth the notion of the learning organization information systems (LOIS), through which each member of the organization is enabled to create his or her own knowledge space, which is subject to some level of description, and thus may be architected and integrated into an organization. Importantly, in order to develop the various LOIS support for knowledge work, we need the correspondent organization scenarios to contextualize the IS design. And we attribute this development philosophy to the essence of systems thinking in conceiving IS support. The paper concludes by reiterating the work of the organization architect, which entails understanding, analyzing, designing, and communicating the most relevant parts of the organization and how they fit together.

Keywords: Learning organization information systems, scenario-based design, human activity systems, systems thinking.

1. INTRODUCTION

Owing to the emerging knowledge economy [20], many an organization today is being compelled to question their entire existing operation and try to redesign it in a way that uses new technology to serve their organization better. Indeed, the excitement brought about by the Internet and the corresponding changes in organizational behavior, has prompted speculation about what the future generations of information systems (IS) support will look like for knowledge work, which is essentially subjective, eclectic, individual, context-specific and often one-off making it traditionally the most difficult to support with technology. Meanwhile, amidst the learning organization movement [14, 21] towards empowering responsible organizational members to undertake the more challenging roles characteristic of the knowledge-intensive organizations, there is a strong need to share knowledge in a way that makes it easier for individuals, teams, and enterprises to work together to effectively contribute to an organization's success. Therefore, we are often confronted with the question of how to design IS in support of the learning organization (LO) [17, 19]. Example support could include such features as: structured and unstructured dialogue and negotiation among colleagues; creative synthesis of knowledge in integrating working and learning; documentation of data, information and knowledge as it builds up; and retrieval of recorded data, information and knowledge, as well as access to individuals with the necessary knowledge resources. To this end, the acronym 'LOIS' (Learning Organization Information System) [26] as applied to an organization is often used as a collective term representing the conglomeration of various information systems, each of which, being a functionally defined subsystem of the enterprise LOIS, is distinguished through the services it renders. Collectively, a LOIS can be considered as a scheme to improve the organization's chances for success and survival by continuously adapting to the external environment. Consequently, we stand a better chance of increasing social participation and shared understanding within the enterprise, and thus foster better learning. Although we believe that this positioning of LOIS represents a significant vision of a future generation of information systems, there are serious questions to be addressed in connection with design approach used to characterize knowledge capture and sharing within the enterprise. All these have consequences for organization transformation in such areas as strategies, structures, processes, systems and people.

2. THE IDEA OF SCENARIO-BASED DESIGN

According to John Carroll [3, 4], scenarios are useful in coordinating the central task of system development which includes understanding people's needs, envisioning new activities and technologies, designing effective software and drawing general lessons from systems as they are developed and used. In particular, scenarios evoke task-oriented reflection in design work by making human activity the starting point and the standard for correct problem requirements, seeing their work as artifacts-in-use, and bearing in mind the external constraints in

the design process. More importantly, scenarios help designers analyze the varied possibilities through many alternative views of the usage situations. Thereby scenario-based design could be considered as a framework approach, which draws on the incrementally accrued knowledge and experience of the designers to manage the flow of design activity and information in a rubric of task-oriented abstractions. In the design of LOIS support, we recognize that our knowledge is the amassed thought and experience of innumerable minds. Thus, any LOIS design should help capture and reuse those experiences and insights in the enterprise. That is also the idea of enabling organizational learning [16], supported by an organizational memory [11] – the means by which knowledge from the past is continuously brought to bear on present activities. It should possibly result in higher or lower levels of organizational effectiveness [22] in terms of the decision-making, organizing, leading, designing, controlling, communicating, planning and motivating functions of the management process. Moreover, the cultivation of a communal knowledge space – one that develops new forms of knowledge from that which exists among its members, is fundamental to any enterprises that intend to establish, grow and nurture a learning organization [15], where individuals grow intellectually and expand their knowledge by unlearning inaccurate information and relearning new information. Consequently, the idea of the learning organization, and thus the subsequent LOIS support, has tremendous implications for the use of scenario-based design.

