

StoryBank: an Indian Village Community Digital Library

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ABSTRACT

This paper considers information access styles for a community digital library in an Indian village. We present our impressions of the community gathered during a field-study and show how these have influenced the interaction design. The prototype aims to overcome low-textual literacy and lack of computing experience by combining touch-based interaction, engaging visual presentations and drawing on villagers' familiarity with radio listening.

Categories and Subject Descriptors

H3.7 [Digital Libraries]: system issues, user issues

General Terms

Design, Human Factors.

Keywords

Community DLs, situated displays, non-textual interfaces.

1. INTRODUCTION

Digital Library (DL) technology could transform so many elements in developing countries like India. They are, as Witten *et al* note [3], a killer-app for computers in these contexts, 'a golden opportunity'. But yet, in the last several years, there has been relatively little reported in this domain within the DL community. Clearly, in developed countries, DLs have a wide reach – from scholars to school children; education to entertainment; and, citizen-scale to media-conglomerate producers. But, what about a village like Budikote? Situated 100km – or a 3hr bumpy drive - east of Bangalore, India; without running water, an unreliable power-supply; low-literacy levels and challenging health problems. What is the role of DLs in these sorts of context?

This paper presents our initial work in developing a repository – *StoryBank* - to allow a community to create and share audio-visual stories.

2. UNDERSTANDING THE CONTEXT

Budikote, home to approximately 3000 people, is typical of a rural Indian village. The primary form of employment is agriculture

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selling crops at the local market. There is a primary and secondary school and healthcare facilities.

If you have not visited such a community it is easy to assume, wrongly, that they are communication-technology impoverished. Budikote, like many such communities have televisions, DVD-players and radio sets. At the entrance of the village there is an ICT resource centre with several computers with limited access to the internet, where our DL system is installed. In early 2007, a mobile telephone company is installing a transmitter to provide coverage in the village and surrounding region.

The community was chosen because it already has an active community information-sharing culture. Our local partner, Voices, with funding from UNESCO, established *Namma Dhwani* ('Our voices') in 2000. Programmes are made at the ICT centre and distributed in several ways – for example, via cable to people's televisions and specially adapted radios; and, on tape to be played to 'self-help' groups (where the interests range from micro-finance to health). There is a *Dalit* community (consisting of the lowest caste members) on the outskirts of the village – their access to technology is much more limited but they also receive community broadcasts via loudspeakers placed in the trees. The programme types range from audio only, audio with synchronized power-point style slide visuals through to full audio-video presentations.

Financial poverty levels are high (65% fall below the Indian poverty-level) and textual literacy low. However, the place is clearly rich and literate in other senses. There is culture of communicating: people regularly gather and chat, share information, tell stories. The ICT centre is one of the 'hubs' of this activity with all elements of the community dropping-in throughout the day. The field-trip also provided evidence of high degrees of visual literacy: one stunning, daily example are the *rangoli*, complex geometric patterns, drawn on at the entrance to each houses to greet the day.

3. THE COMMUNITY DIGITAL LIBRARY

From the field-study visit, three design principles evolved which are used to guide our DL prototyping:

- 1) **avoid computer-centric approaches to providing access to content.** While there are some computers in the ICT centre, the degree of exposure to and appropriateness of basic computer interaction styles (mouse, keyboard, GUI) and information navigation structures (hierarchical browse and keyword search) is very low;
- 2) **make use of existing models of information access** – television and radio use; group-sharing of information; and,
- 3) **exploit the visual literacy and desires to engage visually.**



Figure 1. Initial DL interfaces: touch-screen and radio-knob access to audio-visual content.

Formative prototyping and feedback sessions were run both during the field-trip and on return. From this design work, we decided to create a DL of the existing audio-visual content previously broadcast and to use a primarily visual-style of interaction.

The DL is accessed via a display situated in the main gathering area of the ICT centre. Villagers interact with it by touching the screen and using a radio-knob style control (Fig.1). Still images and video-clips are collaged continuously on the display. Video-clips are represented as an animated sequence of frames to differentiate them from the stills. Touching an image enlarges it; if there is video content, this begins to play. The collage update rate is altered by turning the knob; clockwise for faster, anticlockwise for slower. Greenstone is used to organize the content and we have adapted the collage approach provided by this software [4]. Pressing the radio-knob brings-up the audio interface (Fig. 1, lower image). Here, a radio metaphor is employed: as the user turns the knob, the radio-tuner moves through the available content, playing a snippet of each programme. In the current prototype the programmes are organized along the tuner-bar in terms of category (education, health etc); however, we are experimenting with other classifications such as popularity and recency.

4. RELATED WORK

Collaging of images has been successfully applied in digital libraries [1]; we extend the approach to mix video with stills.

There are many other visual/graphical DL interfaces in the literature but these are aimed at computer-sophisticated users. In contrast, the First-Aid in Pictures DL has non-textually literate users [4] as its focus and innovative visual interfaces to children's DLs have also been proposed [2].

5. AN ECOLOGY OF INTERFACES

While the situated display is intended as a key part of the DL architecture, a visible, tangible reminder of the digital content available, we are complementing these interfaces with others:

Cameraphone story authoring and access: the project team has built a mobile phone digital story authoring application. Villagers will be able to give and take-away stories from the *StoryBank* via Bluetooth near the situated display and remotely wirelessly.

Combining paper and digital content: automatically generated visual summaries of DL content will be printed and distributed around the village. These 'story-fliers' will include a story id-number that the user can enter via the situated display or cameraphone to retrieve the story and related ones.

Television and radio broadcast: villagers' stories in the DL will be used in scheduled radio and television programmes.

6. CONCLUSIONS

DL researchers have much to benefit from working with developing country communities. Already, Budikote has challenged us to innovate DL information-seeking interfaces that resonate with the villagers' current information access and sharing practices. Working with such groups not only benefits the future billions of users in developing countries, though, as there are 'developing communities' in the developed-world. In many major cities, textual literacy is low and there is a need to find ways to extend access to those people who find conventional computing interfaces disabling. At the other end of the skills spectrum, users of content creation and sharing web services (such as *YouTube*) will welcome alternative ways of browsing, sharing and creating audio-visual materials on both large and small devices.

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