



kickables

tangibles for feet

Dominik Schmidt, Raf Ramakers, Esben W. Pedersen, Johannes Jasper, Sven Köhler, Aileen Pohl, Hannes Rantzsch, Andreas Rau, Patrick Schmidt, Christoph Sterz, Yanina Yurchenko, Patrick Baudisch. In *Proc. of CHI 2014*.

Kickables are tangibles that users manipulate with their feet. While they maintain the **affordance** of traditional tangibles, kickables scale to arbitrarily **large spaces** as kickables reside on the ground. This affordance makes kickables well-suited for large-scale walk-up installations, as illustrated by our prototype installation on basic molecular chemistry shown above.

The specific kickable designs shown here were optimized for use with a pressure sensing, back-projected floor. Kickables may be implemented in a variety of ways, though. We demonstrate one such solution (based on overhead IR cameras) that allows for kickable **tracking on arbitrary surfaces**:



To support application designers in creating kickable applications, we implemented a **toolkit of five kickable sets**. Each set explores a different design principle, such as different mechanical constraints.



For example, Bento kickables (one of our five sets) add physical constraints using a system of “rail tracks” for a steel sphere:

