

The goal of the CoVE project is to use the BP Visualization Center to build Immersive Virtual Reality scenes that help people overcome cognitive disabilities.

## Virtual Reality in Design Prototyping

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*A Cognitive Levers research project conducted at the Center for Lifelong Learning and Design. This project is sponsored by the Coleman Institute for Cognitive Disabilities*

A distinct advantage of an Immersive Virtual Reality facility such as the BP Center for Visualization, is that it provides a system in which a designer can explore and evaluate solutions to a problem without the cost, risk, or effort of building and testing a physical prototype.

- Such an environment offers a high degree of intuitive interactivity.
- Virtual worlds have near-infinite and low-
- cost malleability.

The CoVE project's *Virtual Bus Stop* is intended to be such a testing ground for proposals that the *Mobility for All* project has on how to make public transportation more accessible, especially to those who have cognitive disabilities.

- In Immersive Visualization, a user's head and hand are "tracked" – position and orientation data for each are reported back to the application – so that the user's movements in the physical world can be translated into actions in the virtual world.
- This allows is intuitive manipulation within the virtual environment based on natural head and hand movements.

The advantage of true 3D manipulation is apparent to and applauded by any person who has experienced the frustration of using any desktop software in which one must work with 3-dimensional objects using a desktop mouse.

- 3D manipulations done with a mouse are generally constrained to at most two axes at a time, requiring *at least* two movements, and often more, to accomplish what can be done in one smooth motion in the real world.
- People have a lifetime of practice manipulating objects in 3D, and so an immersive environment provides an *instantly natural interface*.

Using a virtual hand, users of the *Virtual Bus Stop* can reposition elements in the scene to their liking.

- These configurations can be saved and reloaded later for further changes or discussion.
- Future iterations will include placement of touch screens in the scene, as well as additional interactive elements to allow more detailed simulation of next-generation, assistive public transportation systems.

*Virtual Bus Stop developed by Jonathan Marbach*

