Qualitative Design for Visualizing User Viewpoints

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To plan business solutions that are deeply rooted in user viewpoints, we have developed the AIm (appreciative & imaginative) Interview as a qualitative design methodology. The AIm Interview visualizes organizational activities, problem consciousness, core values, and medium- and long-term directions, as viewed by individual users in the workplace, and designs a business-solution concept. This methodology consists of four methods based on an original strategic framework: an interview for collecting qualitative data and understanding present conditions, an interview for understanding the driving objective, a feedback workshop, and qualitative data analysis. The framework consists of seven frames: present conditions, values, energy source, strengths, driving objective, gap between actual conditions and driving objective, and business concept. This methodology is particularly effective in understanding the business context and intrinsic qualities in a Japanese organization consisting of people-centered organic relationships and middle-up-down decision making.

1. Introduction

Human-centered design (HCD) creates a whole new story from the user's point of view. This approach requires that product developers listen to users in the field, determine real user needs, and develop a mechanism for evaluating the direction that solutions should take from user viewpoints. However, when users are asked questions like "Would you use something like this?" the response is often shallow and superficial, which frustrates developers who complain that "Nothing important was talked about even though we visited users in the field." Developers are then left to discuss technical matters in a top-down approach while feeling that they have failed in ascertaining user needs.

Simply listening to what users say they need tends to uncover short-term, superficial needs that could easily change. To plan for solutions based on medium- and long-term outlooks, intrinsic needs that do not easily change over time must be understood. As opposed to determining what functions are needed, it is preferable to find out the value that users wish to obtain through the use of functions. In short, needs that may even be implicit to users must be uncovered. To this end, analog values related to emotions, that is, qualitative elements, must be understood in addition to digital functional requirements.

To determine intrinsic user needs, it is necessary to extract and interpret user ideas that are filled with emotion, i.e., feelings. These feelings act as seeds of field innovation. However, taking note of such feelings and interpreting them correctly requires a systematic methodology for determining deep layers of user consciousness and diverse types of context in the field.

We previously developed an interview method for understanding work practices from many angles.[1)] This method focuses on "work conscious-

ness" as experienced by users in the target workplace and clarifies actual work conditions and problem consciousness. It has been used under the name "worker analysis" since 2007 for banking office monitoring to visualize problems in a financial institution. This method, however, while capable of comprehending the present as reflected in user viewpoints, has not been able to understand the essence of a business or the direction that solutions should take. It has been able to draw a cross-sectional diagram of user consciousness with regard to what is happening or what is seriously wrong at that point in time, but it has not been able to draw a three-dimensional diagram of user consciousness having a temporal breadth connected with the past and future.

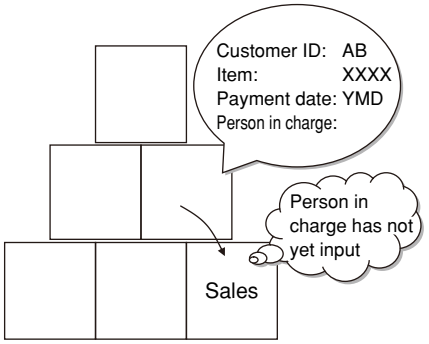
This paper introduces an original human-centered qualitative design approach that we have developed. Starting with the feelings of users in the field, this approach aims to visualize the time-space structure of consciousness reflected in user viewpoints and determine medium- and long-term directions. This methodology provides a way of discovering intrinsic business needs open to information technology (IT) and can assist management personnel who are worried about formulating medium- and long-term visions.

2. Reason for qualitative approach

First, we consider the meaning of "qualitative" and define it simply as an antonym of "quantitative". Survey data centered on character text (as opposed to numeric values) such as interview records, observation records, and documentation is called "qualitative data". And a method that collects and interprets qualitative data and clarifies the essence of things is called a "qualitative approach".