3. DESIGN IMPLICATIONS FOR KNOWLEDGE WORK

Designing LOIS support for knowledge work through scenarios is not an easy or routine kind of problem solving. First, there is often an incomplete description of the problem to be addressed, but it is always necessary to identify the relevant description of the current situation that is to be altered by the design work. Second, the problem space of allowable and possible moves is often not determined beforehand. In fact, there is often no guidance on possible design moves in reasoning from a description of the current situation toward an improved version of the situation. Third, design problems themselves characteristically involve many trade-offs; any move creates side effects, such as impacts on human activities. Fourth, design requires many kinds of knowledge and skill; it typically requires teamwork, problem decomposition, and a lot of management. Accordingly, we have a number of issues to be considered in the IS design for knowledge work [3, 4]: clarifying the problem, identifying design moves, envisioning the solution, recognizing trade-offs and dependencies, and anticipating impacts on human activity.

Clarifying the Problem

This is the first step in design problem solving: What is wrong with the current state of affairs? What is needed? What could be improved? The standard approach in software development is to carry out some sort of requirements analysis. This analysis may initially be couched as a fairly high-level statement provided by the client – the person or organization that commissioned the design work. Such a statement may also be developed by, in collaboration with, or from observation of prospective users of the system to be developed; or it may be based on the hunches of the designers. Nonetheless, this initial requirements statement must be successively elaborated and refined to obtain a precise description of the situation that highlights the specific needs that the design work will address.

Identifying Design Moves

To the extent that a design problem can be clarified, we need to move toward a solution. Typically, we do not know what specific moves are possible or useful a priori; part of the creativity of design is discovering the relevance and effectiveness of a move that has not been tried before. But this is obviously difficult. Much work on design methods has focused on describing what are sometimes called weak decomposition. The basic strategy is to organize an overall design problem into a set of component sub-problems, each simpler than the original problem. This process is re-iterated until the sub-problems are easily solvable, namely, as examples of known problems with known solutions. Nevertheless, starting design work with weak decomposition tends to simplify problems in ways that implicitly discourage creative solutions, bearing in mind that requirements typically change through the course of design work. Today, it is often experienced that an actively synthetic design method of planning by doing that is complementary to the analytic techniques of problem structuring and decomposition, is needed. Designers, nonetheless, might want to make provisional design moves within a concrete design space, explore and develop requirements, and test the consequences of such moves before committing to them.

Envisioning the Solution

The objective in design is to specify a solution that satisfies the needs identified in the current situation. The design solution is typically described by such artifacts as: the technical drawings, diagrams and written specifications, which provide detailed guidance for those who will implement the design and for those who subsequently may debug, enhance, or otherwise maintain the designed solution. However, such specifications can be obstacles to the full participation in the design process of clients and prospective users, who speak the language of the use situation, but not the language of software specification often characterized by rendering the vivid and open-ended designs as stilted enumerations of features and functions. After all, the essence of an interactive IS support is that it is dynamic and responsive: how can this be merely captured in a static list of features and functions? Henry Dreyfuss, in his 1955 book *Designing for People* [12], energetically confronts these points. He wanted to present a design as something tangible, sharable with clients and prospective users; hence, he created a design paradigm of active, mutual engagement in which designers and their clients and users work in close coordination, noticing the world as it is and responding with mock-ups of the world as it might be.

Recognizing Trade-offs and Dependencies

Creating a design solution involves subtle trade-offs and dependencies regarding functionality and usability. The sheer number of important details and their many interactions is an intriguing challenge of design. Often, structured design methods seek to manage interactions by grouping requirements and constraints to specify sub-solutions to sub-problems, and thereby to build up a comprehensive design solution. Understandably, the problem decomposition imposed through such methods shapes the ultimate solution, and may in fact conceal important trade-offs and dependencies. Stated another way, specifications that are developed strictly sub-problem by sub-problem cannot ensure an overall coherence in the design. Dreyfuss [12] rendered a more concrete perspective on the issue of managing trade-offs and dependencies. He stressed the importance of empirical methods for instantiating and

evaluating trade-offs and dependencies. These methods rely on the development of design mock-ups and observations of them in use. The understanding gained through these empirical means could then be used to refine the design solution.

Anticipating Impacts on Human Activity

Designed artifacts have a myriad of consequences for people – some intended, some unintended, some that empower people and enrich their lives, and some that frustrate and punish people. They are complex agents of change; they alter our tasks and our social structures; they have both positive and negative effects, often at the same time and in virtue of one another. Historically, these complications work themselves out through trial and error. Doing better than this often requires sophisticated analysis of use situations coupled with flexible strategies to guide an iterative process of refinement and redesign. Typically, if we think of each design project as an isolated activity, we will not be able to see enough of the long-term consequences for people. However, few system designs are completely novel, and we do know some things about human activity and experience that appear to be relevant across many types of situations. Thus, in the words of John Carroll [3], there is the possibility of what might be called cumulative design, in which we observe the human impacts of past designs through time and attempt to direct that knowledge toward guiding the development of future designs.

