ECSCW '91 Small Workshop Abstracts

1) Small changes that make a big difference

2) Whither GDSS in CSCW?

3) CSCW Design Methodologies

Proceedings of the Second European Conference on Computer-Supported Cooperative Work
Bannon, L., Robinson, M. & Schmidt, K. (Editors)
September 25-27, 1991, Amsterdam, The Netherlands

ECSCW '91 Small Workshops

Small changes that make a big difference

Organiser: Mikko Korpela

The workshop focuses on how CSCW technologies and applications can have the widest implications on the everyday work of large groups of people, with simple modifications or additions to existing technologies and practices.Where to find voluminous work procedures in which even a slight improvement would have a big effect? How to analyze existing cooperative practices in order to find gaps in the computer support for them? How to build on existing technologies, how to "keep it simple"? Simply, how to make "CSCW for the people"?

Joan Greenbaum
City University, New York, USA.

Most people see changes in the computer world as events that occur very rapidly. But those of us in the computer field know that in the day-to-day practice of developing computer systems, as in most practices, changes are slow, and in fact quite small. Our work is not to bemoan the fact, but rather to celebrate some of the changes taking place and to point to areas where further small, inexpensive and uncomplicated changes can to take place. We emphasize the importance of using workshops and group interaction methods to help system developers act as facilitators in enabling people in workplaces to talk about their work and their expectations about future systems.

Scandinavian approaches to systems design include a wide range of strategies for people who use computers and computer system developers to work cooperatively towards making decisions about computer support. These strategies stress the importance of understanding the nature of work and the

organizational setting. The applicability of the Scandinavian approaches in the United States is still open for discussion. Our focus is on an American consulting project where a variety of workshop techniques were used to help staff members in the organization to better articulate their need concerning desktop hardware and software. We would like to use this example to demonstrate ways that workshops "break the ice" in opening up organizational discussions, and also raise fundamental questions concerning differences between the needs of management and the needs of the staff.

Mike Hales
Brighton Polytechnic, England

This contribution refers to a model for human centred ('HC') development of information systems in bureaucratic organisations - the Information Systems Use (ISU) design model. A main function of the model is to underline that HC systems development is not simply a matter of 'participation'. The contribution will discuss weaknesses of a merely participatory definition of HC, referring to an office technology case study in local government.

Starting from the assumption that it is possible and necessary to design *use practices,* as distinct from technology systems, the ISU model identifies three design dimensions: participative structures and styles for design practices; jobs and careers, attending to equal opportunity issues; management roles and development programmes in skills required to manage HC development.

All this involves challenges to the established order of bureaucratic institutions. In other words, *effective design is political.* There is nothing intrinsically 'small' about this kind of design activity. But the approach is associated with smallness in two ways: the scale of the technology involved, to produce major changes, may be small (e.g. 'appropriate' or low-tech technology); attention to details is essential - stylistic and cultural matters that enable marginalised groups and individuals to appropriate some of the technology-related action, in order to establish and assert their own needs.

Maisa Antti-Poika
Peijas-Rekola Hospital, Finland

In Finnish hospitals and health centers, thousands of people work cooperatively daily, more or less supported by shared computerized Medical Records, ordering laboratory tests and returning test results by computer, and so on. In a Finnish district hospital and a primary health center, small

extensions to the "shared-database CSCW" were used to enhance cooperation.

Technically, changes to existing systems were small. Standard electronic mail is used as a tool to transfer patient referrals from the general practitioners to the specialists (from health center computer to hospital computer), to facilitate electronic consultation within the hospital, and to communicate lab orders and results. The electronic orders and referrals have dramatically speeded up patient-related communication between different health care units. Electronic requests for additional information have decreased "unnecessary" appointments (i.e., need for patients to travel), and enabled new forms of interaction between hospitals and health centers.

To nurses and doctors, both external and in-house consultation has increased, and they spend a lot of time replying to consultation requests. Nurses have to do more indirect care, through "computerized paper work", compared to the situation before. Apparent savings in costs and travelling, together with more cooperation amongst the staff, were achieved by minor extensions. Privacy hazards, excessive computer work, and the complexity of the overall system are potential risks. More attention is needed to this kind of "everyday CSCW".

