Abstract
Contextual Inquiry (CI) is a field research method for collecting detailed information about users, their working methods and how they use different tools during their work. CI emphasizes the master-apprentice approach where user is the master and developer is an apprentice who observes the user at work and steers the process by asking questions and clarifications. By properly applying the four basic principles of context, partnership, interpretation and focus, researchers can gain better understanding of the user’s business domain, processes and workflows than with traditional surveys and questionnaires. However, the CI process is quite heavy and produces a lot of information which must be analyzed before it can used as basis for requirements and design. There are also some psychological issues which may hinder the observation process. CI is especially suitable for evaluating existing products and for exploring new unfamiliar business domains.
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1. INTRODUCTION

Contextual Inquiry (CI) is a qualitative field research methodology for data gathering and analysis in specific well-defined context (Raven & Flanders, 1996). The goal of CI research is to collect detailed information about users, their working methods, environments, patterns, processes and other relevant factors regarding their daily work and then interpret that data to gain in-depth understanding of requirements and suitable system design. The key aspect of contextual inquiry is to observe and interact with users in their normal working environment according to master-apprentice model. The user (customer) is the master who performs and explains the work and the interviewer (developer) is the apprentice who tries to analyze the work process structures, patterns, interactions and details (Beyer & Holtzblatt, 1995).

A well-designed and executed contextual inquiry can offer significantly better understanding of the customer’s business processes, tasks and related requirements than traditional surveys, questionnaires and interviews which usually provide summary data and abstractions rather than in-the-moment experience and more concrete information. In addition, also other research methods can be combined with contextual inquiry to gain better flexibility. However, contextual inquiry can be a heavy process and it requires good communications and data analysis skills. (Raven & Flanders, 1996)

Contextual Inquiry was developed at Digital Equipment Corporation already in 1986 by Karen Holtzblatt who was later assisted by Sandy Jones and Hugh Beyer in refining it into full design process (Raven & Flanders, 1996; Holtzblatt & Beyer, 1993).

The purpose of this paper is to describe the principles, advantages and possible pitfalls of contextual inquiry as well as required steps on generic level to conduct a contextual inquiry in practice.

2. BASIC PRINCIPLES OF CONTEXTUAL INQUIRY

This chapter describes the four basic principles of contextual inquiry which must be followed and understood in order to conduct a proper CI research. It is worth noting that some authors do not list interpretation as a separate principle but consider it as part of the partnership principle and general communication guidelines.

2.1 Context

The ultimate goal of developers is to build a solution which supports, facilitates and enhances the customer processes and tasks. In order to gain thorough understanding of these processes, users must be observed and interviewed while they work – in the right context. Beyer and Holtzblatt (1995) understood that seeing the actual work reveals the structure and strategies of the work, that is, what really matters in addition to minor details and patterns which would not most likely get mentioned in e.g. a questionnaire answer.

People are often not completely aware of their working habits, everything they do and subtle reasons or unconscious decisions for their actions, which is why most people have difficulties in explaining the content and structure of their work (Beyer & Holtzblatt, 1995). However, when people explain what they are doing while they work and interact with the observing interviewer, they find it much easier to describe the essential aspects and reasons behind different tasks. The environment and the context also often remind the user what to do next (Beyer & Holtzblatt, 1995).
Additionally, information and conditions of the working environment can offer valuable insight regarding general requirements and constraints. Michael Good (1989) also points out that products may have different usability requirements depending on the context they are used in.

### 2.2 Partnership
The second fundamental cornerstone of contextual inquiry is the concept of partnership. Although Beyer and Holtzblatt (1995) talk about the master-apprentice model where the user is the master and the interviewer is the apprentice, Raven and Flanders (1996) emphasize that the user and the interviewer should be considered equals. It is critical to recognize the user as an expert of his or her personal work and the interviewer should demonstrate humility, inquisitiveness and pay close attention at all times. Holtzblatt and Jones point out that these roles make it clear that the interviewer is not there to solve problems, answer technical questions or to demonstrate superior knowledge. The interviewer is there to understand the user’s work and thus it is natural for him to ask questions, clarifications and confirm all his interpretations.

