

HCD Case Study for the Information Security Training System

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Abstract. We proposed organization persona as persona scenario method for business to business content creation process. This paper introduces three projects cases which were based on HCD process. We improved design process practically and enhanced persona for organization as company.

1 Introduction

In recent years, the case of using HCD (Human Centered Design) process is increasing for digital-content creation and system development such as website construction. Especially, development process of the persona scenario method has been attracted attention. On the other hand, when developing new service with contents and systems, user's goal and purpose may not be clear. Especially for development process of contents for BtoBtoC, there are not many opportunities to hear directly from each other between information provider and receiver, and misleading can be occurred between required knowledge and delivered information. First of all, when users do not have any interests of the content which provider wants to deliver them, planning to rouse the interest and let them use is the most important concern.

In this paper, we describe an application of the HCD process to develop a learning system for a general user who is not specialist in the vulnerability of information systems, with the past projects of creating enlightenment contents.

2 Challenge of Persona Scenario Method in Learning System Development

In developing a common learning system, a learner is set up as a target user and the learning system is designed based on the interest and the knowledge level of the persona. However, this learning system is aimed at raising the knowledge level in the vulnerability of information systems for small sized organizations. We need to create each persona based on the nature of the stakeholders with a comprehensive scenario, not for each user's learning and acquiring knowledge about the vulnerability of information systems but for an organization's learning and preparing for threats.

3 Target of This Project

The content of the learning system is the vulnerability of information systems, which general users are not aware. Moreover, the content provider has structured technical information but they do not recognize clear goal for the information security, even though it is becoming a social issue.

Furthermore, we did not have clear measures in industry type and scale to specify small companies which is the target of the project, and their information systems were different in each company. Because of that, it was necessary to clarify a concrete target image. In order to extract the model of small company, we reviewed the White Paper on Small and Medium Enterprises in Japan and the report of IPA (Information-technology Promotion Agency, Japan), decided to assume the following small companies as typical companies in Japan, and set them as target in the project.

Type of industry: manufacturing industry, construction industry, circulation and retail trade

Scale: a few to around hundred employees

Resource of Information System: no CIO and no high IT skilled worker.

4 The Development Process of the Past Project

(1) The Development Process of "Do You Know? The Information System Vulnerability"

This project intends to explain ten typical vulnerabilities on website (weak points in the security in software) based on "the Method of Making Safe Websites" provided by IPA. The target users are broad range of people related to website administration. We made contents by animation of dialogue using characters to make it easy to understand not only for engineers.

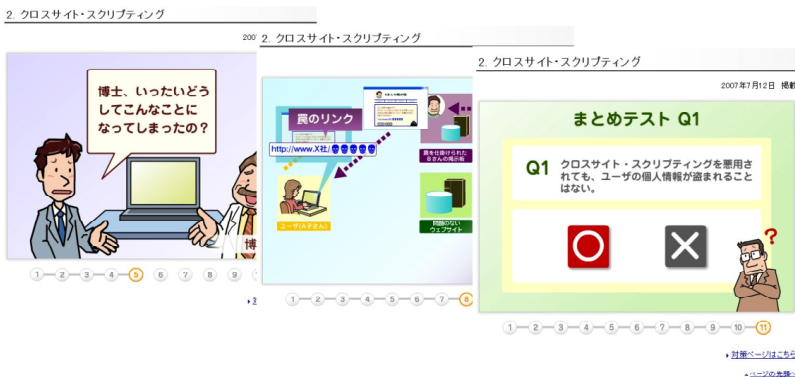


Fig. 1. Screen shot of "Do You Know? The Information System Vulnerability"

The problem of the HCD process in the project was that because the target users were set up very broadly, the project members could not share the clear user's goal, so each member had different direction about necessary technical level of information and appropriate content expression. Moreover, evaluation result we could get was limited only from users who were interested in information security, instead of various target users. Although the evaluation result was positive, verification was not proper enough in whether general users, who are target users at the beginning, could recognize the vulnerability as a problem. As a result, the specification process of "grasp of use situation" and "clear requirement of user and organization" were inadequate, and the result of "evaluation of design for requirement" was ambiguous.

(2) The Development Process of "Introduction to Safety Web Sites"

We developed simulation software, not only to explain an outline of vulnerability but also to be able to learn how to operate actual business with realistic cases.