A qualitative approach is helpful in understanding business context in Japanese companies. Japanese and Western organizing principles are compared in **Figure 1** in a manner that clearly shows the difference between the two. An organizing principle describes how roles are assigned in an organization. This is a basic concept in the allocation of work, and it is clear from this comparison that the Japanese organizing principle is unique.[2)]

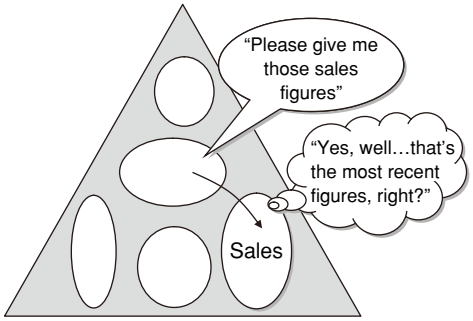
In the Western mechanistic-type (M-type)



• Building blocks represent all duties
• Each block is an individual function
• Mutual relationships are clear, all duties are assigned

Problem occurs→Who is responsible?

(a) Western M-type (mechanistic) organization



• All duties are enclosed by the triangle
• Each oval contains an individual function
• Shaded portion is a common area for mutual consulting

Problem occurs→Everyone considers what went wrong.

(b) Japanese O-type (organic) organization

Figure 1
Japanese and Western organizing principles.[2)]

organization shown in Figure 1 (a), the entire work domain is divided into separate functions. The building blocks represent all duties in the organization with each block representing a function performed by someone. These functions and their interrelationships are designed in a mutually exclusive and collectively exhaustive manner with all duties being clearly assigned. In other words, the company is organized so that any duty becomes the responsibility of some person.

The Japanese organic (O-type) organization in Figure 1 (b) is different. The triangle represents all duties in the organization while the ovals represent functions performed by individuals that may be routine or technically specialized tasks. The shaded portion of the triangle, meanwhile, signifies a strategic common area where members of the organization can consult with each other. In this common area, strategic consensus building based on one objective takes on a "middle-up-down" form.

In the case of an M-type organization, a quantitative approach based on reductionism (the whole is the sum of its parts) is an effective approach. Business in an M-type organization comes down to quantitative operations involving people, things, money, and information. When a problem occurs, a "drill down" process begins from the top of the organization chart to mechanistically determine which individual is responsible for that problem.

An O-type organization, however, includes the strategic common area described above that is not indicated in an organization chart or relegated a function but exists throughout the organization. Business in an O-type organization consists of people-centered organic relationships. A qualitative approach is especially effective in understanding the various types of relationships in such an environment.

3. Basic concept of methodology

Understanding people-centered organic relationships means tapping the consciousness of the central players in the workplace to obtain an overall picture of how the past, present, and future of the business interrelate and the roles that people and products/services play in that business. To this end, we have developed a qualitative design methodology called the AIm (appreciative & imaginative) Interview.[3] The AIm Interview has two key objectives: 1) understand the varied relationships woven by workplace users and the needs that they feel even at the level that the users themselves do not notice and 2) express the direction of a proposed solution as a story based on those relationships. It is conducted as part of a super-upstream process during an IT upgrade or in the product/service planning stage. The AIm Interview surveys and analyzes organizational activities, problem consciousness, core values, and medium- and long-term directions as reflected in the consciousness of workplace users. Its model is shown in **Figure 2**.

The most distinctive feature of this model is its ability to extract "future vision and direction" based on "past positive experiences". When given a vision and the present conditions and the gap between the two, we can see only one relationship connecting the future with the present. Our model, however, conceives of the future from the past, gives direction to the present from the future, and

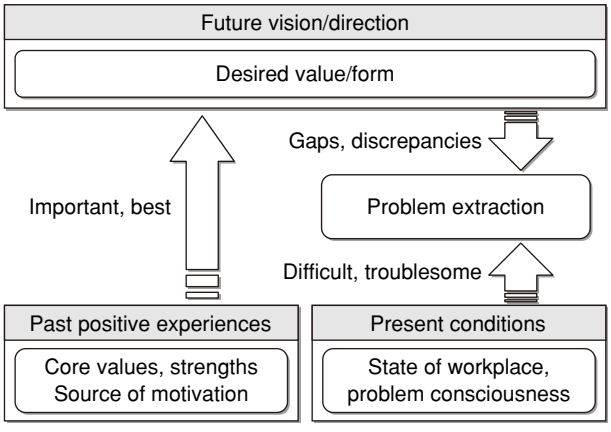


Figure 2
Model of AIm interview.

gives meaning to the past from the present. That is to say, it derives three sets of relationships, as described in research on time perspective in the field of psychology.[4)]

In "past positive experiences", the focus is on positive feelings—values, features, sources of motivation—that envelop the everyday duties of workplace users and the products and services that they use. A value premise that implicitly envelops the workplace can emerge from such positive experiences. Value premise can be thought of as values such as objectives and criteria that underlie decision making.

