APPENDIX 1: THE METHOD

It is perhaps worth spending some time describing the method that was used for the study as it proved particularly useful in the detailed exploration of the inner workings of a CoP and could well prove useful in general CoP work. For the study, I adapted Beyer and Holtzblatt’s (1998) Contextual Design method, as it provides support in the handling and analysis of the large volume of rich data created by ethnographic approaches. It is a multi-layered approach to understanding work, including cultural and social views. This would appear to be a useful tool in gaining an improved understanding of CoPs.

CONTEXTUAL DESIGN

Contextual Design is broadly ethnographic in its approach and falls ideally between participant and non-participant observation so that the researcher is not completely immersed in the work yet is more than a mere observer. The method was primarily developed for work analysis and redesign and provides a structure for data collection but also offers models for working with the data and clear steps for how to move from the rich data to design issues. It provides a structure, models, and steps; however, these are not a rigid, restrictive framework but are intended as a support (Beyer & Holtzblatt, 1998):
How to get data about the structure of work practice ... how to make unarticulated knowledge about work explicit ... and how to get at the low-level details of work that have become habitual and invisible ... These problems suggest an open-ended, qualitative approach that brings us in contact with the customer’s real work1 (p. 37).

Contextual Design moves from qualitative data to themes and models to work redesign. It is intended to be a multi-disciplinary team effort and goes through seven clearly defined stages:

1. Inquiring and collecting data;
2. Interpretation session;
3. Work models;
4. Affinities and model consolidation;
5. Work redesign;
6. User environment design; and
7. Prototype evaluation.

The first four of these stages were used for exploring the interactions of WWITMan.

The Contextual Design method is based on Beyer and Holtzblatt’s (1998) experiences in the field, but it has its roots in ethnography and the development of Grounded Theory (Glaser & Strauss, 1967), which has recently been used in Information Systems research (Howcroft & Hughes, 1999). In the development of Grounded Theory, data is collected. The researcher then develops conceptual categories from the data, followed by the collection of more data to expand on and inform the categories already created. The theory develops from the data itself (Frankfort-Nachmias & Nachmias, 1996). This procedure uses an ethnographic approach and develops the categories as research is proceeding, starting with an in-depth study and being followed by subsequent studies, not necessarily to the same depth, being used to inform the findings that have already been developed. These subsequent studies tend to be searches for confirmation or elaboration. Contextual Design adds to the development of Grounded Theory as Glaser and Strauss (1967) emphasised the need for a codified procedure for analyzing the data in order to convey credibility. Although a purely ethnographic approach would not use frameworks, the models in Contextual Design provide additional support to the researcher and go some way to addressing some of the difficulties outlined above and provide the researcher with a method that can be followed.
The advantages of using Contextual Design are several. The data gathering is ethnographic in form, allowing the researcher to see the work, practice, and interactions of a CoP in context. The method provides a range of models to handle the data, using and extending standard techniques for handling qualitative data, but also employing five different types of models designed to gain a full understanding of the practice being observed. I intended using the method as a framework and adapting it as necessary.

For the initial stages of the study I used a slight adaptation of the method. This involved the gathering of data using Contextual Design methods. The models were used but were adapted as necessary. Contextual Design is essentially a team-based activity, but I tackled this by involving other colleagues and interested parties to provide different perspectives. The fact that I was working primarily alone on the study did have benefits, as it meant I had a detailed view of the whole data set. Contextual Design is intended to involve the interviewees (customers) in the process as much as possible. It was not possible to do this according to Contextual Design principles, so I made use of the “Challenging Assumptions” stage of Dearden and Wright (1997), which takes propositions back to the respondents. Time and cost constraints meant that the case study could not be longitudinal and therefore took the form of two shorter periods (snapshots) with the CoP. Stage One formed the first of these two periods.

The study of the CoP was also supplemented by smaller studies of other CoPs. This follows the principles of the Discovery of Grounded Theory (Glaser & Strauss, 1967) on which Contextual Design is partly based, and provided expansion and confirmation (or otherwise) of the issues that arose from the study of the CoP. In summary, I spent Stage One with part of the CoP. After examining the issues that arose from my time with the CoP, I went back and spent more time with them to focus on any issues that arose. Finally, I undertook shorter studies with other CoPs where I could focus purely on key issues arising from the study of the main CoP. Due to access and time limitations, and the fact that I now had a much tighter focus, open semi-structured interviews were used with these other CoPs.

**STAGE ONE DATA COLLECTION**

The data collection is based on ethnography, but it falls between participant and non-participant observation. The researcher goes through a one-to-
one contextual interview with the subject as (s)he works. The role of the researcher is similar to that of an apprentice to the subject’s master. The researcher is more than observer in that (s)he must question what is happening and the “master” must talk through what is happening. Contextual Inquiry is based on the four principles of context, partnership, interpretation, and focus.

- Context: To get as close as possible to physical presence. It allows the gathering of ongoing experience and concrete data.
- Partnership: The role is actually more than apprentice-master. The researcher and the subject are collaborators in understanding the work. In particular, the interviewer/interviewee, expert/novice, and guest/host roles are to be avoided.
- Interpretation: It is not sufficient to collect data. Interpretation is necessary to make a hypothesis about what the data means. If the method were being followed through to design, the hypothesis would have an implication for the design that could result in a design idea.
- Focus: A clear focus steers the direction of the contextual inquiry and allows the researcher to keep the conversation on track. The project focus must be defined in advance. This allows the researcher to find suitable sites to visit, suitable people to talk to, and which sort of tasks to observe.

The structure of the contextual interview is as follows:

1. The conventional interview.
   The first stage is to get to know the subject. This is helped by running the first stage of the contextual interview along conventional lines. The researcher introduces him/herself, explains focus, promises confidentiality, and asks for permission to record. This stage takes approximately 15 minutes.

2. The transition.
   This takes approximately 30 seconds and involves the interviewer explaining the rules for the contextual interview — that is, the customer works while the researcher watches and interrupts if there is something unclear or particularly interesting.

3. The contextual interview.
   The subject works, the researcher watches, and, as an apprentice, asks questions, analyzes artefacts, makes notes, and drawings.
4. The wrap-up.

Using the notes made, the researcher goes over what has been observed and gives the customer a final chance to correct and expand on issues that were raised.