In the project, developers understood technical information but did not understand user's situation. It was difficult mostly for a user to imagine the total image of service, even if user investigation was conducted to specify "grasp of a use situation" and "clear requirement of user and organization." Because of that, the process of extracting requirements was used in many cases by a hypothesis from current situation survey, prototype creation, and user's evaluation. In this case, however, there were too many types of users and they could not clarify requirements for organizations, so we decided to establish the adviser committee which consists of specialists and to carry out HCD process.

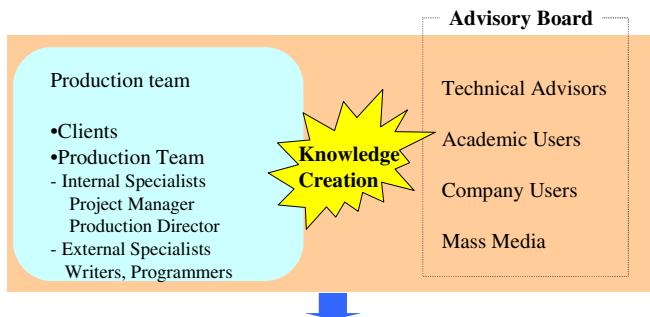
Members of the adviser committee were selected on the following conditions.

Specialists who have sufficient knowledge about the level of the information which should be provided to users.

Specialists who can provide appropriate information to users to utilize system.

Users who can express opinions about the contents of the learning system.

Project result shows that the adviser committee contributes for creating ideas and developing specification in each stage of development processes from early concept building to concretization of content planning from the viewpoint of user as recipient and specialist as provider.



Service with Experiential Value for Users through Knowledge Creation Process

Fig. 2. Activity of the production team and the adviser committee

As a future agenda, we should build general effective method in the HCD process to share and communicate opinions between the adviser committee and users. After this environment is established, we have to build the comprehensive process for a service design with users.

5 Outline of the Project in the 2008 Fiscal Year; "The Study Tool for Small and Medium-Sized Enterprises in Vulnerability"

This latest project was planned for more on the actual condition. New learning tool corresponded to various needs for the security countermeasures of small companies. We decided to develop a customizable simulation learning tool which could optimize based on various types of industries and target users (employees in various positions, ranks, occupations, and ages.)

The project should be concerned about design of the contents and the system, information security technology and management in small companies. Therefore, we established the adviser committee to discuss from professional viewpoints like the last project, and developed the system based on the process of human centered design.

6 Process of Persona Development

Idea of Organization Persona

Ordinary Persona Method extracts individual, but in this project, people's relation in an organization broadly influences a scenario. Because of that, we clarified the role of every worker and their relations in the company before creating individual persona, so that we could evaluate not only each individual but also a company persona in more organizations.

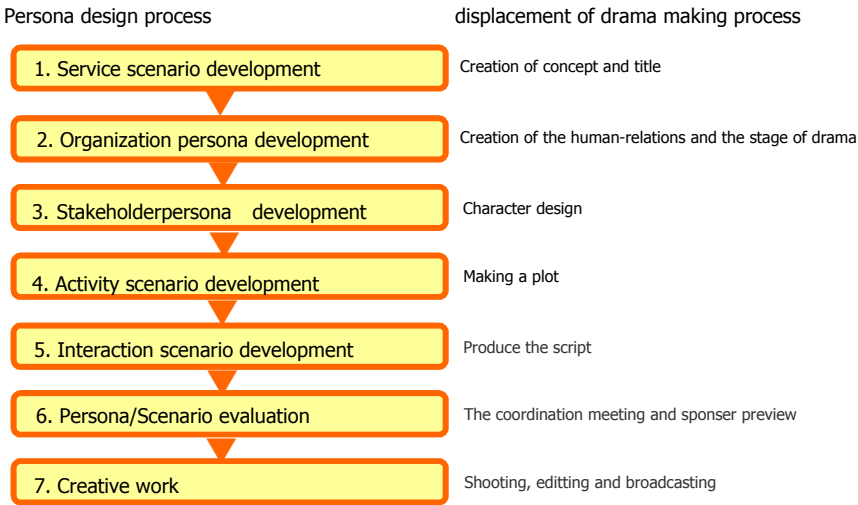


Fig. 3. Persona design process

Actual Development Process

Usually, in a process of persona development, two or more targets are selected out from segmented assumed targets. Common actions are extracted in depth interview of the selected target users and user image is established. Only facts should be described in story style so that all people can imagine user's action patterns.