It is important to realize that the interviewer alone is responsible for understanding the work structure, patterns, constraints, roles etc. and for designing a system which supports these tasks. Similarly the user is responsible for providing as much information about the current task he is performing as well as any other issue addressed by the interviewer, but the user does not need to have any teaching abilities. (Beyer & Holtzblatt, 1995)

Although the user and the interviewer should explore, brainstorm and discuss emerging issues together, the interviewer should not make unnecessary remarks, tell the user how to do his work or interrupt the user needlessly. By interrupting, validating interpretations and asking questions the interviewer can steer the process to maintain desired focus. The interviewer can gain further insight if an occurrence of certain task can remind the user of other related interesting events that happened before. (Beyer & Holtzblatt, 1995)

### 2.3 Interpretation
The interviewer must confirm all his interpretations of his observations by articulating them aloud to the user and by asking clarifying questions. In other words, the interviewer’s hypothesis of a fact must be confirmed to be exactly precise before it can become the basis for the design. This is absolutely critical in order to get reliable information. The user and the interviewer can discuss the issue and brainstorm a bit to figure out alternative ways how a system could support the tasks since the goal is to improve the work, not just understand it. (Beyer & Holtzblatt, 1995)

### 2.4 Focus
Before conducting the actual contextual interview, the focus of the interview must be carefully thought out. The focus is a defined perspective or a combination of assumptions, beliefs and concerns regarding a particular situation rather than a list of specific questions as in a survey (Raven & Flanders, 1996). Raven and Flanders (1996) suggest that the focus should be defined by the entire team by using brainstorming and affinity diagrams composed of Post-It-notes. One good example of a concrete concern might be e.g. “what can we do to improve the documentation?”.

Once the focus has been defined, the interviewer should filter the information and his observations through this focus since it also defines the goal of the inquiry. However, the interviewer must be able to expand and shift his focus since it may turn out to be too limited (Beyer & Holtzblatt, 1995).
3. CONDUCTING CONTEXTUAL INQUIRY

Contextual Inquiry can be conducted in different ways depending on type of the project, development stage, user environment and the type of information we are looking for. Raven and Flanders (1996) present three different methods in table 1 which can be applied at various stages of the research and stress that there is no single correct way to conduct a contextual inquiry.

**Table 1. Different methods for conducting a contextual inquiry**

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work based interview</td>
<td>The traditional method for contextual inquiry. Users are observed and interviewed while they work and the interviewers are responsible for making notes and recording the session.</td>
</tr>
<tr>
<td>Post-observation inquiry</td>
<td>If the user cannot be interrupted while he works or interruptions would significantly harm the work performance, it is better just to observe the user, take notes and prepare a set of questions and ask them later when the user is less busy.</td>
</tr>
<tr>
<td>Artifact walkthrough</td>
<td>Artifact walkthroughs are suitable in situations when the activity takes place sporadically over time or involves several different people during certain period of time (e.g. a couple of days). This requires that the users create notes (diary, logs) in chronological order of their activities and bring all related artifacts (memos, reports, documents, drafts etc.) to the actual artifact walkthrough meeting. In other words, all material and actions must be recorded in order to recreate the process later. In the walkthrough meeting the notes are then analyzed and a timeline of activities is created e.g. on a whiteboard with references to associated artifacts. The goal is to understand the structure and the patterns of the process, people involved and what artifacts are required and generated during the process.</td>
</tr>
</tbody>
</table>

Bailey (2004) presents simple steps necessary for conducting a contextual inquiry iteration. The steps are planning, initiation, execution, closing and reflection. These steps are described in more detail in the following chapters. Figure 1 (Konkka & Kalliokulju, 2001) describes the main steps and emphasizes the iterative nature of the process.

![Figure 1. The steps of contextual inquiry](image)
3.1 Plan and Design
Like with all field research methods, planning and designing is very important. First, the research team should try to understand the task domain on general level and then agree on achievable goals and the focus of the research which are also affected by the nature of the project. After this it is important to identify the relevant user groups and roles, select the actual users who should attend the interviews and plan the visits carefully (date, time, location, duration) (Bailey, 2004). Nikkanen (2001) suggests that at least 10-20 people should be interviewed unless the focus is very narrow and Good (1989) points out that iterations should stop when new interviews no longer reveal much new usability data.