In "future vision/direction", the interview can illuminate the values and form that workplace users wish to obtain by performing their duties and using products and services. It is important here to collect and analyze data while establishing a relationship with value premise. Future vision and direction unrelated to value premise in the workplace—even if a great idea—is like plastic fruit: it may look nice but is otherwise useless.

From "present conditions", we can uncover the duties of workplace users, the state of the workplace including key people involved in carrying out those duties and what is communicated among them, and consciousness of problems such as potential risk and dilemmas.

"Problems" are extracted from two directions. That is, problems that are readily apparent and must be corrected are extracted from present conditions, and medium- and long-term problems with respect to value premise are extracted from future vision/direction.

3.1 Practical method 1: interview

Specific methods fall into two categories: an interview for collecting qualitative data and qualitative analysis to illuminate the direction that plans should take based on interview data.

Here, the interview method consists of a session for understanding present conditions and a session for understanding the driving objective. The session for understanding present conditions determines with good efficiency the present conditions of the interviewees and the current state of the workplace in a manner that expands upon the ECOW interview (ethno-cognitive interview method for work practice understanding).[1)] The session for understanding the driving objective discusses past positive experiences and future vision and direction.

The ECOW interview attempts to understand user consciousness with respect to the state of work in the workplace and the work of users from three angles: change in work over time, work area, and cooperative relations with surrounding people. The interview proceeds in a form approximating ordinary conversation while presenting the interviewee with a worksheet that lists questions on various themes. One feature of this type of interview is that it can efficiently understand regular work practices.

The AIm Interview also presents a worksheet like the ECOW interview and proceeds in a conversational format. The standard time for completing an interview consisting of the above two sessions is about 90 minutes.

The session for understanding present conditions adds questions from two more angles—work processes and usability—in addition to the three angles of the ECOW interview. This enables non-regular work practices as in sales and design to be understood and user surveys on products and services to be supported.

Work processes mean work lifecycles. In the case of sales, this would be a cycle consisting of advance preparation→approach→proposal →closing→follow-up, or it may simply be a PLAN →DO→SEE cycle.

Usability means ease of using products and services. Questions are asked about overall impression, convenience, times when a product or service could not be used well, etc. The main worksheet used in the past in sessions for understanding present conditions is shown in **Table 1**.

The session for understanding the driving objective discusses the interviewee's values,

merits/strengths, and source of energy for causing change that envelop work and products and services, as well as desired future vision based on the above.

Table 1
Main worksheet in session for understanding present conditions.

Question topic	Description
Organization	**To understand work** Interviewee background/role, chart of organization from interviewee's viewpoint **For product/service planning** Target background/role, overall configuration
Relation	**To understand work** Exchanges with related personnel **For product/service planning** Exchanges with user during use
Descriptive	**To understand work** Typical activities during a day **For product/service planning** Usage scenarios in one day of activities
Process	**To understand work** Work lifecycle
Know where	**To understand work and for product/service planning** Places where activities take place and items of concern in those places
Usability	**For product/service planning** Ease of use

Values provide the basis for deciding what is good or bad and what is pleasant or unpleasant. The source of energy is the force for forward movement—the root of vitality and the source of motivation.

In this session, to simplify the expression of an implicit value premise held by the interviewee, the learning experience is reconfigured based on the human learning model shown in **Figure 3**.

In the psychology of learning, learning is a set of phenomena consisting of "stimulus→cognition →response". This set corresponds to "input→logic →output" in software. Values and the energy source correspond to cognition (logic), and merits and strengths are features heavily incorporating that logic.

If suddenly asked the question "What are your values?" the majority of interviewees would have no ready answer. We therefore ask questions about past positive experiences as an input/output set, and after the associated sections of the brain have been activated, values and energy source (logic) become discussion topics. Input is an experience and output is a positive feeling.