4. SYSTEM STUDY BASED ON DESIGN SCENARIOS

Design projects often require the collaboration of team members possessing a variety of knowledge and skill. Yet, organizing a group of individuals to work together is a difficult problem in any type of undertaking. It takes time for team members to pool their knowledge in discussions, negotiate decisions, coordinate their efforts, and incorporate the work of others in their own efforts. In the design of interactive LOIS systems, there is always trade-off between nurturing vision and coherence in a design, and managing complexity by dividing the work among many designers. Through the appropriate use of design scenarios, the problems of designing LOIS support should never be thought of as something to be defined once and for all, and then implemented. Instead, it must be based on the observation that all real-world organizational problem situations contain people interested in trying to take purposeful action. Pragmatically, the idea of a set of activities linked together so that the whole, as an entity called the human activity system (HAS) [5, 8], could pursue a purpose, could indeed be considered as a representative organizational scenario for LOIS support, which is never fixed once and for all. In practice, given a handful of the HAS models, namely, models of concepts of purposeful activity built from a declared point of view, we could create a coherent structure to debate about the problem situation and what might improve it [10]. Subsequently, from the IS architect's point of view, while conceiving the necessary IS support to serve the specific organizational knowledge requirements, the fundamental ideas could be integrated as follows: Always start from a careful account of the purposeful activity to be served by the system. From that, work out what informational support is required (by people) to carry out the activity. Treat the creation of that support as a collaborative effort between technical experts and those who truly understand the purposeful action served. Meanwhile, ensure that both system creation and system development and use are treated as opportunities for continuous learning. In this way, models of purposeful human activities can be used as scenarios to initiate and structure sensible discussion about information support for the people undertaking the real-world problem situations.

5. IS DESIGN AS A PROCESS OF LEARNING

Undeniably, setting up an organizational information system is a social act in itself, requiring some kind of concerted action by many different people; and the operation of an IS entails such human phenomena as attributing meaning to manipulated data and making judgments about what constitutes a relevant category. In this regard, the use of scenarios in the creation of IS support, can be seen as a process which learns its way to the meanings which characterize an organizational context. This idea of learning the meanings, by which people sharing a human situation seek to make sense of it, is a significant feature of Soft Systems Methodology (SSM) [8]. The important point is that we must not lose sight of the fact that the HAS models are not would-be descriptions of parts of the world. Instead, they are abstract logical machines for pursuing a purpose, defined in terms of declared worldviews, which can generate insightful debate when set against actual would-be purposeful action in the real world. The implicit belief behind constructing the HAS models is that social reality – what counts as facts about the social world inside an organization – is the ever changing outcome of a social process in which human beings continually negotiate and re-negotiate, and so construct with others their perceptions and interpretations of the world outside themselves, and the dynamic rules for coping with it. Researching social reality in the context of IS development, then becomes an organized discovery of how human agents make sense of their perceived worlds, and how those perceptions change over time and differ from one person or group to another. In the process, we do not expect to discover unchanging social laws to set alongside the laws of natural sciences. Rather, an organization is perceived as entailing readiness on the part of its members to conceptualize it and its internal and external relationships in a particular way, though it is also understood that such readiness changes through time, sometimes incrementally, sometimes in a revolutionary way, as perceptions and membership change. The basic shape of the scenario-based learning approach could simply be described as follows: Find out about the problem situation that has provoked concern; Select relevant concepts that may be integrated into different human activity systems; Create HAS models from the relevant accounts of purposeful activity; Use the models to question the real-world situation in a comparison phase. The debate initiated by the comparison normally entails the findings of accommodations between conflicting interests, that is to say, situations that may not satisfy everyone, but could still be lived with, enabling action to be taken. Oftentimes, the purpose of the debate is to collectively learn a way to possible changes (improvements) to the problem situations, by activating in the people involved, a learning cycle, which counts on their ability to articulate problems, to engage in collaboration, to appreciate multiple perspectives, to evaluate and to actively use their knowledge. It is worthwhile to notice that taking the purposeful action would itself change the situation, so that the whole cycle could begin again, and is in principle never ending. Likewise, through scenarios, IS architects could provide help in articulating the requirements of specific IS support through operating the learning cycle from meanings to intentions to purposeful action among the specific group of organizational members.