I used contextual interview with the four UK members of WWITMan. Contextual Design asks for a focus statement. This is a statement of what is being sought and implies what the interviewer should look for. The focus statement for the case study was: “How people share knowledge, learn, and solve problems in a community that operates in a distributed environment.” Before the Contextual Interview proper, I had an unstructured interview with the manager of the group. The aim of this interview was to set the CoP in context by finding out:

- the structure of the group,
- its background and history,
- its role in the wider context of the organisation,
- the KM technologies in place in the organisation,
- locations of community members, and their roles,
- when people meet,
- other groups with which people are involved, and
- what problems are experienced.

The contextual interviews were with the four UK members of WWITMan. A whole day was spent with Wayne, one half-day session each with Dave and Mike, and two, separate half-day sessions with Stan. The contextual interview format was followed closely:

- The short traditional interview to find out background information about the respondent.
- The transition to explain the format of the contextual section.
- The contextual section. The format for this was followed as per the prescribed method. The work was observed, questions were asked, and notes were made. However, the focus in Contextual Design is on the whole work picture, whereas the focus for this case study was rather more specific. This resulted in the collection of some data that turned out to be irrelevant for this particular study. This was a minor point, for the contextual interview yielded a large amount of relevant, rich data.
• The wrap-up. In this case the wrap-up was also used to broach some areas that it was felt had not been satisfactorily covered. This generally turned out to be the respondent's use and impressions of communications media that had not been observed.

STAGE ONE ANALYSIS

At this stage there was no apparent need to adapt the method much. The data had been collected using the contextual interview and so, for Stage One, the data were analyzed using Contextual Design techniques. These are outlined below.

The Interpretation Session

The interpretation session is the first main stage of analysis. This is an important stage because under normal circumstances Contextual Design is intended to be a team activity. A variety of interviewers will have interviewed a range of users, and it is important for all members of the team to gain a shared understanding of all the customers. The aims of this session are:

• To get better data — people question the interviewer who therefore remembers more than if (s)he were working alone.
• To create a written record of customer insights.
• To have effective cross-function co-operation. The interested parties in the project are likely to come from a range of functions.
• To obtain multiple perspectives on the problem — as each team member brings a different focus.
• To develop a shared perspective — through discussion.
• For team members to have true involvement in the data — data is revealed interactively rather than through a presentation.
• To make better use of time — questions would still have to be asked of the interviewer. The interpretation session brings all the questioning together.

The members of the team are intended to play different roles in the interpretation session. The interviewer talks the rest of the team through his/her interview. Some members of the team are creating the work models. One member notes insights and observations. There is also a member whose role
is to ensure the meeting stays on track. Any other members of the team are expected to actively participate by asking questions, offering insights and interpretations, and suggesting ideas.

The interpretation session could clearly not be run as a team session in this study as I was primarily working alone. This did not prove to be a major problem as all the interviews had been recorded and transcribed, and were supported by detailed handwritten notes made during the interviews. This meant that the interview recall was very good without the need for prompting and questioning. Working through the data, I was creating the different models and recording insights and observations. The effect of this was that it gave me an intimate knowledge of the data. The major disadvantage was that by working alone there was no possibility of extra insights that might have been offered by other team members.

The Work Models

The second stage of the analysis is to create five work models. The work models are created in the interpretation session and are each intended to represent one aspect of work for design. They were developed over time based on the experience of the design problems encountered by Beyer and Holtzblatt (1998). Although the final aim of the case study was not to design a system, the models were all used for the first part of the study as a means of handling the large amount of rich raw data and providing further insights.

The Flow Model

The Flow Model is concerned with how people divide up responsibilities among roles, and how they co-ordinate with each other while they do the work. In other words, it is used to explore distributed co-ordination. The Flow Model models communication flow and distinguishes between:

- Individuals who do the work.
- The responsibilities of the individual (or the role).
- Groups — these are people who have common goals.
- Flow — communication between people. This might be verbal or it may be in the form of artefacts.
- Artefacts — both physical and conceptual.
- Communication Topic, for example, asking for help.
- Places — where people go to and from to get the work done.
- Breakdowns — problems in communication or co-ordination.
It was anticipated that this model would be particularly relevant for the case study, in particular its emphasis on communication, distributed coordination, and artefacts. A Flow Model was created for each of the CoP members to show the communications observed during the time spent with that person. An example is shown in Appendix 2.

The Sequence Model

The Sequence Model is designed to model the ordering of work tasks, that is, what triggers the task, what the steps are in the task, and what is the intent behind the work. It is based on the principle that the actions that people take reveal the strategy they are employing and what is important to them. If a system were to build on these aspects, it could improve the work. It is essential to see the intents (both explicit and implicit) behind the work. Simply automating the tasks will cause a system to be rejected if the intents are not catered to.

The Sequence Model shows:

- Intents: What the sequence is intended to achieve.
- Triggers that cause the sequence of actions.
- Steps, that is, what actually happened.
- Order. This aspect is shown using loops, branches, and arrows to connect the steps.
- Breakdowns or problems in executing the steps.

At first glance, it was felt that this model appeared to be less relevant than the Flow Model but could provide useful insights into interactions between people, both co-located and distributed. A range of Sequence Models was created from the transcripts, covering both contextual interviews and meeting observation. An example of one of the Sequence Models is in Appendix 3.

The Artefact Model

People create and adapt artefacts to use in the course of their work, for example forms, documents, lists, and spreadsheets. The structure of an artefact can show the conceptual distinctions of the work. The Artefact Model is designed to show the structure and the information content.

It shows:

- The information that is presented by the artefact.
- The parts of the artefact.
• The structure of the parts.
• Annotations that show the informal use.
• The Presentation. This might be the use of color, white space, or layout.
• Other conceptual distinctions such as past/present/future.
• Usage, for example, when the artefact was created and how it is used.
• Breakdowns — problems when using the artefact.

The use of artefacts in a distributed Community of Practice was a particular focus in the case study, and it was felt that the Artefact Model would be a particularly useful way of exploring the use of the artefacts. An Artefact Model was created for each of the physical artefacts that were collected during the course of the investigation; however, particular attention was paid to the planning document. Unfortunately the Artefact Model did not prove to be as useful as anticipated, as it is more suited to everyday artefacts that people use regularly in their work. This was not the focus as such in WWITMan, and the artefacts that were relevant to the focus were created during the work. The planning document proved to be of particular interest, and it was the process of creation and its use in interactions that were more relevant than the artefact itself.

The Cultural Model

The cultural context of the work is of immense importance. If a system does not take into account the culture of the people it is intended to support, it will not be successful. The cultural context includes the organisational policies, national culture, how people see themselves, the formality of the organisation, and laws, rules, and regulations.

