1. Abstract

When a disaster strikes, people must make important survival decisions. They must clearly understand the situation and decide what to do immediately. A well-designed disaster preparedness manual would facilitate making the best choices. This paper begins by specifying drawbacks with currently available disaster evacuation manuals. Specifically, lack of accessibility and content accessibility are problems that the person’s ability to comprehend the situation. We propose a system for producing a disaster evacuation manual equipped with accessible, versatile materials to address various needs and a variety of disastrous situations. We describe its prototype implementation using the preliminary results of a field test.

2. Background: Importance of Disaster Evacuation Manuals

- We require self-made decisions in surviving disasters.
- Appropriate self-made decisions require that people have knowledge of behavioral procedures.
- A disaster evacuation manual is a primary source of knowledge.

![Disaster manuals](Image)

Knowledge acquisition

Evacuation

4. Solution by SMMAPS

- Scenario-based Manual Authoring and Presentation System
- Scenario is useful for acquiring procedural knowledge within the context of evacuation.
- Separate pieces of manual contents are stored in a database and integrated according to individual needs.
- SMMAPS solves the accessibility and flexibility problems.
- SMMAPS manipulates contents at three levels: material, scene, and scenario.
- Materials and scenes are integrated by authoring system, and scenarios are shown by presentation system.
- SMMAPS solves the accessibility and flexibility problems.
- Accessibility is satisfied with scenes consisted of materials required for individual persons.
- Flexibility is satisfied with combination of separate materials.

Prototype

A prototype disaster evacuation manual was created using SMMAPS.
- Written in SMIL (Synchronized Multimedia Integration Language; see W3C website).
- Made for people in Urakawa town, constantly facing the danger of earthquake and tsunami.
- Distributed to the citizens, including people with disabilities, in Urakawa. The reaction was favorable.

3. Problems of Current Manuals

Accessibility problems
- Accessibility means that anyone using manuals must be able to get information and its understanding.
- However, currently available disaster evacuation manuals have accessibility problems.
- Flexibility means that anyone must be able to get appropriate manuals for individual needs.
- The currently available learning environment is created by considering specific individual needs.
- However, considering diversity of needs, the current manual production method is not sufficiently flexible.

Current Disaster manuals

Lack of communication accessibility

Improvement

An improved manual

Failure

Unfamiliar expression

Failure

Too abstract to understand

Success

I understand the contents very well.

Scene 1

High ground is "ABC playing field" in my town.

Scene 2

"High ground" is where "high ground" in my town.

Scene x

Where is "high ground" in my town?

Outline of SMMAPS

- SMMAPS manipulates contents at three levels: material, scene, and scenario.
- Materials and scenes are integrated by authoring system, and scenarios are shown by presentation system.

Presentation System: Presenting scenarios with adequate format.

Authoring System: Generating scenarios by integrating materials and scenes.

Scenario Database: A scene represents a rule, such as "Don’t forget to put out your fire when an earthquake occurs," with material information such as the caption level, narration speed, and sign language style.

Material Database: A variety of materials such as pictures, narrations, and closed captions is prepared to meet various needs.