Interactive Surfaces

Vitor Goncalves (v203667@mae.uma.pt)
Tiago Tomas (tiagotomas@gmail.com)

INTRODUCTION

The world that Wexier had in mind is where the objects interact to satisfy our needs in a clear view form could not exist without considering some interaction with those same objects. In this project we will study the present solutions for creation of interactive surfaces and some visions about their future.

METHODOLOGY

The adopted methodology for this project was the research of the state of the art, by seeing the company solutions that exist on the market, following through the reading and analysis of scientific articles about the usefulness of the solutions we did encounter.

REACTABLE

The reactable is a novel multi-user electro-acoustic musical instrument with a tabletop tangible user interface. Several simultaneous performers share complete control over the instrument by moving physical artifacts on the tabletop while constructing different audio topologies in a kind of tangible modular synthesizer or graspable flow-controlled programming language.

The instrument hardware is based on a translucent round table. A video camera situated beneath continuously analyzes the tabletop surface, tracking the motion, shape, position and orientation of all the objects that are distributed on its surface. The tangible objects, which are physical representations of the components of a classic modular synthesizer, are passive, without any sensors or actuators, users interact by moving them, changing their position, their orientation or their faces.

These actions directly control the topological structure and parameters of the sound synthesizer. A projector, also from underneath the table, draws dynamic animations on its surface, providing a visual feedback of the state, the activity and the main characteristics of the sounds produced by the audio synthesizer.

MICROSOFT SURFACE

The Microsoft Surface experience brings people together to connect, learn and decide with a 360-degree interface that supports touch and real-world objects. With XboxSense, Microsoft Surface views and responds to touch and real-world objects, supporting more than 50 simultaneous inputs.

Make content more engaging.
Plan and simulate.

SIXTH SENSE

Sixth Sense brings us that bridge between the two worlds, without the need of having a physical surface to interact with the digital information, making every object a virtual surface that we can interact, manipulate and bring up the information we want and where we want.

Some applications of Sixth Sense are:
Maps:
The map application lets the user navigate on a map displayed on a nearby surface using hand gestures, similar to gestures supported by Multi-Touch based systems, letting the user zoom in, zoom out or pan using intuitive hand movements.

Drawing:
The drawing application lets the user draw on any surface by tracking the finger movements of the user’s index finger.

GESTURES

The Sixth Sense also recognizes user’s hand-in-hand gestures and linking them to actions. For example, camera of the system takes photos of the scene that user is looking at by detecting the ‘taking’ gesture. Another example is by drawing an ‘O’ symbol the system will allow the user to check his mail.

CONCLUSION

Through the elaboration of this project was possible to perceive that improvement of the techniques in interactive surfaces and UI’s allow that human computer interaction becomes more natural, transparent and ubiquitous by using the gestures which are intuitive and embodied to the user and the use of real object allows an improved adherence between the system actions and interactions. Also we would like to point out that emerging of these improvements was made possible because of development of display technology and sensors.

REFERENCES

3. Eyewall – Eyewall: http://www.eyewall.com/products_505.html, 24.06.11
4. Eyeclick Ltd: http://www.eyeclick.com/products_505.html, 24.06.11
5. Eyeclick Ltd: http://www.eyeclick.com/products_505.html, 24.06.11
6. Francony Mistry, Fluid Interfaces Group, MIT Media Lab, Syntense: http://www.franconymistry.com/projects/syntense, 24.06.11
7. S. Hunter, J. Kalantari, D. Merrill, Make a Riddle and Tell a Story: designing children’s applications for the Esballos platform, ACM New York, NY, USA ©2010