The Cultural Model, however, has a more restricted view of culture and represents:

• Influencers, that is, people who affect or constrain work.
• The extent: To what degree the influence affects the work. This is shown by overlap of components on the diagram.
• Influence on the work, and the direction of the influence.
• Breakdowns: the problems that interfere with the work.

Cultural aspects have a large bearing on work that is carried out by distributed international groups. Therefore, it was anticipated that the Cultural Model would also be of particular relevance. One single Cultural Model for the CoP was created during the course of the study, rather than one for each
member. The resulting model was very large, hence a small section of it is reproduced in Appendix 4 as an example.

The Physical Model

The fifth and final model is intended to represent the physical environment and how it either enables or supports the work (or, indeed, how it hinders the work). The reason for this is also geared towards system design; that is, any system that is designed will have to live within that environment. It must therefore take into account the constraints, otherwise it will cause problems for the users.

The Physical Model shows:

• Places — where the work takes place.
• The physical aspects of the environment that limit the space, for example, walls, desks, and other large objects.
• Usage and movement — how people move within the space.
• Tools, hardware, software, and communication.
• Artefacts that are created and passed around.
• Breakdowns that show how the physical environment interferes with the work.

As the group being studied was part of a distributed group, it was not felt that the physical model would contribute a great deal to the study, and this proved to be the case as the immediate environment was modeled for each respondent. However, it may have been useful to have created a higher level model of the environment to show the problems the group encounters when operating in the distributed environment. Such a model could have demonstrated the differences in mode of operation when interacting with colleagues on site and when interacting with distant colleagues. These aspects, however, were brought out through the other models and the Affinity, but a high level physical model to show this would also have been useful.

Consolidation and the Affinity Diagram

After the creation of the models, the next step is to consolidate. Beyer and Holtzblatt (1998) describe this as “the inductive process of bringing all the individual data together and building one Affinity diagram and one set of models that represent the whole customer population” (p. 154).
To create an Affinity, all the insights and observations that have been recorded during the interpretation session are organised into hierarchies in order to show common issues and themes. It is an inductive process and is done by placing a note on the wall, and then adding any others that the researcher feels fit with it. If a note doesn’t fit with any on the wall, a new category is started. When the notes are all allocated they are organised into hierarchies by grouping together and providing meaningful names. In a normal contextual enquiry, the Affinity diagram would be based on a large number of notes and would therefore be a team activity.

When the Affinity has been created, all the data are arranged clearly and present the issues. The researchers then “walk” the Affinity; that is, they “read” the wall. Reading the notes raises further issues that might need to be addressed in further interviews or it might lead to the creation of ideas. The intention is for anyone to be able to walk the Affinity — researchers, customers, and outsiders. It is intended to be a collaborative activity. As WWITMan’s organisation was many miles distant, it was impractical for the respondents to visit; therefore, my

Figure 1: The Affinity
departmental colleagues were invited to walk the Affinity and provide their insights and feedback.

Having created and walked the Affinity, the work models had to be consolidated. The aim of consolidation is to move to one set of models representing the study population. Therefore, each set of models is combined to create one.

**The Flow Model**

The Flow Model consolidation is intended to show the communication patterns that underpin the business of the study population. Consolidating the Flow Model moves from individuals to the roles played by those individuals. I hoped that this would provide insights into the interactions within the CoP and also show the roles undertaken by the members in sustaining the CoP.

The first step is to create a complete list of responsibilities for each individual. Undertaking this process may also bring previously overlooked responsibilities to light. Having listed the responsibilities, roles can be identified. The stages that were followed in consolidating the Flow Model were adapted from Beyer and Holtzblatt (1998) to cater for the tight focus and population of the study, which would be smaller than that of a normal Contextual Design exercise.

**Step One:** Generate a complete list of responsibilities for each individual.  
**Step Two:** Examine the flows to see if they suggest any other informal roles.  
**Step Three:** Look for roles and name them.  
**Step Four:** Combine the people into roles.  
**Step Five:** Combine the roles into another flow model and bring in flows from the original flow models.

Examples of these stages and a section of the consolidated Flow Model are shown in Appendix 5. Consolidating the Flow Model proved to be a useful exercise. Four main roles were identified, and although not all four were totally relevant to the focus of the study, the model and the process of creating it led to insights into the data and the situation of the study group.

**The Sequence Model**

It was doubtful whether the consolidated Sequence Model would be particularly relevant, as its purpose is to examine a particular task. The CoP in the study did not have particular repeated tasks, and the focus of the study
was more on interactions. However, the process proved to be much more useful than expected and led to a number of further insights about the work of the community.

Whereas the consolidated Flow Model shows the interaction between roles, consolidating the Sequence Model demonstrates the structure of a task and the strategies used. Different people will approach work in different ways, and the consolidation of the model helps identify common structures. To consolidate the model, there are six steps:

1. Using the Sequence Models, the researcher needs to identify a number of sequences that address the same task and that would possibly consolidate well. This was done by reading through the sequences, marking with a pencil, and basically coding the sequences.
2. In the selected sequences, activities are identified. The end point for the first activity is marked in each sequence.
3. The triggers are matched across the sequences — these may start at different points.
4. The sequence steps within the first activity are matched, with any omitted steps being added in to make matching easier.
5. The actual steps are abstracted with any breakdowns being added at this point.
6. When the end of the sequence is reached, the intents are added.

Sequences were chosen to show:

- Collaboration
- Arranging meetings
- Having a meeting
  (a) Co-located management team
  (b) Distributed WWIT
  (c) (a) and (b) combined
- Identifying collaboration
- Noting action to be taken
- Planning
- Customer service
- Clarification
- Discussion of issues
The consolidated Sequence Model for “Identifying Collaboration,” along with the notes that were made, is shown in Appendix 6 as an example.

The Artefact Model

I had initially expected that the Artefact Model would perhaps be the most relevant to this study because of its interest in reifications in the form of shared artefacts. This turned out, however, to not be the case, and the consolidation reinforced this point. The aim of consolidating the Artefact Models is to demonstrate how people organise their work and structure it from day to day. This did not work in this case, as the CoP in question does not have a regular, representative weekly routine, and the purpose of the central artefact (the planning document) could not show in its structure how the members organised the work, as it was not that sort of artefact. Holtzblatt and Beyer (1998) explain that people's tasks have similar structure, and therefore the intent and usage of artefacts will also be similar. However the only similar artefacts revealed by the study were:

(a) different drafts of the planning document; and
(b) two copies of a chat history, one that had been formatted by hand and one that had not been formatted at all.