The main worksheet used in the past in sessions for understanding the driving objective is

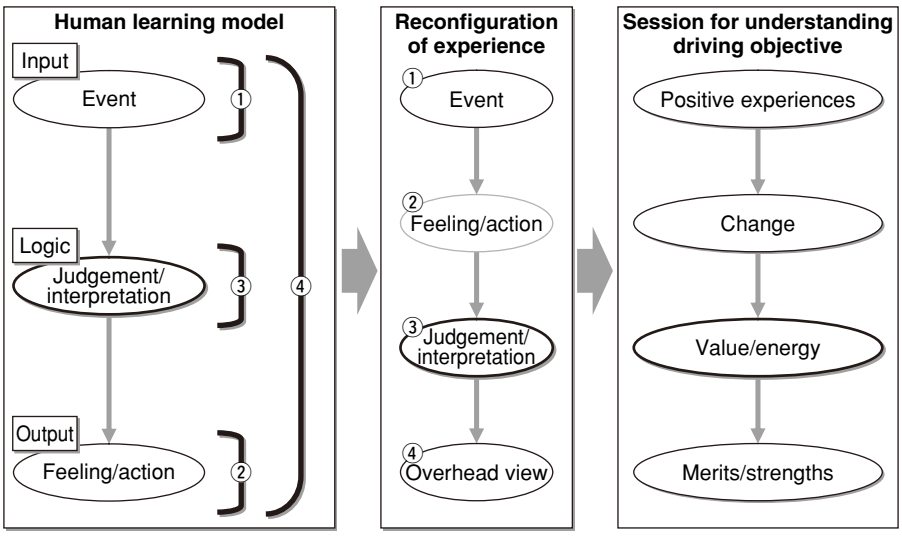


Figure 3
Learning model.

shown in **Table 2**.

3.2 Practical method 2: qualitative analysis

Qualitative analysis can be divided into two types. The first type is a feedback workshop optionally held immediately after an interview. The purpose of this workshop is to prepare an impromptu storyline to interpret the interview in line with the strategic framework based on the AIm Interview model and to stimulate the workplace. An example of an impromptu storyline created for a health-care nurse performing corporate health checks is shown in **Figure 4**.

The second type is a data analysis method that combines the AIm Interview model and a qualitative approach called the modified grounded theory approach.[5] The data analysis procedure used here is summarized below.

1) Write out interview data.
2) Interpret the data and create concepts that reflect the characteristics of the target field.
3) Enter the names of those concepts and their definitions on a concept sheet and include conversations as concrete examples of those concepts.
4) Investigate the mutual relationships among the various concepts and visualize the time-space structure of consciousness. An analysis example of the health-care nurse mentioned above is shown in **Figure 5**.
5) Based on an analysis results chart, create a storyline to suggest policies in line with the same strategic framework used for the feedback workshop.

4. Achievements and future developments

The AIm Interview has been applied in practice since the second half of 2007 to people in diverse occupations including insurance sales persons, bank personnel involved in financing and public relations, health-care nurses, university professors, university administrators, elementary-school instructors, and designers. It has begun to be used in work-style analysis and user surveys for the planning of products and services. People that have participated in the AIm Interview have voiced the following opinions.

- Effective for understanding corporate culture.
- Useful for improving employee satisfaction and coaching.
- Having my activities and opinions organized like this was very revealing. Since I am busy

Table 2
Main worksheet in session for understanding driving objective.

Topic	Description
Narrative generation question	Past positive experiences: work experiences and experiences using products/services
Implication question	Comparison before and after experience, are there any changes in the field?
Source question	Motive force behind change?
Strength question	Merits/strengths of interviewee, surrounding people and organization, products and services?
Future inquiry	Given an ideal workplace that demonstrates sufficient merits/strengths, what are ideal products and services?

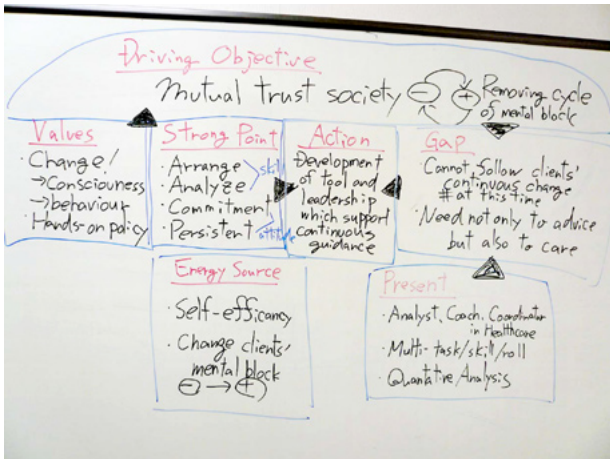


Figure 4
Impromptu storyline.

with daily work and don't have the time to step back and reflect, I came away thinking "So that's the way it is!".