The research group should decide how to record the interviews and notes, get the necessary equipment (video cameras, tape recorders, digital cameras, notepads, laptops) and agree on guidelines for conducting the actual interviews. (Bailey, 2004)

The team must also ensure that they have been authorized to conduct the research by the customer’s management board and all security related issues are taken into account. Naturally the management should be informed about the nature of contextual inquiry and how the method is carried out in practice. Experience shows that a good project plan with realistic timeframe and goals, well-designed interview techniques (brainstorm the questions and technique as a group) and some verification and iterations already in the planning phase increase the chances of success. (Bailey, 2004)

It is important to remember that in most cases contextual inquiry is a heavy process (Kujala, 1998) which requires at very least good communication and documenting skills from the research group members.

3.2 Initiate
Since the actual contextual interview is a social process and requires good teamwork specified by the partnership principle, it is important to notify the users who are selected for the contextual interviews beforehand. The research team should send preferably one page formal letters directly to the selected persons to inform the user about the project, process, goals, schedule, expectations and naturally introduce the research team. It is important to mention that the process has been approved by the user’s supervisors and include other relevant information in order to successfully conduct the research. (Bailey, 2004)

Although the letter should include contact information and a request to confirm the visit, it is better to make a follow-up phone call a couple of days after sending the letter. This will increase the chances that the interview actually takes place and the user will not forget or disregard the event. (Bailey, 2004)

3.3 Execute
The actual interview consists of observations, discussion, steering and verification. Raven and Flanders (1996) suggest that interviewers should work in pairs (2 people per user) so that one person mainly takes notes and records the session while the other person leads the interview and tries to retain focus. One session should last about 2-3 hours and will typically produce about 50 to 100 notes per user (Beyer & Holtzblatt, 1998; Bailey 2004), but naturally these figures are dependent on the nature of the work and the project focus. To maximize team efficiency, the entire development team can participate the contextual inquiry as interviewers taken that they have adequate understanding of the process and required communication and documentation skills (Raven & Flanders, 1996).

Beyer & Holtzblatt (1998) suggest four steps to conduct the execution step which are described next.
3.3.1 Conventional Interview
First the user and the interviewer should introduce themselves after which the interviewer explains the focus and the structure of the interview. The interviewer should emphasize that the user is the expert and his work and actions are the primary interest of the interview. The interviewer should also explain how long the session will take, ask permission to record the session and give user the right to control the interview so that the user can take breaks and stop the interview at any time (Raven & Flanders, 1996).

To gain better overall understanding of the user’s work, the user may quickly and briefly describe the overall structure of his work but this should be kept on very generic level and the conventional interview should not take more than 15 minutes total. The goal is to create relaxed and nice atmosphere which encourages teamwork and partnership (Bailey, 2004).

3.3.2 Transition
Transition is a very short phase (a minute or so) during which the interviewer explains the rules and roles in the contextual inquiry. The basic message is that the user does the work and the interviewer observes and asks questions. The user is encouraged to think aloud and discuss ideas with the interviewer.

3.3.3 Contextual Interview Proper
Then the actual contextual interview begins and user starts doing his work and the interviewer observes, asks questions, takes notes and tries to analyze his observations. It is important to make as detailed notes as possible preferably using chronological order and to maintain discussion (Bailey, 2004; Konkka & Kalliokulju, 2001). The interviewer should not record assumptions as facts before he has successfully verified them by articulating his interpretations to the user. Two interviewers are most probably able to capture more information and record better notes than just one observer (Raven & Flanders, 1996).

Throughout the interview the interviewer should filter the information considering the specified focus and steer the process to better understand the relevant tasks, workflow, physical and social constraints. The interviewer should avoid generalizations and state his questions so that the user tells concrete traceable facts – you should ask “when was the last time you did …” instead of “do you usually…””. Although the interviewer should be inquisitive, observant and eager to ask questions, he should also try to stay in the background and refrain from commenting or advising the user. The interviewer should adhere to what he stated he would do and maintain a positive tone (Bailey, 2004). Additionally, it is also important to realize what the user does not do (Konkka & Kalliokulju, 2001).