The selection of Artefact Models is decided by the project focus; for example, if the project is to develop a personal organiser, then the artefacts of interest would have calendar functions. In the research study, the focus was more on how artefacts were used in interactions than on the work itself. Therefore, the emphasis was on a different type of artefact, and it was the Affinity, the Flow Model, and the Sequence Model that proved to be more revealing.

The steps for consolidating the Artefact Models are:

1. Take the Artefact Models and group them according to the roles that they play.
2. Identify common parts in each artefact, and the intent and usage of each part.
3. Identify breakdowns and common structure and usage within each of the common parts.
4. Build a generic artefact to show all the common parts, usage, and intent.

For Step One, the most important artefact within the project focus was felt to be the planning document, and possibly also the online minutes. It did not appear to be beneficial in any way to consolidate the different drafts of the planning document. It also did not seem possible to do Step Two unless it was for the planning document drafts, and this did not seem to be worthwhile. Therefore, I did not do any consolidation of the Artefact Models. I felt it preferable to find a different model to explore the usage of the artefact. This took the form of a timeline that was created after later iterations of the planning document (Figure 3, Chapter 6).

The Physical Model

One of the aims of consolidating the Physical Models is to make the researchers aware of limitations imposed by the physical environments. The effectiveness of the models was, however, limited by the fact that they only represented the immediate physical environment. It would have been better had I created a higher level model to demonstrate the limitations imposed on the CoP by the distance to their colleagues in California.

There are only main two steps in consolidating the Physical Models:

1. To separate the models into types of spaces. Beyer and Holtzblatt (1998) note that a set of models will usually represent a whole site or several sites, focusing on the buildings and the relationships between them. Some models may also focus on individuals’ spaces and specialised spaces.
2. To catalogue common large structures and organisation. Beyer and Holtzblatt suggest that, for example, telephones, calendars, and address books gathered in one corner of the desk in several models indicate a common theme of communication and co-ordination. Movement is identified if it is relevant to the project focus.

The consolidation phase indicated that the initial Physical Models had not been created well enough and that a better range would have produced more insights in the consolidation. For example, it would have been useful to have created models showing the different sites and the specialised spaces (video
suites, AV rooms with polycoms), whereas the models only showed the individual work spaces that were perhaps slightly less relevant to the project focus. The workspaces were all very similar and were indicative of the culture of the organisation in that they were open cubicles in order to encourage informal ad hoc communication. Each cubicle had a range of communication media suggesting the importance of communication and finding people. The movement on the models was only really relevant in cases of co-located work. Although the focus was more aimed at distributed working, the co-located work showed the importance of informal ad-hoc, serendipitous communication. Despite the difficulties posed by the initial error of emphasis in the creation of the models, the process did show two useful insights:

1. It needs to be made easy to locate people in Palo Alto and lower the set-up difficulties in talking to them.
2. The individual workspaces are open, so that colleagues can drop in to talk informally. This was an immensely important part of the co-located environment, and it would be beneficial if they could move towards this in the distributed environment. This indicated that a useful avenue to follow would be to increase the awareness of a person's presence at his/her desk, or awareness of his/her availability.

The Cultural Model
I had anticipated that the cultural model would be particularly useful in increasing understanding of the functioning of a CoP in the international environment, as it would record and show the cultural aspects that help sustain or hinder a community.

As with the other models, the Cultural Models are normally created separately, that is, a Cultural Model for each contextual interview. However, during the course of the study so many aspects were being repeated that one single model was created. By the end of the interviews, the result was a Cultural Model that was already well consolidated. Therefore, consolidation was not undertaken as a separate stage for this model. The creation of the Affinity had thrown light on some aspects and to reflect this, some parts of the Affinity were added in to the model for illustrative purposes.

Extra Stages
An important aspect of the Contextual Design method is communication with the customer or, in this case, the people participating in the study.
Adjustments had already been made to reflect the fact that I was working mainly alone rather than as part of a design team, and further adjustments had to be made in this stage. Beyer and Holtzblatt (1998) suggest that the “customers” should be invited to the design team’s room to walk the Affinity and for the work models to be used as communication tools.

It was not possible for the members of the group to visit; therefore, a series of propositions were drawn up from the insights created during the process of making the Affinity and consolidating the work models. The propositions and some of the consolidated models were presented to the members of the CoP in two separate meetings in order to elicit feedback and inspire further discussion of the issues. This process was used to confirm, or otherwise, the insights that had been made and to further inform the Affinity. The propositions were designed to encourage discussion, with some of them being made deliberately contentious. The propositions were presented one at a time, but are shown in a list in Appendix 7.

The feedback from the two meetings was then used to further inform the Affinity and the insights that had been extracted from the Affinity and the model consolidation. Linking the categories produced the web of possible relationships shown in Appendix 8.

**STAGE TWO AND THE EXTRA COPS**

The purpose of the second stage of the study (and the extra CoPs) was to expand on and inform the initial insights. Glaser and Strauss (1967) observe that the fuller coverage comes at the beginning of the research as categories and themes emerge. Subsequent studies do not need such full coverage as the aim is to gather more data pertinent to the themes and categories that have emerged, generally looking for confirmation or elaboration. To this end, Glaser and Strauss point out that earlier stages will take a fuller approach, such as reading documents, interviewing, and observing at the same time. Later stages can be more focused with shorter interviews and more direct questions. This was the approach that I took with Stage Two of the study and with the extra CoPs. The Contextual Design tools were not as applicable for the second stage, as the focus was tighter than in Stage One. In Stage Two and with the extra CoPs, the focus was not on the whole work but on the use of artefacts and the importance of relationships and face-to-face communication. Additionally, Contextual Design focuses on regular work with the overall aim of designing a
system to support the work. During Stage Two of the study, the regular work had been at most suspended, or at least interrupted for the period where the two cores were together. Therefore, the tools used for data gathering and analysis tended to be a mix of Contextual Design techniques and interviews.