In this project, we decided to develop not only an individual persona but also a company persona which can imagine how it acts as an organization. We explain each document by transposing it to the meaning of drama making.

(1) Service Scenario

Service Scenario corresponds to title or concept in drama making; making a basic plan and collecting necessary information for scenario. It is subsequent work for smooth development by describing request of users and the conditions of joy.

(2) Organization Persona

Organization Persona corresponds to the human-relation correlation diagram of the stage and characters in drama making. In the organization persona, the human relations in a company and company situation are described based on the above-mentioned service scenario. Especially in the project, human relations in the company influence the correspondence of security incident, so we also summarized emotional relations and business roles.

(3) Stakeholder Persona

Stakeholder Persona corresponds to characters. When creating subsequent scenarios, an indispensable user image is packed along with the service scenario and the organization persona sheet.

(4) Activity Scenario

Activity Scenario corresponds to outline in drama. It is summarized in an itemized statement that how service influences the persona (stakeholders) and what the final goal is.

(5) Interaction Scenario

Interaction Scenario corresponds to script in drama. Based on service scenario, persona sheets, and activity scenario, more detailed story is created. The interaction scenario should be created so that the project participants can understand the big picture of the project; what the service do and what it can provide users.

(6) Evaluation and Development Process

In drama making process, actual creation starts when members gain a consensus. In this stage, main project members discuss the scenario and persona which have been completed so far and check correspondence to the purpose and feasibility.

7 Evaluation

The service scenario sheet, the organization persona sheet, stakeholder persona sheet, and interaction scenario sheet were evaluated by project members in the following aspects;

Effectiveness of the Development Process

Even in the stage where service was not concrete yet, we could get practical opinions and utilize it for the compatibility evaluation.

Effectiveness of Creating User Characteristic

Without the persona method, the type of user may turn into ambiguous because experience and viewpoint of participants vary, which make the discussion failure. With defining an organization persona and a stakeholder persona, a person who should participate could speak in the discussion and people could help other participants who did not have enough knowledge to understand the discussion. Especially in the kickoff meeting, the persona method was very effective to activate discussion even without sufficient opinion exchange beforehand. It was also helpful to prevent from getting off the subject.

Effectiveness of the Communication Tool

It was very effective to extract opinions when interviewing not only the project members but also the users who should do a monitor test for accuracy of interaction scenario. Especially, because interviewed users did not have technical knowledge of the information security, it might be difficult to hear their real opinions by using technical terms. In this project, we explained the interaction scenario when they had enough sympathy with the organization persona and the stakeholder persona. Therefore, they could understand the scenario and could talk about the issue in the same level with interviewers.

Consensus with Development Team

It was necessary to adjust slightly when developing the tool. However, because the big picture had been defined, what we should correct was clear, so we could avoid wasting time. Moreover, we could pass on user's true voice to the development team which usually did not have enough opportunity to hear it, so we got very good result.

Contribution for the Final Tool

Because HCD methods, such as persona and scenario, were used for making the tool with assuming the actual use scene, satisfied result is expectable after tool completion. Especially, user expressed the expectation of the tool to improve situation in the pre-research interview. We believe it means that the tool is not for just filling functions but for meeting the usage demand.

8 Future Development

Our project team has following plans in content creation and system development.

Application to Content Scenario Development

The project team plans to develop a content scenario which meets the actual user's usage and situation with useful results of persona/scenario method. It is applicable to the content creation more efficiently in the actual condition.

Evaluation of the Established Tool

We will check the correspondence of the scenario to practical scene and if it does not match, we will look for the cause of its divergence. Because future action may vary

based on the cause of divergence, we will need to clarify where the divergence exists in future system evaluation.

Other Results

Two or more companies, which we interviewed for create scenario this time, carried out full security check. When users understand the persona and empathize with the scenario, they can regard it as own problem. Moreover, because their interest of security became very high, we believe the organization persona and the stakeholder persona scenario is effective when they implement the created learning tool.

Acknowledgment

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