Mikko Korpela
University of Kuopio, Finland

Feminist research has shown how important it is to use the viewpoint of specific people with faces, histories, gender, ethnicity, and class. In assessing technology like CSCW, one should ask how well it promotes the basic needs of specific groups of people. On a global scale, the most useful technology would serve low-class women of the Third World in their daily struggle for a better life. Conversely, the least useful technology goes where the money is, as *CSCW Toys for the Rich White Boys*. Looking at CSCW applications represented in various conferences, there is a lot of multi-hyper-giga technology, some goodies for the designers themselves, and just a few pieces of technology for the "Middle-Income White Working Women". Not much of it has anything to offer to the majority of humankind.

Simple electronic mail, for instance, would be very useful in a context of poor telephone lines, bad roads and slow mail. It would not perhaps be used by the "Poor Black Working Woman" herself, but facilitate services she and her children need. E-mail technology is, however, designed for an environment where each node has a systems administrator. Small changes are needed to make it robust enough for developing-country use. But who is interested if one can develop costly hype for those who can pay?

CSCW Design Methodologies

Co-organisers: Gro Bjerknes & Karl Kautz

Tone Bratteteig
University of Oslo, Norway

As a system developer I see some important differences between analysing the technical and the organizational and social basis for a CSCW system and a ``traditional'' computer system. A "traditional" computer system may function as a medium for sequential communication between human beings, whereas a CSCW system supports simultaneous communication, i.e. cooperative and communicative situations. From my point of view, the interesting features of CSCW systems are concerned with the fact that time and space are important attributes of cooperative situations.

When two or more people are working on the same task at the same time independent of their location in space, the computer system may function as a distributed support of work. A relevant analysis of work would be a description of the communicative parts of the work situation. As a tool for cooperating on a work task, the computer system should present the ``raw material'' of the work task to all the users. In addition, the system should support communication about the task, simulating features of a face-to-face communication situation (e.g.several windows, sound, video). When a group of people working on the same task shares one physical computer interface, the computer system functions as a representation of the work rather than a tool.

Gro Bjerknes and Karl Kautz
University of Oslo, Norway

General Characteristics and Specific Implementations of Cooperation --- A Study of two different Work Settings: On the basis of comparing cooperation and computer support in system development projects and in nursing, we have drawn the following conclusions :

It seems that cooperation can be discussed and described in terms of goals, organization of work, communication and overview.These factors interpenetrate in a complex way.

Moreover, we cannot expect to find two similar cooperation settings, due to the fact that there always will be local differences in goals, organization of work and communication.

This means that computers only to a small extent can support cooperation, and only if the anomalies lie in connection with information exchange and recording. Even then, it can be more beneficial to do something with e.g.- the task structure than to introduce a computer system.

For the moment we can forget about building general CSCW-systems, such as meeting systems that can be used in many disciplines or fields, as the local setting will require specific support.

Although there are no general computer systems, there may be common denominators in all cooperation settings. Knowledge of common denominators can be used for analysing cooperation settings and in this way contribute to building computer support-systems for the situated cooperation settings.

Thomas Schael & Buni Zeller
University of Technology (RWTH), Aachen, Germany and RSO, Milan, Italy

RSO developed the TicutomiNet methodology to analyze, evaluate and design cooperative networks. It is based on two of RSO's socio-technical guidelines:

i) viewing the design of a system as a never ending innovative process in an enterprise. It is composed of planning, design and field test.

ii) supporting choices for socio-technical systems on the basis of the consonance among the enterprise's model, its organization and the skills of those involved; and the appropriateness of performance characteristics of the system environment to the socio-technical system.

The methodology aims to:

i) support the description of characteristics and critical aspects of cooperative networks.

ii) identify organizational and technical key-components supporting cooperative work in the system.

iii) identify, analyze and re-design work flows in cooperative processes.

The network is analyzed as a non-permanent organizational form. The methodology helps develop a framework to analyze cooperative work and a common language among the persons involved in its application. It guides the social process during application.The final result is the design-specification for Information Systems to support different types of cooperation (coordination, collaboration and co-decision) within the workflows of business processes.The methodology has been applied in different Italian companies. Some results will be discussed in the workshop.

C. Bignoli, F. De Cindio, C. Simone, A.M. Zanaboni
University of Milan, Italy

The development process needs support, yet an a-priori defined process model is difficult for designers to follow. Our idea is that such a support should be able to understand what goes on in communications inside the design team in order to construct a map of the distributed behaviours, and to give this map back to the people involved in order to let them know the overall situation in which they cooperate. Moreover, it should be able to recognize regularities in people behaviour and to support their interactions.