**Data Collection**

The greater part of the study was spent observing the members of WWITMan in meetings and interacting together. It was not possible to follow a Contextual Interview Model with the researcher playing the role of apprentice. Rather, the observation was simply observation. However, there was also the opportunity to speak with the three established American WWITMan members, the Japanese member, and with Carol, a member of the Client Server team. In the interviews with these people, an open semi-structured interview seemed to be the most suitable approach. This took the highlighted issues from Stage One and tackled them directly but still allowed for flexibility to pursue other relevant avenues that might arise. The interview schedule (Appendix 9) was intended purely as a guide for the interview and was not intended as a script. To finish the interview, a subset of the propositions that had been presented to the UK core was presented and discussed. The interview also offered the opportunity to refer the respondents back to the meetings for clarifications and explanations. Detailed notes were made during the meeting observations, and all interviews were recorded.

Following the period spent in California, I spent a further period with the UK core to ascertain what effect the American visit had had. This period also consisted of observation and interviews that were annotated and recorded.

**Analysis of Stage Two**

The first stage of the analysis, as with Stage One, was to transcribe the interview transcripts. The coding of the transcripts followed the pattern in Stage One; that is, notes were made as the transcripts were read, as if it was being done in a Contextual Design interpretation session. These notes were then added to the Affinity, for example, creating a new category or being added to an existing category.

The Contextual Design Models were then explored to see if they could be of use. Physical Models had not been drawn for the American core; however, Physical Models had been drawn for the meetings.

The Artefact Model in Stage One had not proved to be as useful as had been expected. Additionally, only one new artefact had been retrieved from Stage Two — Stan had made notes and a PowerPoint presentation to present.
to his Informatics Team. Therefore, the Artefact Model was not used in Stage Two.

A Cultural Model was not created for Stage Two. The Cultural Model that was created in Stage One seemed to be sufficiently comprehensive, and the few points that arose in Stage Two fitted better in the Affinity.

The Flow Model proved to not be relevant in Stage Two for a number of reasons:

- The focus was much tighter than in Stage One, which took a broader view of the work in general.
- The everyday work was suspended in view of the visit of the UK — and, like the UK core, there is no such thing as a “representative week.”
- The consolidated Flow Model of Stage One had highlighted the importance of collaboration in the role of the CoP members. This became one of the propositions that was presented to the UK core. A subset of the propositions was also presented in the interviews in Stage Two, and this seemed to cover the Flow Model aspects satisfactorily.

In Stage One, meetings were seen where:

- the UK and the US cores were distributed, and
- the UK core was co-located.

In Stage Two, the UK and US cores were co-located; therefore, Sequence Models were created for the meetings to see if they showed anything different.

As one of the focus points of Stage Two was the use of shared artefacts and the Artefact Model had not proved useful, a different approach was needed. A tracking approach seemed to offer a way forward. The main artefact in evidence was still the planning document and so an artefact timeline was drawn to show the planning document’s development up to the visit to America and then its use in America.

**EVALUATION**

Although Contextual Design is primarily aimed at a systems design environment, for the purposes of this study, Contextual Design provided a methodological framework that suited the aims of the study and that allowed the
easy handling of a mass of qualitative data. This was an interesting application of the method and resulted in some interesting insights. In general, the method proved to be practical and useful, but showed that there were some areas that needed to be adapted.

The data gathering techniques worked exceptionally well for the purposes of KM research when focusing on CoPs. It is not surprising that this stage worked so well, for it has its roots in ethnographic procedures. In later stages when the focus became tighter, the contextual inquiry techniques were too exploratory and more focused questions were needed alongside. This, too, was not unsurprising, as Contextual Design also has roots in the Discovery of Grounded Theory (Glaser & Strauss, 1967), which observes that data should be gathered iteratively in order to inform the findings of previous iterations. The iterations become more focused and the questioning tighter.

Contextual Design provided five models and an Affinity with which to handle the mass of ethnographic data. These models are intended to be the beginning of a work re-design process, but in the case of this project, they were used for the analysis of the qualitative data. The analysis of Contextual Design data is intended to be a team activity. In the case of this study, I was working alone. This did not prove to be a disadvantage as it meant I obtained a comprehensive view of the data. In order to avoid too narrow a view, however,

(a) colleagues and interested parties were brought in to “walk the Affinity” and to provide different insights, and
(b) a set of propositions was created to take back to the interview respondents. I could then use the feedback to the propositions to provide further insights to the Affinity and models and provided a form of validation.

Taking these two steps overcame the limitations imposed by working alone.

The Affinity is a standard qualitative technique that sorts the data into themes and categories and as such was an essential stage in the process, providing a number of insights.

It had initially been expected that the Artefact Model would be a useful model as the research was exploring the use of artefacts in a CoP. Unfortunately, it did not prove to be useful as it focused on the structure of an artefact with a view to embodying this in a system. For example, it would explore the structure of a calendar and how people used it, in order to use those insights in a personal information management tool. A better picture of the use of the artefact in the CoP was obtained by creating a different model, in the form of
a timeline, to track the creation, iterations, and use of the artefact. This provided a picture of the development of the planning document over time and its use in the community. It showed the people involved, some of the work that went into its preparation, the number of iterations, where it was used, when it crossed the boundaries between the cores, and also how it was stored and displayed (for example, used in a meeting or placed on the intranet for comment). As the planning document became something of a focus, the timeline provided a means of pulling all the data about its development and use into one model. It did not, however, show the application of the softer aspects of people's knowledge. This understanding was built up through the use of the timeline, the Affinity, and the Flow Model. For the purposes of planning KM issues, it would be useful to further develop the timeline model to include more details on the development and use of an artefact by the CoP members.

The purpose of the Flow Model was to abstract the work done by the members of the CoP into roles. It was also helpful in mapping some of the movements of the planning document. This worked well and provided a number of insights into the working of the CoP.

The Sequence Model also worked well in that it provided a means of representing the actions taken, suggesting reasoning behind the actions, and steps taken to accomplish an action. This provided a number of insights into how the CoP accomplished some of its tasks.

The Cultural Model was satisfactory to the extent that it provided a visual representation of the impact of culture on the CoP. The notion of culture in the model, however, is restricted to issues (and people) that hinder work and enable it and breakdowns in the process. Culture in the broader sense, that is, national, organisational and group cultures, was not addressed but was a theme that came out strongly in the Affinity. A useful development would be to further develop the Cultural Model to cater for a less-restricted notion of culture.