6. AN ORGANIZATION SCENARIO OF KNOWLEDGE SYNTHESIS

Essentially, the use of scenarios in IS work always assumes that the purpose of creating an organized IS, is to serve some real-world action; namely, organized provision of information is always linkable to action [6], say, to deciding to do things, doing them, observing and recording the results – and then if necessary, modifying the deciding, doing and recording. Thus, designing an IS will require attention to the purposeful action which the IS serves, and hence to the meanings which make those particular actions meaningful and relevant to particular groups of actors in a particular situation. In other words, if we wish to create an appropriate IS in the exact sense of the phrase, we must first understand how the people in the situation conceptualize their world. We must find out the meanings they attribute to their perceptions of the world and hence understand which action in the world they regard as sensible purposeful action, and why. What follows is our appreciation of three important knowledge processes considered as indispensable in the daily operations of the learning organization: the personal process, the social process, and the organizational process. Of particular interest here is the idea of appreciative settings, which according to [23, p.98], could refer to the body of linked connotations of personal interest, discrimination and valuation which we bring to the exercise of judgment and which tacitly determine what we shall notice, how we shall discriminate situations from the general confusion of ongoing event, and how we shall regard them. The word "settings" is used because such categories and criteria are usually mutually related; a change in one is likely to affect others.

The Personal Process

Consider us as individual conscious of the world outside our physical boundaries. This consciousness means that we can think about the world in different ways, relate these concepts to our experience of the world and so form judgments which can affect our intentions and, ultimately, our actions. This line of thought suggests a basic model for the active human agent in the world. In this model we are able to perceive parts of the world, attribute meanings to what we perceive, make judgments about our perceptions, form intentions to take particular actions, and carry out those actions. These change the perceived world, however slightly, so that the process begins again, becoming a cycle. In fact, this simple model requires some elaborations. First, we always selectively perceive parts of the world, as a result of our interests and previous history. Secondly, the act of attributing meaning and making judgments implies the existence of standards against which comparisons can be made. Thirdly, the source of standards, for which there is normally no ultimate authority, can only be the previous history of the very process we are describing, and the standards will themselves often change over time as new experience accumulates. This is the process model for the active human agents in the world of individual learning, through their individual appreciative settings. This model has to allow for the visions and actions, which ultimately belong to an autonomous individual, even though there may be great pressure to conform to the perceptions, meaning attributions and judgments that belong to the social environment.

The Social Process

Although each human being retains at least the potential selectively to perceive and interpret the world in their own unique way, the norm for a social being is that our perceptions of the world, our meaning attributions and our judgments of it will all be strongly conditioned by our exchanges with others. The most obvious characteristic of group life is the never-ending dialogue, discussion, debate and discourse in which we all try to affect one another's perceptions, judgments, intentions and actions. This means that we can assume that while the personal process model continues to apply to the individual, the social situation will be that much of the process will be carried out inter-subjectively in discourse among individuals, the purpose of which is to affect the thinking and actions of at least one other party. As a result of the discourse that ensues, accommodations may be reached which lead to action being taken. Consequently, this model of the social process which leads to purposeful or intentional action, then, is one in which appreciative settings lead to particular features of situations as well as the situations themselves, being noticed and judged in specific ways by standards built up from previous experience. Meanwhile, the standards by which judgments are made may well be changed through time as our personal and social history unfolds. There is no permanent social reality except at the broadest possible level, immune from the events and ideas, which, in the normal social process, continually change it.

