Media Lab Europe
European Research Partner of MIT Media Lab

Interaction Design Lab

TECHNOTE

Moving Pictures
Looking out / looking in

Moving Pictures, a concept we are currently developing, is an accessible, robust multi-user unit and a set of physical tools that enables young users to explore, manipulate and share video content with others.
This project involves a collaborative approach that supports social interaction in group work. It proposes exploration, methods and and a tangible tool set for creation of co-present video play.

Background
Moving Pictures extends Textable Movie, a graphical interface which takes text as input and allows users to improvise a movie in real-time. Media segments are automatically selected according to the users' own labelling. As the user types in a story, the media segments appear on the screen, connecting writers to past experiences they have captured in images. By improvising movie-stories and projecting them for others, young adults are challenged in their beliefs about other communities and their own.

Footage taken by children at the Ark, Dublin, August 2003

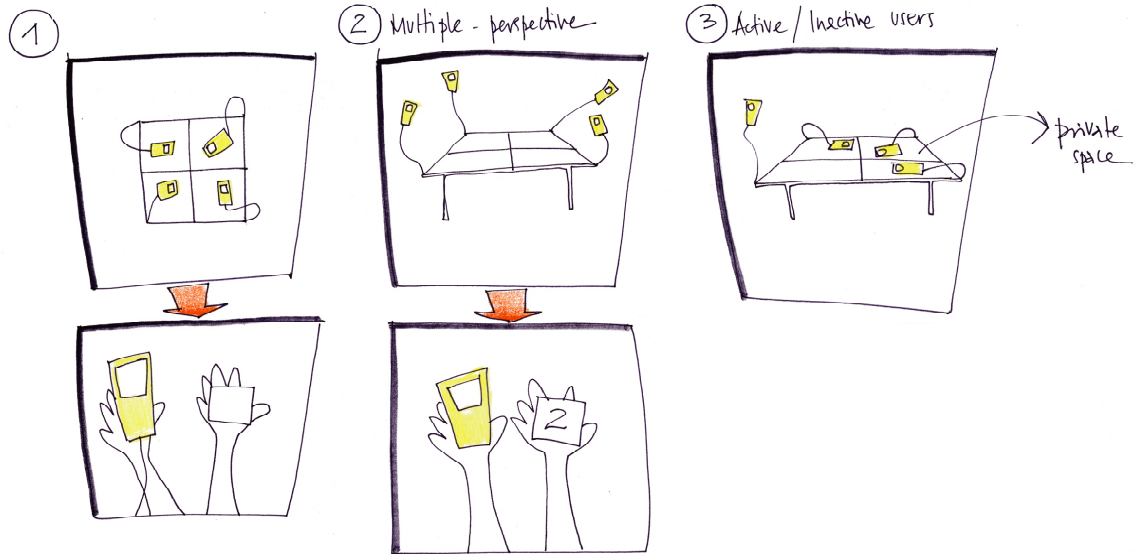
Research areas
Interactive cinema, story networks, co-present collaboration, tangible interfaces, new media, cultural exchange, storytelling, perspective taking, improvisation.

The concept
Moving Pictures is a tangible interface for pre-teenagers, which allows users to establish a cultural exchange through playful storytelling using motion picture capture.

The project explores different types of input tools appropriate for young users. It allows a group to explore concepts such as simultaneous perspective taking, sequential perspective taking, as well as the relationship between space and time.

The system

Moving Pictures is a multi user station that supports multiple input devices (computer, video, camera, sound). A movable table with multiple camera/sound input. A tabletop that displays video in response to RFID objects.



With the help of this set of cameras and tagged tokens, multiple players can shoot and exchange videos of their environment. The resulting video clips are then combined by the group to achieve a common outcome. Later, with a projector, users can display their creation on virtually any surface, from a school classroom to a city wall.

Publications

SIGGRAPH '03 - Textable Movie: improvising with a personal movie database
TIDSE '04 - A system to Compose Movies for Cross-cultural Storytelling: Textable Movie
ICHIM '04 - An open-ended tool to compose movies for cross-cultural digital storytelling: Textable Movie

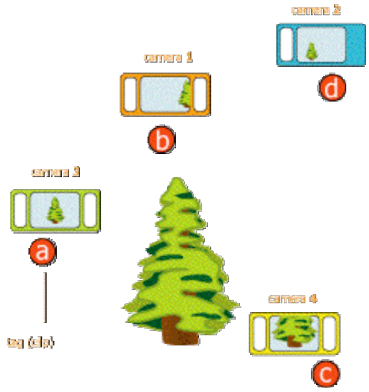
Pilot Studies

Computer Clubhouse, May 2003, Ireland
The Ark, August 2003, Ireland
Cyberfest, April 2004, USA
The School of Ostermalms, May 2004 - present, Sweden