The model that contributed the least was the Physical Model. This may be partly due to the fact that, although it was used properly as per the method, it was not adapted sufficiently. The model was created as directed, but it became clear during the analysis stage that the model would have benefited from being broadened to reflect the wider context of the CoPs operation, as opposed to the immediate physical environment of each member. The Physical Model was used to record the immediate physical environment of the members. This provided no insights at all, other than to emphasise the importance of ICT. It would perhaps have been preferable to record the wider physical environment and illustrate the difficulties of the distributed environment.
Once all the models and the Affinity had been created, they were “read,” and any insights or findings recorded. These were then used as a focus for the next stages, which in turn further informed the findings to increase the understanding of the situation. The timeline was not used at this stage, being developed at the beginning of Stage Two of the main case study in order to bring the development of the planning document up-to-date.

Using the Contextual Design as a methodological basis worked very satisfactorily from a practitioner point of view. It must be emphasised, however, that it was only satisfactory as a basis, and that the method had to be adapted by:

- adding an extra stage of creating propositions with which to return to the respondents;
- changing the Artefact Model;
- using structured, open-response interviews in the later stages [In the later stages, the only models that were used were the Sequence Model and the adapted Artefact Model (timeline). It was not felt that the other models would add anything extra at this stage.]; and
- extending the Physical Model to reflect work in the distributed environment.

Further improvements that could be made to the method for use in investigating work from a KM standpoint with a view to developing a KM initiative would be:

- Further developing the Artefact Model to reflect the application of people’s softer knowledge.
- Adapting the Cultural Model to reflect a richer definition of culture.
- Developing a model to reflect the social networks of the organisation. The Flow Model does this to some extent but translates the flows into work roles. A model to map the social network in an organisation would be particularly useful. It could be mapped in stages or smaller units and consolidated to cover a wider group.

It must also be borne in mind that the focus of this project was an organisational CoP that operates in a distributed international environment. It is unlikely that the method would have proved so effective in exploring the interactions of a totally virtual community.
REFERENCES


ENDNOTES

1 Customer: as the overall aim of Contextual Design is the creation of a computer system, respondents/subjects are referred to as customers.

2 One approach to tackling the problem of handling a wealth of ethnographic data was used by Dearden and Wright (1997) who used a mix of situated and non-situated approaches. The study reported by Dearden and Wright (1997) was subject to time constraints (22 person days) and was intended to analyse the ‘quality of fit’ between the work undertaken by a specific group of office workers and the IT system which had been put in place to support the work.

The time constraint of the study meant that time could not be lost handling large amounts of ethnographic data. Dearden and Wright (1997) therefore used an ethnographic technique (contextual inquiry) for observing the work in context after having had a training session to quickly learn the procedures and terminology in use. As the focus of the work was well-defined it was possible for them to use non-structured techniques such as...
semi-structured interviews and rich pictures as used in soft systems analysis (Patching, 1990). The understanding of the work was validated by the use of three techniques:

- Model building: this forces the researcher to work through his or her understanding of the situation.
- Challenging assumptions: the researchers returned to the organisation and presented groups of interviewees with a number of propositions or assumptions, some of which were deliberately contentious, in order to encourage debate.
- Wish Lists: The researchers made suggestions and created a ‘wish list’ from open-ended questions in the interviews. The wish list was then presented to the groups of interviewees (who did not know which were suggestions made by the researchers and which had come from the interviews) in order to obtain more ‘wishes.’ The final list was put into groups and then displayed for discussion.

The mix of situated and non-situated techniques, using models to handle some of the data, appeared to work very well for Dearden and Wright (1997) allowing them to undertake the research, handle the data and report within a short time scale.
APPENDIX 2: EXAMPLE FLOW MODEL*

Figure 1: Example Flow Model

[Diagram of a complex flow model with various nodes and arrows indicating interactions and processes.]

Figure 2: Example Flow Model — Detail

[Diagram showing detailed interactions and annotations for specific nodes and interactions.]
APPENDIX 3: EXAMPLE SEQUENCE MODEL

Figure 1: Example Sequence Model

Intent: formal meeting

Trigger: Regular Occurrence

W setting up
Informal chatting with PA
S arrives
S greets PA
W Setting up NetMeeting
S helps
W can’t get SmartBoard working
Asks PA1 for help
M arrives and sets up smartboard
D arrives
PA ask a question

No-one answers. Was it directed at us? It seemed to be but no-one answered

S asks PA a question - can they see the SmartBoard

PA ask have you got …up. W?

W had left the room
No-one corrects the mistake

S answers question

Continue set up

During set up PA keep calling M ‘W’

We get video picture of PA

W kicks off

Misunderstanding corrected

W introduces UK side

PA repeat to confirm

PA put up an artefact for agenda item 1

Use the artefact to work through some things

PA report on what done for NT5-sharing info

Decide to go direct to agenda item 2 - the UK planning doc

Short pause while UK get their artefact up

PA take the opportunity to get a drink

W gives some background to the process
Figure 1: Example Sequence Model (continued)

- PA interrupt - immediately seen some areas where could collaborate
- D talks through first part of artefact
- PA need cursor on what D is talking about
- D works down artefact, pointing to the] items and explaining what is what

**Intent:** note an action item  
**Trigger:** item that needs action

- M makes note on SmartBoard
- etc.

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APPENDIX 4:
EXAMPLE OF CULTURAL MODEL*

Figure 1: Example of a Cultural Model

Figure 2: Example of a Cultural Model — Detail
**APPENDIX 5: EXAMPLE OF CONSOLIDATED FLOW MODEL**

In Step One, a complete list of responsibilities was generated for each individual. Roles were then created and named. The example below shows how this was done for W.

<table>
<thead>
<tr>
<th><strong>W: Manager UKIT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provide tools, infrastructure, support for distributed international working</td>
</tr>
<tr>
<td>• Liaise with other areas in Labs (e.g., Internet telephony)</td>
</tr>
<tr>
<td>• Oversee the three teams in UKIT</td>
</tr>
<tr>
<td>• Budget responsibilities</td>
</tr>
<tr>
<td>• Lead team meetings</td>
</tr>
<tr>
<td>• Advisory (e.g., meeting with Bea and Stan)</td>
</tr>
<tr>
<td>• Liaise with PA/coordinate</td>
</tr>
</tbody>
</table>

**Roles:**

**Manager**  
Oversee the three teams in UKIT  
Budget responsibilities  
Lead team meetings  
Personnel matters  
Personal evaluations

**CoP Collaborator**  
Liaise with PA/coordinate  
Arrange WWIT meetings with PA  
Look for opportunities for collaboration/leverage

**Technical**  
Provide tools, infrastructure, support of distributed international working

**Collaborator**  
Liaise with other areas in labs  
Advisory
When all of the roles and responsibilities had been created for each of the CoP members, they were combined into one consolidated Flow Model.