Whenever possible the interviewers should use a video camera, tape recorder and possibly a digital camera to record as much information about the session as possible. Naturally the basic tools such as notepads, sketch boards and possibly portable computers are essential. Recording aids are especially important if the user cannot be interrupted or constantly observed which is typically the case when using the post-observation inquiry or the artifact walkthrough method. (Beyer & Holtzblatt, 1998)

Hackos and Redish list a set of questions (Nikkanen, 2001) which can be effective in finding out how a certain process works. So for every task, try to ask these questions:

- when the first task in the process happens
- what triggers it
- who does it
- what information the person has when that task starts
- what are the major steps in the task
- what information comes out of it
- who is the next person in the chain of process
• when does the next task happen
• what lets the user know the task is complete
• does the process connect to another process
• is the process ever reopened and if so what circumstances

Although contextual interview sounds pretty simple and straight-forward, there are various psychological issues and other obstacles which may make the process difficult. Bailey (2004) points out that the users may be shy, suspicious and even embarrassed about what they do especially if they make mistakes. Generally most people do not like the fact that someone is constantly monitoring them and looking over their shoulder which may cause the user to do his job differently than he would normally do (Beyer & Holtzblatt, 1998). The interviewer should be persistent and should not always take the first answer as the final correct and complete explanation – sometimes questions and issues need to be revisited.

3.3.4 Wrap-up

After the actual interview it is time to summarize the interviewer’s observations, notes, verify remaining interpretations and discuss issues which may still remain a bit unclear. In other words, the goal is to resolve ambiguities and inconsistencies (Raven & Flanders, 1996) and confirm that the overall conception gained by the interviewer matches that of the user. At least 15 minutes should be reserved for this discussion as it is the last chance to correct misinterpretations. However, the interviewer should try to maintain the agreed schedule and respect the time the user has spent to participate in the interview. Thus it is important to decide when it is time to thank the user and leave (Bailey, 2004).

Kujala (1998) also mentions that the essential concepts, tools, places etc. written on post-it notes during the interview can be organized into logical groups by the user during the wrap-up and the interviewer can then use this information to confirm his observations and figure out the relationships between different entities.

3.4 Close

All users who were interviewed should be sent a thank you letter and a copy of the research results for their review. The letter should include contact information and request to contact the user again if there is need to clarify the results later. It is polite to thank the user for his time, state the importance of the research results and assure that information confidentiality and privacy issues have been taken into account. (Bailey, 2004; Beyer & Holtzblatt, 1998)

3.5 Reflect and Analyze

After the research team members have conducted all contextual interviews it is time to analyze, summarize and categorize all observations as a team to create a shared perspective. The analysis should be done as soon as possible (preferably less than 48 hours) after the observations so that the interviewers can still recall minor details they possibly did not write down. It is important to set focus and scope for the analysis and decide the methods and tools for presenting the data before the actual walkthroughs start (Raven & Flanders, 1996).

Konkka and Kalliokulju (2001) suggest that each pair should conduct a walkthrough of their observations by sharing all the notes and insights with other team members. The process should be formal enough so that each member has a special role as either a moderator, typist, modeller, sketcher etc. which helps the team to better record and analyze the data. The team members listen, ask questions, draw workflow models and try to capture the information and structure in affinity notes which contain issues, interpretations and design ideas.

Visual modelling techniques such as affinity diagrams, process flow models, UML diagrams are essential in this phase. It is vital to share interpretations, discuss various viewpoints, categorize and
understand the workflow and structure of the content. In case there are still unclear issues the team should contact the users and ask for clarifications and feedback. The data analysis requires several iterations and good teamwork since there is usually a huge amount of observation information. (Bailey, 2004; Good 1989)

In the next short chapters we will quickly introduce three methods for analyzing and processing the data.

3.5.1 Affinity Diagram
An affinity diagram is a categorization or grouping of questions that are similar or that seem to go together (Raven & Flanders, 1996). An affinity note, which should contain only one observation item, can be written for example on a sticky Post-It note. Each note should be understandable as such without having to inspect other notes. A clear and simple observation template with fields for user ID, sequence number and observation code together with guidance questions and answers for “what?” “who?” “why?” “when?” can make the affinity notes more consistent (Konkka & Kalliokulju, 2001).