Team: A collaboration between Media Lab Europe and Interaction Design Lab - Umeå Institute of Design, within the Vital Meetings Project January - December 2004
http://www.mle.ie/~cati/movingpictures.html
Media Lab Europe, Story Networks Group, Ireland : Cati Vaucelle, Glorianna Davenport
Interaction Design Lab, Umeå Institute of Design, Sweden : Diana Africano, Mikael Wiberg and Oskar Fjellstrom

TECHNICAL DESCRIPTION

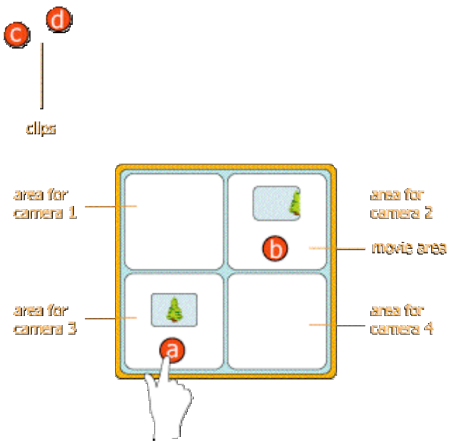
1 – Documentary Mode

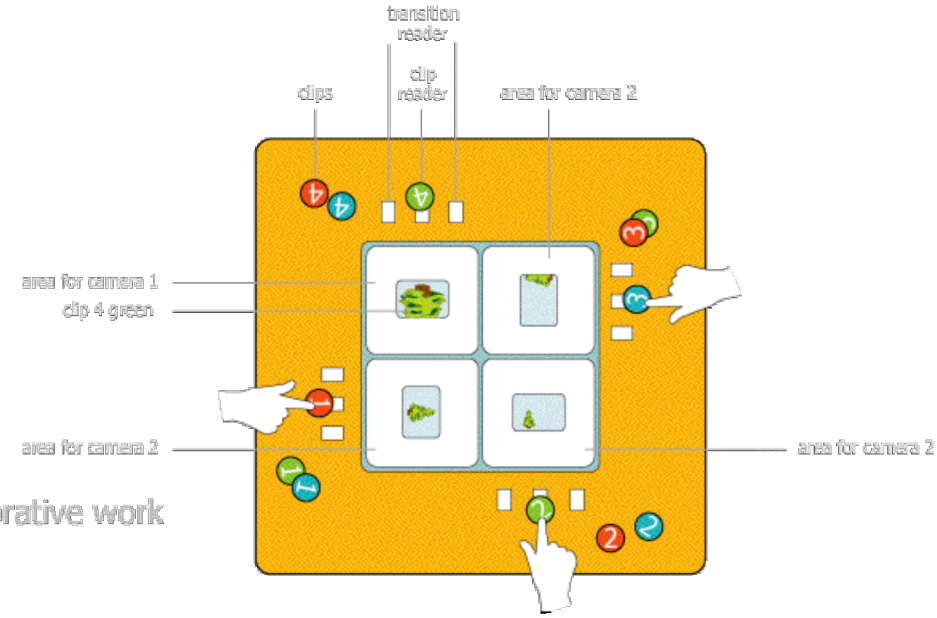


Scenario: For capturing video segments. 4 users shoot a clip with 4 Ipaqs with camera about the same object.
Technology needed : Tagged tokens are used to categorise the content, labelling the video segments for later retrieval. for Labelling and retrieval: 4 RFID readers + n RFID tagged tokens ; tag reader behind the Ipaq
Technical ideas : PDA connected to a wifi enabled machine. We would use the HP iPaq 4150 - it has SDIO, BlueTooth and WiFi bulit in. We would need to attach a SDIO camera on it. (The 4150 is faster than the 5550, better WLAN card than the 5550.) We can install compact flash/SD/MMC cards of up to 1GB in size also. We need enough space to store one clip. We need to grab each frame and render it ourself (In ordinary windows, we can easily connect a video input device to a rendering window, but in PPC we have to grab each frame by calling the video driver). We need Initiate camera, grab frame, render frame. Maybe we can use dll files from Ipaq video software for help with the code. If we choose to build our application all the way through, then we will either have to use the dll and lib for the camera to grab and render images, or find documentation for controlling an existing application that uses that camera.
We plan to use LifeView camera and use the video-rendering app for the LifeView cam written by Oskar (we still need to write the code for saving the file). The video segments will be then dynamically associated to RF ID tags
1- Use app with live view cam
2- Tag detection on Ipaq
3- Save mode with tag automatic labeling (for later video segments retrieval)

2 – Revision Mode

Scenario: the users watch the clips on the table.
Technology needed : Retrieval: 4 RFID readers + n RFID tagged tokens + touch screen





individual/collaborative work

Technical ideas : video work (changing RGB value, sequencing, effects...)
We will allow placing tags (or objects with tags embedded) on a surface that detects which tags there are and the sequence, and then there will be some screen showing the associated clips.
The idea is to have both individual and collaborative work. On their own they can preview their own clips and experiment a little with transitions/effects, then all together they can construct the sequence, add transitions and export the final resulting movie.
We would like the users to be able to either work on their own (it means one window per person, and manipulation tags on one part of the table independtently to one another) or collaboratively (it means one window for 4 people, and manipulating tags for everyone).