The Organizational Process

Our personal appreciative settings may well be unique since we all have a unique experience of the world, but oftentimes these settings will overlap with those of people with whom we are closely associated or who have had similar experiences. Tellingly, appreciative settings may be attributed to a group of people, including members of a team, or the larger organization as a whole, even though we must remember that there will hardly be complete congruence between the individual and the group settings. It would also be naïve to assume that all members of an organization share the same settings, those which lead them unambiguously to collaborate together in pursuit of collective goals. The reality is that though the idea of the attributed appreciative settings of an organization as a whole is a usable concept, the content of those settings, whatever attributions are made, will never be completely static. Changes both internal and external to the organization will change individual and group perceptions and judgments, leading to new accommodations related to evolving intentions and purposes. Subsequently, the organizational process will be one in which the data-rich world outside is perceived selectively by individuals and by groups of individuals. The selectivity will be the result of our predispositions to 'select, amplify, reject, attenuate or distort [18, p. 212] because of previous experience, and individuals will interact with the world not only as individuals but also through their simultaneous membership of multiple groups, some formally organized, some informal. Perceptions will be exchanged, shared, challenged, argued over, in a discourse, which will consist of the inter-subjective creation of selected data and meanings. Those meanings will create information and knowledge which will lead to accommodations being made, intentions being formed and purposeful action undertaken. Both the thinking and the action will change the perceived world, and may change the appreciative settings that filter our perceptions. This organizational process is a cyclic one and it is a process of continuous learning, and should be richer if more people take part in it. And it should fit into the context of the learning organization scenario.

7. AN ORGANIZATION MODEL FOR IS DEVELOPMENT

According to [5, 7], the main role of an information system is that of a support function in an organizational setting. More specifically, the IS function is to support people taking purposeful action by indicating that the purposeful action can itself be expressed via some activity models, which are called the HAS models from the perspective of SSM [8, 9]. As an account of the context of IS work, we now consider a *process* model in which *organization meanings* are created; hence, the idea of the POM model. Briefly, there are seven elements in this model, worthy of our attention. Element 1 consists of people as individuals and as group members in the organization. Element 2 is the data-rich world people perceive selectively through their various taken-as-given assumptions. Element 3 is the organizational discourse in which meaning is created inter-subjectively. Element 4 denotes the attributions of meanings which yield the necessary information and knowledge through a very complex social process involving perhaps, persuasion and coercion. Element 5 represents the assemblies of related meanings, intentions and accommodations among conflicting interests. Element 6 represents the purposeful action, best thought of and expressed as a managing of relationships. Element 7 covers the formally organized information systems based on various information technologies (IT) which support organization members in conceptualizing their world, finding accommodations, forming intentions, and taking actions (elements 5 and 6). In fact, the POM model is conceived not as a descriptive account of the specific organization process, but a defensible device with a structure to make sense of life in real organizations and their provision of IS [25]. In a particular situation, the initial focus might, for example, be on action (element 6). It might be found to be inadequately supported by the IS in element 7, or it might be found that some boring action previously taken by people could now be automated. In another situation, a new development in IT (element 7) might cause a re-think of possible knowledge (element 4), intentions (element 5), and action (element 6). Meanwhile, from an IS architect's viewpoint, elements 1-5 describe the organizational context in which people create meanings and intentions; this leads to purposeful action being taken (element 6). Element 7 provides what would usually be described as information support. Thus, we have a process (elements 1-5) and a form of support (element 7) for a main outcome of that process, namely, the purposeful action (element 6), which people take as a result of the process. In general, the POM model should have pathways, which link all elements with one another; namely, there is no clear starting point for use of the model. However, the cycle might be dominated, in particular circumstances, by changes in (or changed perceptions of) any of the elements in the model.