Notes are then collected on a large sheet of paper or whiteboard on the wall and then organized into logical groups. The groups are then connected into high level concepts and high level groups. Grouping is based on similarity of content or idea of the notes. The notes can be also colorized based on their level in the hierarchy. Finally the group analyzes the affinity diagram contents and tries to complete the missing bits of information and analyze arising themes by brainstorming and consulting users who were interviewed. (Bailey, 2004; Beyer & Holtzblatt, 1993)

3.5.2 Workflow Models
Based on affinity notes and other recorded material, it is possible to create models which represent the structure and different processes occurring in the observed environment i.e. the user’s context. Beyer and Holtzblatt (1993) mention the context model, physical model, flow model, sequence model and abstract flow model. The goal is to understand which persons or roles are involved in certain process, which artifacts are needed and produced and to identify possible bottlenecks and ways to improve the process. Once again, visual models are essential. The products of the workflow analysis and affinity diagram composition form the basis for contextual design. The development team must be able to figure out broader and better solutions, changes in the work practice and possibly design supplemental technologies. (Beyer & Holtzblatt, 1993; Bailey 2004)

3.5.3 Action-Data-Benefit Table
Raven and Flanders (1996) suggest a simple but very effective way to summarize and collect data from affinity diagram and workflow models into requirements. This information can be presented in so called action-data-benefit table which has these three things in the table columns. In the table, we have main goals like “Improve the documentation” as headings. Each action cell tells what are we planning to do to reach that goal, data cell contains information about the source of information (how did we notice this is important in the interview) and the benefit cell naturally lists benefits of this new feature or improvement. Iterative process with contextual inquiry and design can produce highly detailed, relevant and accurate user requirements and understanding of the user’s workflow processes.
4. METHOD ANALYSIS

This chapter describes various viewpoints regarding contextual inquiry and lists several advantages and possible pitfalls. It is important to take into account that the nature of the project, focus, scope, and goals have significant meaning when we are trying to determine feasibility of contextual inquiry.

4.1 Advantages and Benefits

The obvious benefit of contextual inquiry is the fact that it provides lots of information about users and their habits since it captures the detailed direct user experience of a system rather than summary data which is often produced as a result of a survey or traditional interview (Raven & Flanders, 1996). Contextual Inquiry is especially useful for discovering and analyzing usability related issues and in general for capturing behavioural-type requirements and for testing prototypes (Fouskas et al., 2002; Raven & Flanders, 1996; Good 1989).

Contextual Inquiry interviewers also learn about different tasks, high-level workflow and constraints and are thus better able to prioritize required features (Bailey, 2004). Raven and Flanders (1996) point out that the user can help in brainstorming possible solutions and since the process is bound to a certain context, the user has a better chance to take advantage of his expert knowledge. Further, the context reveals lots of additional unspoken information to an observant interviewer.

Despite the fact that the interview process requires some documentation and communication skills, almost everyone can participate in contextual inquiry interviews and data analysis phase (Raven & Flanders, 1996). Designers can gain design inspiration and by establishing a trusting partnership with the users, the designers can get valuable feedback and development ideas. It is important to inform the users about the design and analyzed data so that the users can confirm the interpretations and can possibly come up with new good ideas and viewpoints (Bailey, 2004).

4.2 Possible Pitfalls, Problems and Drawbacks

Contextual Inquiry may sound simple to conduct but in fact there are several issues which can make the process difficult and unfruitful. Beyer and Holtzblatt (1995) emphasize the importance of proper interviewing technique because the interview can easily turn into a regular questionnaire, interview, friendly irrelevant discussion or even interrogation. The interviewer should make sure that the user does not talk in the abstract using general expressions and should urge the user to talk about concrete actual events. The interviewer might also be reluctant to share his interpretations because he might worry about biasing the data. However, it is necessary to confirm all interpretations and it also helps the user to describe the work better and make clarifications. It might also be troublesome to lead the user in certain direction to maintain the desired focus or the focus might be wrong, limited or even nonexistent.

