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User Participation in Prototyping

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A strategic program of user-centered design was developed by HUSAT to deal with systems for interactive case handling within a UK government department. The program included a prototyping exercise which not only involved users in providing feedback about the interfaces being developed, but also created structures which provided feedback on the impact of the proposed system on job design and work organization. It is this prototyping of both technical and social structures which is unusual and provides lessons for the practice of PD. The prototyping activity was initiated by the user team associated with one project that would affect 35,000 staff in 500 offices. The scale of this impact led to the decision to commit the resources needed to create a working unit that would support six staff members and provide enough tasks to work on for one to two weeks at a time. The complexity of the task and the interdependency among the user roles required a sophisticated technical environment. Therefore the socio-technical prototype was developed in parallel with the development of the technical specification.

The human factors specialists from HUSAT supported a group of user representatives who planned, commissioned and ran the prototyping activity. The planning included the recreation of realistic task conditions, including the reproduction of documents and telephone calls to complement the information about cases loaded into the prototype computer system; the design of data collection activities, which involved observation, questionnaires, group discussions and diary keeping; and the selection of the user samples, made up of volunteers recruited from offices throughout the U.K. The bulk of the data analysis was done by the human factors specialists, who worked in parallel with the ongoing prototyping exercises. The results influenced a variety of aspects of the user specification and plans for introducing the system into the organization. Important issues emerged from the users' experience of extended use, particularly in relation to the combination of different media sources. The prototyping exercises provided considerable insights into the probable impact on different grades of staff, in particular the junior grade for whom there might be no satisfactory future role. In the case of the senior staff, problems with monitoring procedures led to comparisons of alternative technical solutions.

Three issues relating to the use of prototyping as part of a user-centered design strategy are worth further consideration:

- User representatives who are not human factors specialists are able to conduct prototyping activities and gather data, provided they have received some training and have assistance with the development of systematic plans. This case suggests they may find it more difficult to carry out the technical analysis of the data and that, without extensive training, they may need assistance with the interpretation, particularly in relation to the implications for technical change.
- The prototype provided direct and convincing evidence about the job design and work organization issues for transmission to management. It was possible to quantify the effects quite precisely and to identify potential sources of dissatisfaction.
- This case demonstrates the possibility of prototyping socio-technical systems to feed information into the user requirements specification. However, the user managers encountered resistance to requests for technical change from the developers, who felt that the problems should be addressed through organizational rather than technical change. This emphasizes the importance of ensuring that both users and developers are committed to applying the feedback from the prototype and have a common understanding of how it will be used. **□**

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