**Figure 1: Consolidated Flow Model — Detail**
APPENDIX 6: EXAMPLE OF CONSOLIDATED SEQUENCE MODEL

Identifying Collaboration

M2; M2 — i.e., both examples that have been selected are from an electronic meeting

These two examples come from the second distributed meeting. There were other (less explicit) examples, but some of them were related secondhand and not seen directly, for example:

- S said that when he was abroad he dropped in on one of his colleagues with whom he had a good relationship, saw a project, and thought, “That would be good in the UK.”
- W said that the possible collaboration with the Internet Telephony Unit came about because someone from PA happened to see a demo and thought, “We want to use that.”

These were both serendipitous, but there were also occasions in the co-located meetings where it was expressed that more cross-team cooperation was needed. Here they were recognising a need and suggested ways for cooperation/collaboration.

There are two examples. One is general — “several areas where we can collaborate” and just highlights the possibilities. The second is very specific — “what we have here is … and what we need to do is … and this is who could do it.” This happened on several occasions in the meeting — this one has been selected as being representative.

The people who act on the need will learn from their collaboration, but what about sharing the knowledge (if relevant) with other members of the group? If they create something — some of their knowledge will be embedded in it.

Another interesting point — they do not select people just from the CoP to work on these actions, but also bring in people from WWIT (the wider group).
Appendix 6: (continued)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Abstract Step</th>
<th>M2</th>
<th>M2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use artefact</td>
<td>Read artefact</td>
<td>Trigger: PA scans trough artefact on screen whilst WD talking about it</td>
<td>Trigger: discuss items on artefact</td>
</tr>
<tr>
<td>See possibility for collaboration</td>
<td>Notice area where could work together</td>
<td>PA stop WD – seen several areas where we might collaborate</td>
<td>During discussion of artefact realize it would be suitable for collaboration</td>
</tr>
<tr>
<td>Refine possibility</td>
<td>Discuss feasibility</td>
<td></td>
<td>Define need</td>
</tr>
<tr>
<td>Note collaborative action</td>
<td>Record action to be taken</td>
<td></td>
<td>Suggest people to action this</td>
</tr>
<tr>
<td>Move on</td>
<td>Move on</td>
<td></td>
<td>Move on</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity</th>
<th>Intent</th>
<th>Abstract step</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use artefact</td>
<td>Communicate with colleagues*</td>
<td>Read artefact</td>
</tr>
<tr>
<td>See possibility for collaboration</td>
<td>Work together to</td>
<td>Notice area where could work together</td>
</tr>
<tr>
<td></td>
<td>• Learn</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Leverage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Share</td>
<td></td>
</tr>
<tr>
<td>Refine possibility</td>
<td>Work out initial detail of collaboration</td>
<td>Discuss feasibility</td>
</tr>
<tr>
<td></td>
<td>Create partnership/team to work on this</td>
<td>Identify personnel</td>
</tr>
<tr>
<td>Note collaborative action</td>
<td>Have history</td>
<td>Record action to be taken</td>
</tr>
<tr>
<td>Move on</td>
<td>Identify further possibilities</td>
<td>Move on</td>
</tr>
</tbody>
</table>

Key point to come out of this is the artefact that is stimulating collaboration.

*In this case, the artefact was being used as a communication tool.*
APPENDIX 7: PROPOSITIONS USED IN STUDY

The only thing representative about the week was that it was unrepresentative.

A CoP cannot be created, only facilitated.

*From the Flow Model: Collaboration:*
The major part of your role is collaboration
  - Within UKIT
  - Directly with PA
  - Identification of areas for USIT/UKIT collaboration

*From the Flow Model: CoPs:*
Only some groups are CoPs:
  - USIT/UKIT Management teams together are a CoP
  - Subgroups are not CoPs
  - WWIT is not a CoP
  - PC Team, Infrastructure team, Informatics — are not CoPs

There is evolution — WWIT may become a CoP

*From the Flow Model: Media:*
You consciously choose the medium you use for communication.

You get communications breakdowns in the media.

The selection of the wrong media does cause problems.

Relationships do not grow electronically — you have to meet the people face-to-face first.

*From the Flow Model: Distribution/Internationalisation:*
The short time window is a problem.

You need regular and frequent interaction — this lessens as one moves out of physical proximity.
Being aware that your communication partner is at his/her desk would not be of noticeable benefit.

Because you work with PA, you now have access to more expertise.

You ask PA for help with technical problems and collaborative projects.

Sometimes asking for help is not pre-planned — you just pick up the phone.

*From the Flow Model: Learning and New Knowledge:*  
The easiest things for people to learn are technical things. It is harder to learn how things get done.

When something is finished you don’t take stock and ascertain what you’ve learned from it.

*From the Flow Model: Ad Hoc Communication:*  
A lot of your ad hoc communication is a result of physical proximity.

*From the Sequence Model: Media:*  
Fast response and a shared artefact are of more use than bandwidth.

Getting to know the PA people has happened through visits and not at all through e-media.

Getting to know the people well has helped with issues of trust and confidence.

Knowing who you are talking to is sometimes a problem in e-media. The fact that you know the people so well does not help at all.

Your communication media need:

- To be easy to set up and use
- To have a fast response
- To have shared artefact

*From the Sequence Model: Gurus/Experts:*  
When you turn to a guru for help you let him/her do it — you don’t learn from him or her.
When an expert leaves, the knowledge is easily replaced.

Having two people working at the same job (e.g., backups) is a waste of resources.

If you haven’t got an expert in UKIT, you are stuck.

*From the Sequence Model: Learning and New Knowledge:*  
You use your shared knowledge to create new knowledge.

Learning is dependent on serendipity.

Spending time with a mentor is valuable but doesn’t often happen.

There is scope for facilitating more learning from each other in the group.

You do learn from and act upon past experience — your own and PA’s.

As a group, you have recognised that you need to learn more effectively.

*From the Sequence Model: Ad Hoc Communication:*  
Ad hoc communication is a key element of your communication.

Ad hoc communication takes place:
- Electronically
- Within formal settings
- Drop-in

Ad hoc communication provides opportunities for:
- Collaboration (even distributed)
- Sharing information
- Technical queries
- Discussing issues/problem solving

*From the Sequence Model: Knowledge Management Issues:*  
Breakdowns
- Loss of knowledge
- Duplication of effort
Needs
• To share knowledge
• Spread the load

*From the Sequence Model: Use of the planning document:*  
The Planning Document was more important than you realised.

