

# Experience Summarization in a Ubiquitous Environment

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## ACM Classification Keywords

User interfaces, Screen design, Collaborative computing.

## INTRODUCTION

This paper describes a technique for summarizing a visitor's touring records in an exhibition (e.g., at museums, trade shows, or academic conferences) using graphical representation. A system called the Experience Catalog System (ECS) has been designed using this technique.

After visiting an exhibition, you might want to describe it to another person while recalling your own experience. In this case, you may refer to photographs, videos, and memos that you took (we call these personal records), and you also may refer to pamphlets and guidebooks about the exhibition that were published by the exhibition organizer (we call these community records). Using these in a complementary fashion, you can recall your experience.

However, it is difficult to understand personal records and community records in a complementary way because there are gaps in informational management and in the representation of personal records and community records.

Our approach to this problem is to automatically integrate the visitor's touring records (personal records) and community records, and to generate a single summary on a computer. We call this summary the Experience Catalog. The Experience Catalog helps the visitor to recall his/her experience. We call the efficacy of this method the Recall Effect.

At the same time, we also attach importance to developing an orientation that makes ECS useful for the exhibition organizer, in order to promote the widespread acceptance of

ECS within the community. We call this the Administrative Effect. The Administrative Effect involves improving the comprehension of all visitors regarding the entire exhibition, thus making the exhibition more popular. We think that it is important to provide this Administrative Effect function to the exhibition organizer as a reward for the effort that he/she spends on setting up and maintaining ECS.

## EXPERIENCE CATALOG SYSTEM

Figure 1 shows a usage scenario of ECS. We assume two types of users. The first is a visitor who comes to the exhibition and browses his/her Experience Catalog. The second is the exhibition organizer who holds the exhibition and sets up ECS.

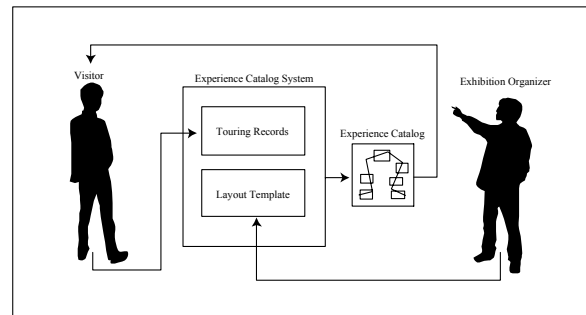


Fig 1. Usage Scenario

ECS summarizes the visitor's touring records and generates an Experience Catalog according to layout templates that are set up by the exhibition organizer. The latest implementation of ECS uses the Ubiquitous Sensor Room [1] to record a visitor's tour. The records consist of video files, voice audio files and indexes that describe the interaction status. The indexes describe human-to-human interactions and human-to-exhibit interactions in terms of time, object and so on.

## RENDERING RECORDS

Figure 2 shows a sample of the Experience Catalog. In the following sections we explain the basic principles for rendering the Experience Catalog from the perspectives of Recall Effect and Administrative Effect. Also we explain the layout and storyteller, which are features of this system.

### RECALL EFFECT

From the viewpoint of Recall Effect, ECS renders personal records that were automatically captured to support the visitor's memory. The personal records consist of static images of the visitor's own view, static images that overlook the visitor's interaction, and text that explains each image. It also has URLs that link to summarized video files, because the visitor cannot easily understand the details of the records by static images alone.

Additionally, ECS renders community records to give the visitor clues for understanding the exhibition more deeply. The community records consist of exhibit and participant rankings, exhibit recommendations and so on.

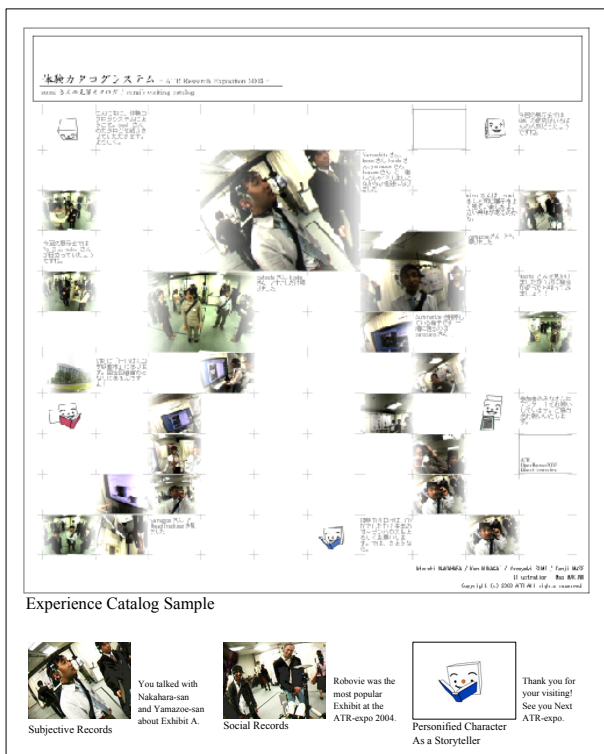


Fig 2. Experience Catalog

### ADMINISTRATIVE EFFECT

From the viewpoint of Administrative Effect, the rendering of community records supports the exhibition organizer. Offering community records to visitors improves their understanding of the exhibition, and improving the visitors' understanding is one of the exhibition organizer's aims.

ECS may also give the exhibition organizer a chance to influence the visitor's actions after the exhibition since the organizer can control the community records. We envisage the development of an advertising function utilizing the community records.

### LAYOUT

Another feature of ECS is the diversity of its layouts. Figure 3 shows samples of layout patterns. This diversity

makes it possible to make the visitor's touring records more understandable and more dramatic. ECS decides a user model according to the indexes of the visitor's touring records and determines the layout of the whole display according to the user model.

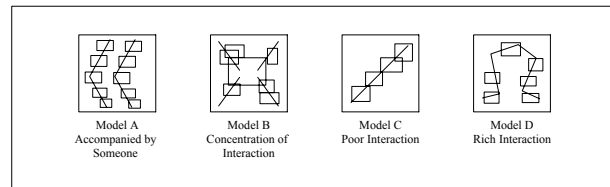


Fig 3. Layout Patterns

As a technique to summarize video files, comic-style rendering is well known [2]. On the other hand, our approach to arranging the layout attaches more importance to the variety of semantic representation than to the consistency of the time-order.

### STORYTELLER

ECS renders a personified character as a storyteller in order to add a storyline to the Experience Catalog. The storyteller tells the visitor's experience and community records as a story. The storyteller is another subject that can also narrate community records that the visitors cannot know directly. We adopt the storyteller because the story is important for a visitor's understanding and dramaturgy of his/her experience.

### TRIAL

We used ECS in an actual exhibition as a trial and were able to confirm its usability. The exhibition was an academic research exhibition held by our laboratory (The ATR Research Exposition 2003).

After this trial, we surveyed the visitors. The visitors said "I enjoyed the dramaturgy of my experience with this system." and "I would like to show my catalog to other people." This result indicates the potential of ECS as a form of entertainment and an advertisement.

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