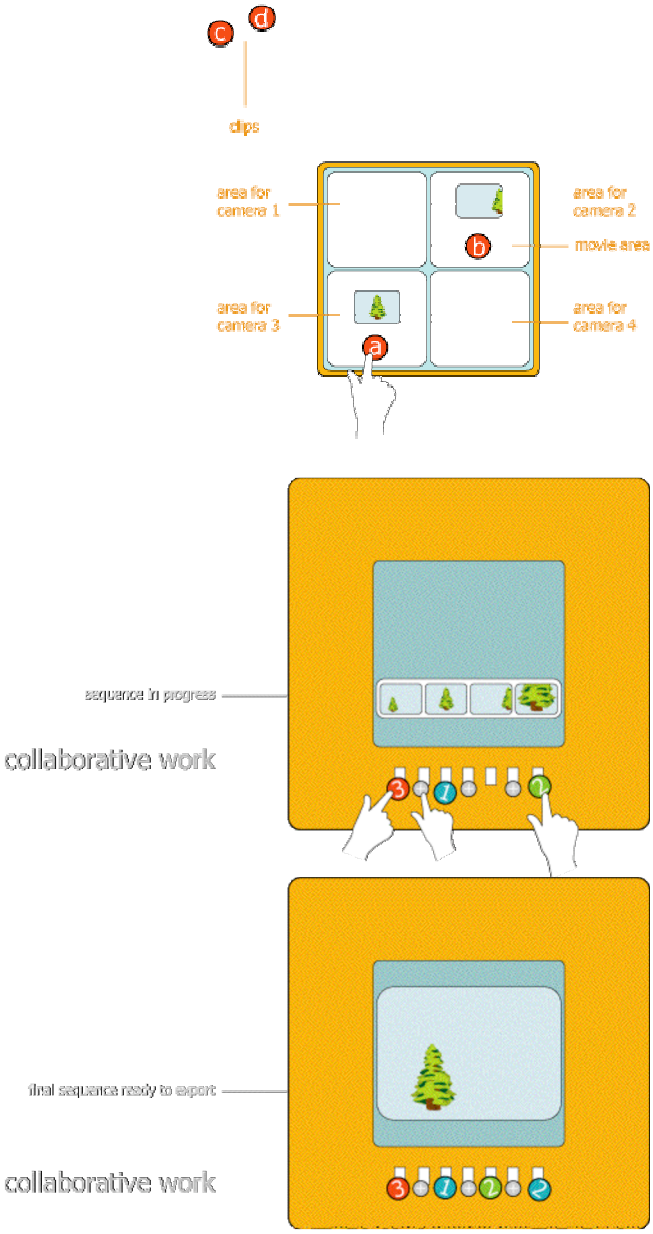
1- *tag sensing tech for videos retrieval* ; we can either use tag sequencing (one tag after another but not several at a time ; we want the users to put the tags in a sequence, then the system would detect what tags there are and what the sequence is. We want the users to pre-visualise the videos and transitions in real time. We use a matrix of rfid-readers to detect tag sequence, then each user would have at least three readers to be able to test a transition between two clips. One way to make it possible to detect spatial tag sequence, would be to use a sequence of readers, each reading one tag ; this row of readers would be

hidden under the table. (the Design choices are still in progress between puzzle design or carrousell one)

2- Play multiple video windows at a time—maybe with MS Mediaplayer
3- An interface to control the positioning and functions of the tags
4- We will use directx to do video transitions, effects, etc…

3 – Video-Jockey Mode

Scenario: The users create and display a movie with clips and transitions. For live performance of the captured video segments. Preteen-agers are now video performers and use the tokens to retrieve segments and project them onto a screen. The interactive surface serves as tag reader. It reads the info from the tokens and plays back the segment associated to it.
Technology needed : Composing: 4 RFID readers + n RFID tagged tokens (clips) + m RFID tokens (transitions) + projector
Technical ideas : projection of video segments in real time using the tags to manipulate the media in real time.



Deadline

Development software-hardware-participatory design : January 2004-October 2004 Sweden/Umea - Ireland/Dublin
Test of the final platform and exchange of video database among cultures: November 2004-February 2005

Sweden (The School of Ostermalms/Umea), Ireland (the Ark & Computer Clubhouse/Dublin), Japan (Camp/ Kyoto), Chili (Institute for ICT in Education/Temuco), Colombia (Computer Clubhouse).