Our proposal is therefore to start from communication support in order to design a software development process support, and then to integrate other specific aspects in this framework. Thus process models emerge from interactions among people according to their role, their expertise, their ability in orienting their partners and their past experience in working together.

We propose the functionalities of CHAOS (Commitment Handling Active Office System), a knowledge based system whose basic characteristic is a learning capability; UTUCS (User to User Communication Support) whose focus is the design of a conversation handler interfacing communication media other than e-mail; CHILE (Conversation Handling Individual Local Environment), which handles user defined rules to manage the communication flow on the user side.

Whither GDSS in CSCW?

The following set of position statements are the basis for a small workshop discussion on Group Decision Support Systems.

Joost Zuurbier
Twente University, The Netherlands

GDSS Design: The first decision support systems (DSS) date back to the '60's. In the seventies, there was an awareness of management problems not covered by systems like EDP and MIS. The first comprehensive text on the subject was published in 1978 by Keen & Scott Morton. Since then more and more DSS applications have evolved thanks to developments in hardware (PC's) and software (fourth generation languages). A number of interesting empirical studies on the effectiveness of DSS were conducted. Design was given less attention. Most writers focus on system construction, which is a technological viewpoint. A recent research program, now becoming known as the Delft School in organisational analysis and DSS design, focused on the design process to be supported. The hard core of the program consists of an analysis and design method. Many successful single user and group DSS applications were developed as part of the protective belt around this hard core.

The Delft School favours the use of process models. This views the tasks as mechanical processes. No attention is given to connections with the informal system. We think these can be made by doing a semantic analysis using NORMA. This leads to a description of the important business semantics.

Abhijit Chaudhury & Sukumar Rathnam
University of Massachusetts & University of Texas, USA

An Axiomatic basis for GDSS: As a method for structuring organisations the use of human groups is becoming increasingly popular. From a technology perspective there has been an explosive growth in the interest in computer systems to support group decision making (GDSS). However, when these tools have been ported to industrial or commercial organizations "*the results have so far been mixed*". In order to improve the performance of GDSS it has

been felt, by the designers of these systems, that we need "*a better understanding of what business groups now do*".

The main drawback of many systems to support such multi-agent situations, the resolution of multi-conflicting goals is the result of finding compromise solutions. This paper is directed towards building process models and theories of team behaviour, during consensus formation and conflict resolution, by the use of an economic and social perspective. The motive is to model the *properties of process* by which groups arrive at a solution by the acts of bargaining and negotiation, much as people do in real life in multistage game situations, and present their use in GDSS. For such classes of problems we model the interactive group process, under very weak conditions, and derive sufficient conditions for their asymptotic resolution, and present their use in GDSS.

Elgen Grigoriev & Oleg Zhirkov
Institute "Mosproect-3", Moscow, USSR

The INVARIATRON system is a special video-acoustical environment which stimulates creative activities by means of autodialogue and the dialogue within a combined group team. INVARIATRON supposes that basic data will be kept in human memory, it is intended not to use the "system of knowledge", but to stimulate collective creative activities of specialists. INVARIATRON can be used in various fields of human activities: designing; planning; engineering.

It ensures interaction of making decisions which are realised at different levels and results in strengthening the integrity and strength of though. The development of the information object undergoes a number of stages: the preliminary structuring of reality; the formation of the purpose's structure; the generation of the object. The system's work is based on the use of invariants reflecting the objects essence.

The users of INVARIATRON system work in a studio equipped with a big projection screen necessary for displaying the actions of the groups of specialists and experts. With this some original models come into reality, such as "INVAR", "KARTOIDS", "ECONOMY QUALITY", some "KNOW-HOW", created by the authors of INVARIATRON system. As the output the user has a documented protocol or multivariant process for producing and choosing the most harmonised decisions.

Jim Bryant
Sheffield City Polytechnic, England

Paralleling the development across the Atlantic of sophisticated, computer-based environments for group decision support, here in Europe (and especially in Britain) pre-existing methodologies for process-facilitated group decision support have been enhanced by the use of newly-created computer tools. The presentation contrasts the two approaches, and provides and overview of some of the structured methodologies which have been developed in the UK in current application.