8. SYSTEMS THINKING AND SCENARIO-BASED DESIGN

One of the most obvious characteristics of human beings is our readiness to attribute meaning to what we observe and experience in the world outside ourselves. What is being of interest is that we perceive the world through the filter of – or using the framework of – the ideas internal to us, but that the source of many or most of those ideas is in fact the perceived world outside. Thus, the world is continually interpreted using ideas whose source is ultimately the perceived world itself, in a process of mutual creation. As human beings, we enact this process every day, usually unconsciously. But, if we now add the thought that we are able consciously to think about our own mental processes, then the ideas we have can be used explicitly in some methodology to interpret perceived reality [9]. Indeed, this is an instance of holistic (or systems) thinking, implying the application of consciously organized thought, where the word 'systems' has been used to imply the concept of a whole entity, carrying such characteristics as a single whole (emergency and hierarchy), properties which have no meaning in terms of the parts of the whole [6]. In examining real-world scenarios characterized by purposeful action, we can always think about the world in different ways, relate these concepts to our experience of the world and so form judgments, which can affect our intentions and, ultimately, our actions. In scenario-based design, when a real-life problem situation arises, our typical approach of enquiry is to formulate some HAS models of purposeful activities, which it is hoped will be relevant to the real-world situation, and use them by setting them against perceptions of the real world in a process of comparison. That comparison could then initiate debate leading to a decision to take purposeful action to improve the part of real life, which is under scrutiny. This description of scenario-based design represents a stream of systems thinking (or soft systems thinking, to be precise), which is essentially logic-driven. It uses the purposeful models as logical machines, which can be used to question the real world. In recent years, a second stream of enquiry, called the cultural stream, has been developed, which interacts with the logic-driven stream. The cultural stream basically comprises three examinations of the problem situation. The first looks at the intervention of the situation itself, by the so-called improvers of it, the users of scenario-based design. The second examines the situation from the angle of social concerns. The third investigates the situation from the angle of political concerns, the power-based aspects of human affairs. It is clear that the logic-driven stream and the cultural stream will interact, each informing the other. Which HAS models are actually found to be relevant to the people in the problem situation will inform us of the culture we are immersed in. Also knowledge of that culture will help both in selection of potentially relevant systems and in delineation of changes which are culturally feasible. Here, it should be noted that what in the end turns out to be feasible will itself be affected by the learning generated by the project itself: human situations are hardly static. Besides, changes implemented as a result of the use of scenarios certainly would change the problem situation as originally perceived, and in the new situation, the cycle of learning stimulated by the same methodology can begin again. This is in principle never ending, and ending a system study is indeed an act of discretion. In retrospect, it is our experience that the working of scenario-based design, owes its methodical foundation to soft systems thinking, and especially, soft systems methodology (SSM), whose essence is to take seriously the subjectivity, which is the crucial characteristic of human affairs, and to treat this subjectivity at least in a way that could be characterized by intellectual rigor.

9. THE RISING IMPORTANCE OF ORAGNIZATION ARCHITECTING

In the previous sections, we examined the organizational context in which most work on information systems is performed, and discovered the idea of an organization scenario to be subtler than we usually bother to acknowledge. In fact, through the perspective of learning organization [14, 16, 19, 21], many people increasingly feel that being a member of an organization is more like being part of a family than being the

servant of a rational machine. For such people, social reality is constantly being constructed and reconstructed in a social process in which meanings are negotiated. For them, an organization does not exist as an independent entity but is part of sense making by a group of people engaged in continuous dialogue. This makes the idea of information, and IS support much more problematical, since information is now obviously related in some profound way to meaning attribution and sense making. Equally, this view will not automatically embrace would-be-scientific methods of investigation and research, based on systematic data collection aimed at hypothesis testing. Evidently, it will seek alternative processes of inquiry in such areas as interpretative action research [1, 2, 13]. All these represent important challenges for the organization architect whose major responsibility includes designing structures across organizational boundaries, engineering processes into strategic capabilities, developing individual competencies through organizational learning, aligning information technology with organizational imperatives, and integrating the disparate pieces that constitute the organization. Obviously, architecting such management practices, which could give the organization its depth and means for handling change and challenge, is not without difficulties. The availability of suitable IS support could help; however, its creation must be carefully examined by devising appropriate models of purposeful activities, whose exploration through design scenarios as discussed in this paper, represents one of the major challenges in the job of organizational architecting.

10. REMARKS OF CONTINUING CHALLENGES IN IS WORK

If information is interpreted as what we get when human being attribute meaning to data in a particular context, then an information system (IS), in the full sense, will be a meaning attribution system in which people select certain data out of the mass potentially available and get them processed to make them meaningful in a particular context in order to support people who are engaged in purposeful action [5, 7, 8]. Soft systems thinking offers an important insight into this role of information systems, which are not created for their own sake, but should serve or support people engaged in what for them is meaningful action under the scenario of concern. Namely, it is to see information systems as systems, which attribute meaning to selected data in which someone has an interest, by processing it – usually by means of IT – in a way which makes it meaningful to users of the system. It should also be of interest to note that meaning attribution can never be completely institutionalized, which will continue to make IS a rich and fascinating area of work. Meanwhile, although it is accepted that technological development may well create new possibilities which may lead to a re-thinking of the organizational scenario, it is a fundamental proposition of systems thinking that in order to conceptualize, and so create a system which serves, it is first necessary to conceptualize that which is served, since the way the latter is thought of will dictate what would be necessary to serve or support it. The starting point of this work, then, is a re-thinking of what is entailed in providing informational support to purposeful action in the real world of organizational sceanrios. From that, a clearer view emerges of the nature of information systems and IS development as a field of study.

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