McKinstry Designs Unique Interactive Wall for Swedish Hospital

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From video games to airport ticket kiosks, interaction between humans and computers has become more sophisticated over the years transforming us from passive consumers of information into active participants, engaging our minds as we utilize our bodies. As media expert Marshall McLuhan famously asserted, the medium truly is the "massage," a sentiment aptly demonstrated by the newly installed interactive wall at Seattle's Swedish Hospital in Ballard.

The wall is located on the hospital's newly remodeled 3rd floor, directly across from the sky bridge that links the main building to the parking garage. It is a display of three 40" Samsung thin bezel screens each having a resolution of 1080p (1920 X 1080 pixels), and was designed for continuous 24 X 7 duty. Images on the screen run the gamut from fields of thick bladed grass to northwest waterways, and other evocative local scenes from the Ballard area. The magic happens when anyone walks by: infrared sensors, located along the hall and under the display, pick up movement which causes elements of the present scene to shift. This could mean that a walk by or pass of the hand makes a blade of grass bend along the path of a person's movement or results in an a shift of scene from an idyllic farm house to a hospital staff directory, complete with smiling photographs.

Swedish Hospital commissioned McKinstry and its partners - Mode Studios and Round tree Visuals - to design the 1x3 screens to add visual interest, provide essential information about staff on the floor and, in the words of McKinstry's Technology Solutions Engineer, Igor Parkman, who headed up the project, "Look cool." From concept to completion, McKinstry's design took approximately two months; a short period, considering the project's unique nature.

"None of the parts could be bought in a store," noted Parkman. "We had to design the project completely from scratch – from the sensor hardware to the data acquisition software."

The wall is on a regular reboot schedule to keep it fresh and mitigate any system failures from excessive up time. The sequence, consisting of several different scenes, runs through a 15 minute loop before resetting to the beginning. While the types of scenes themselves do not change, new text and pictures of staff can be uploaded to the staff directory through an administrative panel, designed by Roundtree Visuals and controlled by the hospital.

Despite the fast project turnaround, the team had a few bumps to contend with along the way. A main sticking point was the graphics software. The initial concept was to utilize the Flash program, but the multi-layered nature, and high-resolution of the wall was more than Flash could handle. The resultant images were jittery, and the team quickly abandoned Flash in favor of MAX/MSP, a video-production and data acquisition software package developed by Cycling '74.

"MAX worked better for the scale of what we were doing," explained Parkman. "According to Pablo Molina, who is a software developer and designer for Mode Studios and a Professor at Cal Arts, when you see the large screens at concerts, MAX is typically the software used. MAX uses a programming language called Jitter, which was initially used for data collection. Later, as hardware became more powerful, it evolved into video production and interactive design. Due to MAX's versatile architecture for data collection, and well implemented multi-threading, it's a popular platform for large displays where elements on the screen react to the surrounding environment – be it music, motion, room occupancy, weather, traffic, or anything else that you can monitor."

Mode Studios wrote the interactive portion the display software, while McKinstry wrote the firmware for all the microcontroller-based intermediary devices that collect data from the sensors. The custom hardware for the wall, which includes its enclosures, was developed by McKinstry in-house and fabricated in the sheet metal shop.

Not only does the interactive wall look cool, but it is a savings bonanza for a hospital that usually looks to fish tanks to add aesthetic interest to its waiting areas. As it turns out, the maintenance involved with a fish tank - changing out water, feeding the fish and all the sundry upkeep - is more expensive than maintaining the interactive wall over its lifetime.

Watch a video of the interactive wall in action