

Software Support for Interaction Work in Call Centers

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Abstract. Call centers deliver a new kind of interactive service. It turns out that today's software systems are far from adequate to supporting this. Software development seems to be based on a reduced understanding of call center work and neglects the social component. Detailed work analysis revealed new software requirements. It also showed a need for revised task analysis instruments.

1. Introduction

Personal service work is ubiquitous today. In travel agencies, medical offices or bank service centers employees work in direct interaction with customers, they do “interaction work” (Büssing & Glaser 1999). In order to achieve effective and efficient customer interaction new forms of computer-supported work organisation have been developed. Call center (CC) service is one of the new formulae for customer orientation and the integration of customer contact into business processes.

However, does the new software segment fulfill the specific requirements of interaction work? We found evidence that today's CC software is far from adequate. Software designers seem to have understood only part of what CC agents do.

Work-oriented and user-centered software design requires a close look at work processes and the organisational context of the intended computer use. In a research project ComCall¹ we explored the specifics of CC work, an area that is considered physically and mentally stressful and where out of various reasons 2/3 of the employees are female. What task requirements and stress factors characterise these new service jobs? Can CC work be organised to allow for personality development? What requirements follow for the design of software? The project cooperated with 3 call centers in Bremen and with the Bremen Chamber of Employees („Arbeitnehmerkammer“).

We applied a mix of qualitative, participatory and constructive methods that partly had to be modified and adjusted to the particular field of enquiry. (For a discussion of methods see Maass et al. 2002b.) First we carried out 3-hours contextual interviews at workplaces. For an analysis of the results we used the KABA-criteria for humane work (“contrastive task analysis”, Dunckel et al. 1993). In usability tests and expert reviews the software-ergonomic quality was evaluated in detail. In order to work out new software concepts we involved agents in a scenario-based participatory process.

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2. Interaction Work in Call Centers

For CC agents most of their work consists of customer interaction. They accomplish technical tasks, like answering questions, taking orders or consulting about products, and they lead conversations in an efficient, professional, friendly and flexible way in order to achieve customer satisfaction. Their service work has a technical and a social component, which are closely intertwined.

Personal services require a high degree of cooperation on the customer side. Nerdinger (1994) points out that service recipients become “co-producers” of the rendered service. In our case agents and customers are partners in communication. However, they do not share interests in every regard. The situation is even complexer because agents work for companies that organise and sell their services.² The various and partly conflicting interests and requirements of all three parties determine CC agents’ work at the “borderline” between companies and customers.

For a *company* a call center serves to provide permanent, quick and economic access to company services. Consequently, management tries to streamline and standardise customer interaction, its course and duration, aiming for uniform mass services independent of individual agents.

Customers expect individual and flexible service at any time. Their requirements are diverse and unpredictable in detail, their goals evolve and change over time. They call from home or work, some are in a hurry and know what they want, others are up for a relaxed chat. In interaction they ask and order, provide details and take decisions. Their individual goals, competences and situations determine every call in spite of any given standards.

CC agents have to mediate between company and its customers. In order to satisfy the various requirements they must lead flexible conversations. Nevertheless, they have to stick to given company standards and scripts, even if they experience them as detrimental to service quality.

In addition to organisational context technical infrastructure and software design also affect agents’ ways of acting. Calls are distributed by Automatic Call Distribution Systems, databases and application systems provide access to relevant product data, Customer Relationship Management Systems show the customer history and permanently record current customer contact data. Agents have to handle and move among these systems, interpret system output for the customer and disguise any technical problems. In regard to software they act as mediators, too, translating between customer concerns and program logic.

3. Task Requirements and Stress Factors

Mediator jobs are stressful. Our KABA-analysis provided us with a more detailed view of CC agents’ task requirements and stress factors. Here we will focus on their decision latitude and temporal scope, which are both particularly relevant from the perspective of work and software design. After that we will discuss typical stress factors.

Agents’ *decision latitude* was closely correlated to task complexity. For short-cycled tasks like order processing or address verification, work processes were predefined step by step. In more complex jobs like travel service or technical consulting, agents were more flexible: when organisational standards did not apply, agents had to find individual solutions for customer requests.

However, the rather low degree of decision latitude for most CC agents only characterises the technical service they provided. CC work is particularly demanding with respect to social

² For simplicity we only refer to internal call centers here.

interaction. Even seemingly simple tasks like outbound address qualification may require a high degree of communicative flexibility to be successfully done. Consequently, we introduced “interaction latitude” as an additional characteristic for personal service work, however without a rating scale. The CCs we studied standardised their agents’ communicative behaviour and thus restricted their interaction latitude: standards for the duration of calls, the conduct of interactions and the call structure, to the extreme of dialog scripts with compulsory wording. For technically simple tasks rules were strict and determined the course of interaction. Complexer tasks followed a more open schema. In general, the stricter regulations were, the more agents experienced them as inadequate or even counterproductive.

Close *temporal restrictions* were typical for most CC tasks. Inbound agents neither could change the sequence of incoming calls nor plan in advance: they had to deal with calls promptly and completely. Outbound calls could be made in arbitrary order in given periods of time.

Like other studies we found physical CC working conditions to be critical. But the main stress factors were time pressure, extreme concentration demands and inadequate software.³

Time pressure had two main reasons, the first was high workload due to call volume and personnel planning strategies. Incentive wages often increased pressure, so agents tried to save time, doing preparatory or concluding system interaction in parallel to customer interaction. Agents’ performance also depended to a great extent on customers. With call durations in the order of 120 sec. a single long-winded customer easily ruined an agent’s “service level” for the day.

The second reason for time pressure was inherent to interactive service work on the phone: just-in-time production of information and emotion. Answers had to be given quickly and even in complicated problem solving processes conversation had to be kept flowing. In outbound calls the dialog thread had to be spun well and tight to rouse and keep customer interest.

Parallel work in several contexts, the need to switch attention between customer interaction and software interaction required extreme *concentration*. Agents listened and talked, read and wrote, handled phone and computer, taking care not to lose control in conversation. We found this to apply to both, complex and simple tasks.

Under such circumstances the task-adequacy of software is crucial: Our work analyses and usability tests showed that bad *software quality* was an important stress factor. Cluttered, mal-structured and unreadable screens made high demands on concentration. Complicated dialogs, multiple data input and slow response times increased time pressure and hampered conversation.

For service work, task-adequacy also means interaction-adequacy. CC systems we evaluated primarily supported the technical side of customer service. They provided access to product and company data, stored contact data and triggered production and delivery processes. Systems that explicitly modelled the communication aspect assumed that communication would follow strict patterns. Interactive dialog scripts defined the course of conversation and made it hard for agents to deviate from it.

4. Interaction-Adequate Software

Based on the acquired insights into the diversity of CC tasks and their software support ComCall has put forth organisational and technical concepts for ergonomic CC work design. Organisational measures can be found in Maass et al. 2002a. Here we will focus on software requirements.

³ Emotional stress is another important factor, see Zapf et al. 1999.

Screens must be clearly structured and system interaction must be efficient. This will diminish concentration demands and save time. Agents have to find quickly the information they need. Input and navigation must be optimised for work tasks, providing automatic routines for frequent actions and adequate default values. Such requirements may not seem very new and apply to standard office software as well. In the CC context, however, they gain paramount importance because agents cannot focus their attention on computer interaction alone.

Software must enable flexible service interaction. Software always structures work processes. Often, data have to be entered in a given order and screen sequences must be followed strictly, otherwise input may be lost and data will have to be entered again. Users get trained to proceed the right way; work interruptions cause problems. CC software often serves management to enforce standard procedures. Agents, however, need flexible software that allows them to cope with the customers' unpredictable moves. Interaction-adequate software offers generic functions and relevant data at almost any point in time.

Software must support customer interaction instead of controlling it. At the end of an interaction all necessary steps must have been completed. Agents have to keep an overview and software can help them by visualising the current interaction state and indicating the remaining steps, but without enforcing them. Software should also reduce the risk of input errors by prompting and checking for plausibilities. Yet, it may not disturb conversation. Important messages must catch the user's attention without blocking the process by modal dialogs or message boxes that need to be confirmed.

5. Conclusion

CC work is a new kind of interaction work that is determined by the conflicting interests of several parties. At first sight agents' tasks are simple and not demanding, but physically stressful. For a more detailed work analysis KABA was used, an instrument that has proved to be helpful in the analysis of socio-technical systems. In most cases it revealed a rather low scope of action and considerable work hazards. Yet, the instrument failed to characterise the important social component of CC work. Therefore „interaction latitude“ was introduced as additional factor.

Good software quality largely depends on careful requirements analysis. Aspects that do not become visible in the analysis will most probably not be modeled and supported by software. The lacking „interaction-adequacy“ of CC software is an example. Industrial psychology is invited to develop suitable new instruments for the growing field of interactive service work.

6. References

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