- Very well organized; clarified how IT ranks in the workplace. Made it easy to see how IT is intertwined with work style. This should be our base for future policies.
- This is exactly what I see and hear on a daily basis in the workplace, but nobody up to now could see it from a bird's-eye view! I'm very happy with the results.

Workshops for hands-on learning of the AIm Interview are also being prepared at Fujitsu Laboratories. They have already been applied to sales persons, system engineers, planners, marketers, and other personnel in the Fujitsu Group and favorable comments have been received. We plan to expand the types of applicable occupations and enhance the educational curriculum with the aim of expanding the use of AIm throughout the company.

5. Conclusion

This paper introduced the basic concept of the AIm qualitative design methodology, which begins with the viewpoints and feelings of users in the workplace. This methodology visualizes the time-space structure of consciousness reflected in user viewpoints and determines medium- and long-term directions. The paper also described an interview-based data-collection method and a qualitative-analysis method targeting that data.

Looking forward, we plan to promote the enhancement and use of AIm as part of Fujitsu's business style with the aim of developing solutions and products and services that are deeply rooted in user viewpoints.

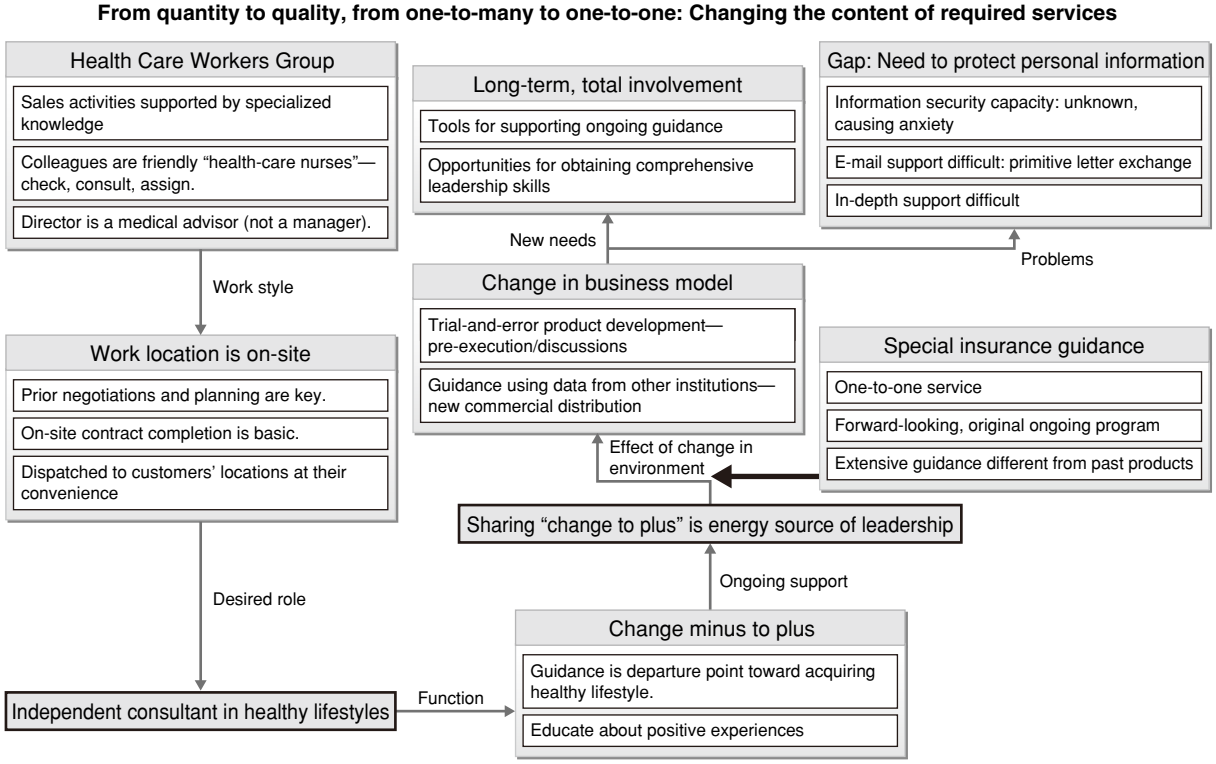


Figure 5
Time-space structure of consciousness.

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