



A user tries the tangible extension of Handimation during the workshop



Replay of animations with all animation tracks displayed in Handimation

# Tangible Expressive Animations Without High Costs

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Handimation, a software for creating animations and real-time digital performances, has been enhanced with tangible inputs to make the animation process even easier, quicker and cheaper. 3DVia Virtools played a key role in this project.

As Handimation is a novel approach to computer animation that addresses the current bottleneck in the industry regarding collaboration and use of acting skills. The system allows an animator to record and playback animations in real-time using a sequencer-based interface and inexpensive input devices. Handimation was designed by a professional animator to accelerate the process of creating

animations. One goal was to be able to produce a two-minute film in one day, assuming the script was written, dialogue was recorded, and sets were created in advance. Another goal was to let animators create in real-time the movements each virtual character would have before inserting it in a scene. The idea of having an interface based on a sequencer metaphor was born. Seeing animators perform gave rise to the idea to incorporate

input from various devices since different devices, e.g. physical marionettes with sensors, are better suited for different types of performances.

## DEVELOPMENT

Handimation is a general connection interface that links input from different input devices to different virtual 3D objects. The prototype is built in 3DVia Virtools, a complete development and deployment platform with an innovative approach to interactive 3D content creation. 3D models are loaded in 3DVia Virtools NMO-format. A sequencer-based interface is overlaid on the animation providing record and replay functionality through data tracks. The interface can be hidden so as to be able to use the entire screen to visualize feedback when animating. The latest version of Handimation enables more tangible interactions. The enhancements make it possible to have more expressive interaction and support for a broader range of interaction devices. In this way animators can make use of skill sets from traditional crafts such as puppeteering. To create an affordable solution for novel input devices, support for the Nintendo Wii mote has been added through a 3DVia Virtools plug-in. The Wii mote controller offers 3D accelerometer sensing and several buttons as well as 2D movement, providing a flexible input source with a high level of granularity. The tangible version of Handimation makes support for multiple user collaboration a breeze since multiple animators can animate the same character by controlling



One character animated with Handimation from a scene in the Duncan Sheik music video



different parts. For example, one person can control the head and face while another walks and makes the body strike different poses. While this can result in quicker animations of individual characters another possibility is to let each animator control an individual character in real-time and let the different animators interact with one another through their characters.

## POSITIVE INDUSTRY FEEDBACK

Handimation with tangible support was presented to the industry during a workshop held in collaboration with Center of Visualization Göteborg (a regional organization promoting visualization), SVT (the national Swedish broadcast company), and Film i Väst (a regional film foundation that has co-produced films like *Dancer in the Dark* and *Dogville*). Professional animators attending this event gave very positive feedback, noting that they quickly got the feel of the system. Furthermore, they saw it as a way to bridge computer animation with traditional puppeteers, which would make it easier to find more animators. They also believed it made the process more democratic between the different skills needed. The system also sparked novel ideas on how animation can be used; the animators discussed real-time performances and animating all types of objects, not only anthropomorphic ones.

As a final test of the software's productivity, Zoink Animation set out to use the system in a real production. In Autumn of 2008 they were

commissioned to produce a music video for the singer Duncan Sheik. In all the computer generated scenes Handimation was used to animate the characters and the video was produced in less than three days. The finished video can be seen at <http://blogs.usatoday.com/popcandy/2009/01/exclusive-dunca.html>.

## CONCLUSION

Anders Svensson sums up his experience, "3DVia Virtools has been an excellent tool in the conceptualization and development of Handimation. It has enabled me to shift focus from the most common bottlenecks of simulation software production to the essential parts of development. 3DVia Virtools helped create synergy when formulating our ideas and helped us avoid the drawbacks of developing an in-house graphics engine" \*

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## In practice

**Virtools**  
A Dassault Systèmes Company

Swedish Institute of Computer Science **SICS**

**EYSIMIR DESIGN**

INTERACTIVEINSTITUTE

## The Tangible Handimation Project

The objective of the project was to explore how novel interaction techniques could support and improve the work of animators. In general, the perceived values are decreased turnaround time, resulting in faster production cycles, and support for the animator so that he/she can work more creatively and more efficiently. The project consortium consisted of three core partners: the Game studio at Interactive Institute AB (II), the ICE (Interactive Collaborative Environments) lab at SICS AB (Swedish Institute of Computer Science AB), and Zoink Animation. II was mainly responsible for software development and usability issues of the finished prototype while SICS provided expertise regarding hardware, tangible interaction and collaboration. Zoink Animation, author of the original Handimation idea, acted as multimedia producer and as end-user for internal testing. Dassault Systèmes contributed to the project by providing support for 3DVia Virtools 4.0. Anders Svensson was the main developer of the project and is currently commercializing the results through the newly started Eysimir Design. [anders@eysimir.com](mailto:anders@eysimir.com)