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initial “shock” when he first saw the Xerox Alto [hailed as the first computer with a GUI] back in 1973 was what prompted his interests in HCI. Years later, Ishii is now a leader in tangible user interface research and development. In 2006, Ishii was elected by ACM SIGCHI into the prestigious CHI Academy for his significant contributions to the field.

Certainly, Ishii’s success did not come without some initial roadblocks. One of the great challenges he has faced is discovering “compelling applications” to convince people of their vision in well-established HCI conferences, which have traditionally been more focused on user-centered designs. Another ongoing challenge involves the fact that tangible user interfaces often require proprietary and non-standard hardware platforms, but Ishii says he is optimistic about their acceptance in the future.

The growing number of researchers, designers, and artists who are contributing to the field of tangible user interfaces share his optimism. In fact, Ishii refers to the success of the International Conference in Embedded and Embodied Interaction series [TEI], most recently held in January 2010 at MIT Media Labs, as an encouraging sign for the community.

With these challenges currently being addressed and novel high-level concepts coming to fruition, Ishii is prepared to invoke the next big idea. He believes that in the next five to ten years, we can expect to see an integration of manipulatory and ambulatory interfaces as well as “a departure from a table [interface] to an entire room, building, and city.” As tangible user interfaces continue to emerge and mature, we can surely expect Ishii to lead this movement.

Hiroshi Ishii Tangible Bits

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DOI: 10.1145/1764848.1764859

Hiroshi Ishii sees the world differently. The Massachusetts Institute of Technology professor of media arts and sciences, widely regarded as the pioneer of tangible user interfaces [TUI], is changing the way we interact with our surroundings by integrating computing and physical objects. Specifically, within his Tangible Media Group at MIT, Ishii and his students are looking for ways to tie physical objects to digital information in a vision they call Tangible Bits.

Their vision, which departs from the pervasive “painted bits” within current graphical user interfaces, is led by the observation that humans have developed a lifetime of intuition manipulating objects in the physical world. By complementing physical objects with digital information, we can improve and augment the way we perform tasks.

Before joining MIT Media Labs in 1995, Ishii worked for NTT Human Interface Labs in Japan, where he led

a research group toward developing two critical projects: TeamWorkStation and ClearBoard. TeamWorkStation was designed in 1990 to provide real-time sharing of drawing space between geographically disparate collaborators. It was enabled through a translucent video overlay of the collaborators’ workspaces. ClearBoard, developed in 1992, allowed for vis-à-vis interaction between two collaborators, and for the first time supported gaze awareness [so that the partner’s focus of attention was communicated] over a large, clear screen for drawing. These seminal efforts have since been succeeded by a cornucopia of interface projects under Ishii’s lead.

Ishii, who received his PhD in computer engineering in 1992 from Hokkaido University in Japan, recalls the circumstances that led him to his current work. “My father was a programmer of the IBM 360 mainframe when I was a kid, [which] is why I chose computer science.” He added that his