An interviewer who constantly comments the way the user works and possibly even tells the user that he is not doing his work correctly or efficiently enough is making a grave mistake. The interviewer must understand that users may be shy, suspicious or even embarrassed about what they do especially if the make mistakes. Generally most people do not like to be closely observed while they work and it is therefore possible that the work is done differently under observation. Thus it might be hard to find people who are willing to participate in contextual interview (Fouskas et al., 2002). Therefore post-observation and artifact walkthroughs are important methods for conducting a contextual interview but the do not offer the same in-depth accuracy as the normal contextual interview. (Beyer & Holtzblatt, 1998)

Contextual Inquiry often produces huge amounts possibly redundant data which takes lots of time to analyze and interpret correctly (Bailey, 2004). An incompetent interviewer might collect data that is
out-of-focus, irrelevant, too general or even totally wrong. It appears that it is very difficult to automate any parts of the contextual inquiry process and there is a need for ad-hoc tools since the theory framework does not provide any specific tools or guidelines. In addition, the contextual inquiry process might not produce very extensive and good results if there isn’t enough diversity in the research team. In other words, it is recommended to have people with different skills and backgrounds such as psychologists, managers, software engineers etc. (Fouskas et al. 2002)

Finally it is worth noting that contextual inquiry process requires lots of resources, time and commitment and it might be difficult or even impossible to get permission to visit a user site because of confidentiality issues (Purho, 2001).

4.3 Feasibility

It is clear that contextual inquiry is not a feasible choice in all projects and scenarios. The process is great when the developers have very little knowledge of customer’s processes and the goal is therefore to understand an unfamiliar business domain. In such case, it is recommended, if possible, to visit at least three different companies to gain broader view of the domain (Raven & Flanders, 1996).

Hom (1996) argues that contextual inquiry works best when used at the early stages of the development since the gathered information is often very subjective. Kantner et. al (2003) point out that contextual inquiry more or less assumes that the team is examining processes, tools or tasks which have been used for quite some time. Therefore it is a good method for exploring how people use a certain product and for identifying important features and development needs. A software company who plans to develop a new solution, might want to do contextual inquiry research based on major competitor products to figure out the common working habits, important features and correct focus.

4.4 Discussion

The purpose of this chapter is to present some of my own thoughts and observations about the contextual inquiry method. However, the reader should be aware that I have not participated in CI process before and these views more or less present a “gut feeling”.

The first thing that caught my attention was the fact that authors seemed to slightly disagree what should be the skill set of people conducting a contextual inquiry. In my opinion, the psychological aspects must be acknowledged since they have significant importance especially during the actual contextual interview. An inexperienced interviewer might not be able to steer the interview properly to maintain focus, ask the right questions in correct way and confirm his interpretations properly. I assume that there is a great danger that the interview falls flat and produces very little relevant information even if it takes a very long time. Shyness, altered behaviour and other hindrances might lead into quite misleading conclusions. The interviewer must also be able quickly document all his observations and be able to disregard irrelevant things while filtering everything through defined focus. This combination of excellent communication, observation and documenting skills most probably requires training and I thus argue that we just can’t take any team of developers who would automatically get good results with the CI process.

Another point is that CI obviously requires lots of time, resources and enthusiastic people. We should not assume that these needs are easily fulfilled. Even if the company is able to organize a team to conduct a CI, it is certainly not guaranteed that the team members can actually visit the users and conduct the interview because of confidentiality issues. Especially information technology companies have very strict information security guidelines and they simply cannot allow outsiders to observe their mission critical data, tools and processes.

The large amount of information is another concern. The authors suggest that all interviews should be videotaped, tape recorded and every little detail should be documented with notes etc. Although this
greatly enhances the possibility of capturing all important things, this information has to be processed, analyzed, understood and categorized before it becomes useful. This requires teamwork, skill, time and nerves which emphasizes motivation as an important attribute. The large amount of data does not guarantee good results.

Finally it is a bit difficult to believe that artifact walkthroughs always work well in practice because this requires that the users involved in certain process constantly keep log of their activities and collect all related artifacts for later review. Even if the users were willing to do this, they simply might forget this duty or the provided material and artifacts may not be the ones they actually used and produced. At very least this requires that the observation periods must not be too long. Nevertheless, contextual inquiry seems like a good way to take advantage of the context and benefits of using user’s expert knowledge of his own work are obvious.

5. CONCLUSIONS

Contextual Inquiry offers a good way to collect extremely detailed information about users, their working habits and different processes occurring in the working context. Although the process is quite heavy and time consuming, requires some communication and documentation skills and is not suitable for all scenarios, it is an effective tool for evaluating existing products and systems or for getting familiar with a certain new business domain. Contextual Inquiry research can reveal many aspects that could not be captured with simple surveys, regular interviews or staged experiments. With proper training and systematic use of all basic principles, an experienced team has a chance to get good results consistently.

6. REFERENCES


