TinkerSheets: Using Paper Forms to Control and Visualize Tangible Simulations. Zufferey, et al. TEI. 2009.

What are the core research questions addressed by the work?

- How can paper serve as an interface between tangible simulation and computer processes?

What motivates the work?

- Using paper along with tangibles combines the best of two worlds, physical interaction with the model as well as the ability to represent an arbitrary number of parameters by well known GUI components

How does the work understand the usage, capabilities, and limitations of paper?

- Paper is a generic tangible medium which can carry any kind of representation (from concrete drawings and photographs to abstract formulas)
- As a basis for a computer interface, paper allowed to represent any graphical control
- Paper is robust and intuitive

What is the target application domain of the work?

- Learning
- Simulation

What are some proposed extensions to paper proposed by the work?

- The paper interface is developed in the context of a tabletop learning environment for apprentices in logistics
- Allow users to set different parameters and query information presented in textual or graphical form

How are the proposed extensions implemented?

- Use of ARTag for locating sheets on the table surface and computer vision techniques for input detection

What findings have been obtained from either the implementation process or an evaluation of the proposed system?

- The paper form metaphor underlying the development of the system appeared to ease the use of the simulation
    - More obvious feedback signals needed to ensure the user is aware of system state
- Because the input sheets could be arranged spatially on the side of the interactive surface, the interaction space of the software is available for visual inspection
- Sheets could be cheaply reproduced by any standard copier or paper
    - But also perceived to have a higher value than traditional paper because they allow to control a complex application
- The nature of the system, mixing augmented and printed forms of information can be used as a bridge between the physical and digital worlds
- The sheets were sometimes stacked on top of each other during sessions
- The integration into teaching has to be carefully planned and designed