The Planning Document was used for:
• Communication with PA

The Planning Document was used for:
• Communication with your teams

The Planning Document was used for:
• To include input from your teams

The Planning Document was used for:
• Planning

The Planning Document was used for:
• Stimulating discussion

The Planning Document was used as a:
• Collaboration catalyst

The Planning Document was used for:
• Driving meetings

The Planning Document was used for:
• Flagging up issues, problems and technical issues

The Planning Document was used for:
• Applying knowledge from Bristol and PA to solve problems and technical issues

*From the Cultural Model: Media:*  
You and your colleagues are happy in e-media but get to know each other better face-to-face. Part of this is a cultural thing — you can understand the culture better.
From the Cultural Model: Gurus/Experts:
Cultural difference: US has experts (people more focused on specific topics).
   Bristol has to go for “Jack of all trades” approach — this can actually be beneficial.

Time is a problem — it is easier to grab the guru and get him/her to solve the problem than to learn about it and do it yourself.

From the Cultural Model: Ad Hoc Communication:
Ad hoc communication is part of the culture of the organisation.
APPENDIX 8: WEB OF POSSIBLE RELATIONSHIPS FROM THE AFFINITY*

Figure 1: Web of Possible Relationships from Affinity
APPENDIX 9: INTERVIEW GUIDE FOR STAGE TWO

1:1 Sessions with USIT Members

How useful did you find the process of creating the planning document with UK?

Artefact use. These were my impressions from the observations. What are your opinions?

a) Discussion document:
   *Does the document serve to drive a discussion? Is it a focus of discussion?*

b) Collaboration catalyst:
   *Does working with a shared document highlight areas for further collaboration?*

c) Planning:
   *Do you ever use a joint document for planning?*
   *Do you create a planning document?*
   *What is of most use — the process of creating the document, or the actual finished product?*

d) Reflection:
   *Does using/working on a shared document cause you to reflect (as a group) on what you are doing?*

e) Demo:
   *Do you ever use any shared artefacts to demonstrate anything to anybody — e.g., how to do something?*

f) Problem solving:
   *Does working on a document, or going thorough a document flag up any possible problems that you then turn your minds to as a group?*

g) History (minutes):
   *Do you record minutes of meetings?*
   *How do you do this?*

h) Clarification of understanding:
   *Do you ever use the shared document to clarify understandings?*

i) Communication tool:
   *Do you use a shared document as a communication tool?*

j) Boundary object:
   *Does your shared document cross any boundaries?*
   *What boundaries does it cross?*
k) Interpretation:
   Do different people get different interpretations of things that are in the document?
   Is this a good or a bad thing?
   Explain.
   How do you cope with different interpretations?

l) Representation propagation:
   How does the document get created?
   What input is there?
   Vertical
   Horizontal

Your opinion on the importance of face-to-face interaction.
What media do you use?
Likes and Dislikes?
You have your own version of the planning document. How does that tie in with the UK one?
What aspects have to be taken into account when creating the boundary object?
In the development of the artefact, they came together at certain points for co-ordination points. What is the purpose of these?
A contribution we are making is to look at the process of constructing an artefact — analysis will look at these processes.
APPENDIX 10:
INTERVIEW GUIDE FOR EXTRA COPS

Part A: Background
1. What is the structure of the group — who is where?
2. How did the group come into being? (evolution)
3. How is the group progressing now? (evolution)
4. What is the work of the community?
5. What difficulties are there in operating in a distributed environment?
6. And what benefits?
7. Are people members of different groups? (marginals)

Part B: Media
Looking for importance of face-to-face interaction, what media are used for doing different tasks.
1. How do you solve problems?
2. How do you contact colleagues in other locations?
3. What media do you use in the course of your work in the community?
4. Do you meet face-to-face?
   • Who with?
   • How often?
   • Prearranged or ad hoc or both?
   • Importance of ad hoc
   • How do you get ad hoc with people elsewhere?
5. What do you like/dislike about the media?
6. Do you get help with technical problems from your colleagues in other locations?
7. How do you build up a relationship with your colleagues?
   • How important is face-to-face in this?
   • How does it work in e-media?
8. How important is it to build up this relationship?
9. How do you develop trust with your colleagues?
10. Would being aware that a colleague was at his/her desk be of benefit?
Part C: Artefacts

1. Do you ever use artefacts such as shared documents in meetings?
   Co-located?
   Distributed?

2. Do you ever work on shared documents with colleagues here?
   What kind?
   What of?
   How do you develop the document?

3. Do you ever work on shared documents with colleagues in other locations?
   What kind?
   How do you communicate?
   How do you develop the document?

4. Does the artefact substitute for face-to-face at all?

5. Use of artefacts
   As:
   a) Discussion document:
      Does the document serve to drive a discussion; is it a focus of discussion?
   b) Collaboration catalyst
      Does working with a shared document highlight areas for further collaboration?
   c) Planning
      Do you ever use a joint document for planning?
      What is of most use—the process of creating the document or the actual finished product?
   d) Reflection
      Does using/working on a shared document cause you to reflect (as a group) on what you are doing?
   e) Demo
      Do you ever use any shared artefacts to demonstrate anything to anybody—e.g., how to do something?
   f) Problem solving
      Does working on a document or going thorough a document flag up any possible problems that you then turn your minds to as a group?
   g) History (minutes)
      Do you record minutes of meetings?
      How do you do this?
h) Clarification of understanding
Do you ever use the shared document to clarify understandings?

i) Communication tool
Do you use a shared document as a communication tool?

j) Boundary object
Does your shared document cross any boundaries?
What boundaries does it cross?

k) Interpretation
Do different people get different interpretations of things that are in the document?
Is this a good or a bad thing?
Explain.
How do you cope with different interpretations?

l) Representation propagation
How does the document get created?
What input is there?
Vertical
Horizontal

Can you show me any examples of artefacts and talk me through what has been done with them?

CD technique — trying to root an account in the past in context
Can I have any examples of shared artefacts?
Where are the documents kept? (intranet, shared folders)
Who has access?

*In these appendices, there are examples of the different models which are used in Contextual Design. Some of the models are very large, therefore the reduced representations shown are only intended to give an overall impression of what the model will look like. Where appropriate a small section of the model has been magnified to give the reader more detail about the type of information which might appear in the model.*