

DESIGNING A TANGIBLE INTERFACE FOR MANAGER AWARENESS IN WILDERNESS SEARCH AND RESCUE

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PROBLEM

- **Wilderness search and rescue (SAR)** involves a team searching for one or more lost people in a wilderness area.
- A **SAR manager** (and their team) coordinates several smaller teams in the field.
- Managers need to build and maintain high **situation awareness**. However, as a search progresses, this becomes more challenging.



TERRAIN PROTOTYPE

We designed a tangible interface to support SAR managers in building and maintaining awareness of an ongoing search. This interface consists of:

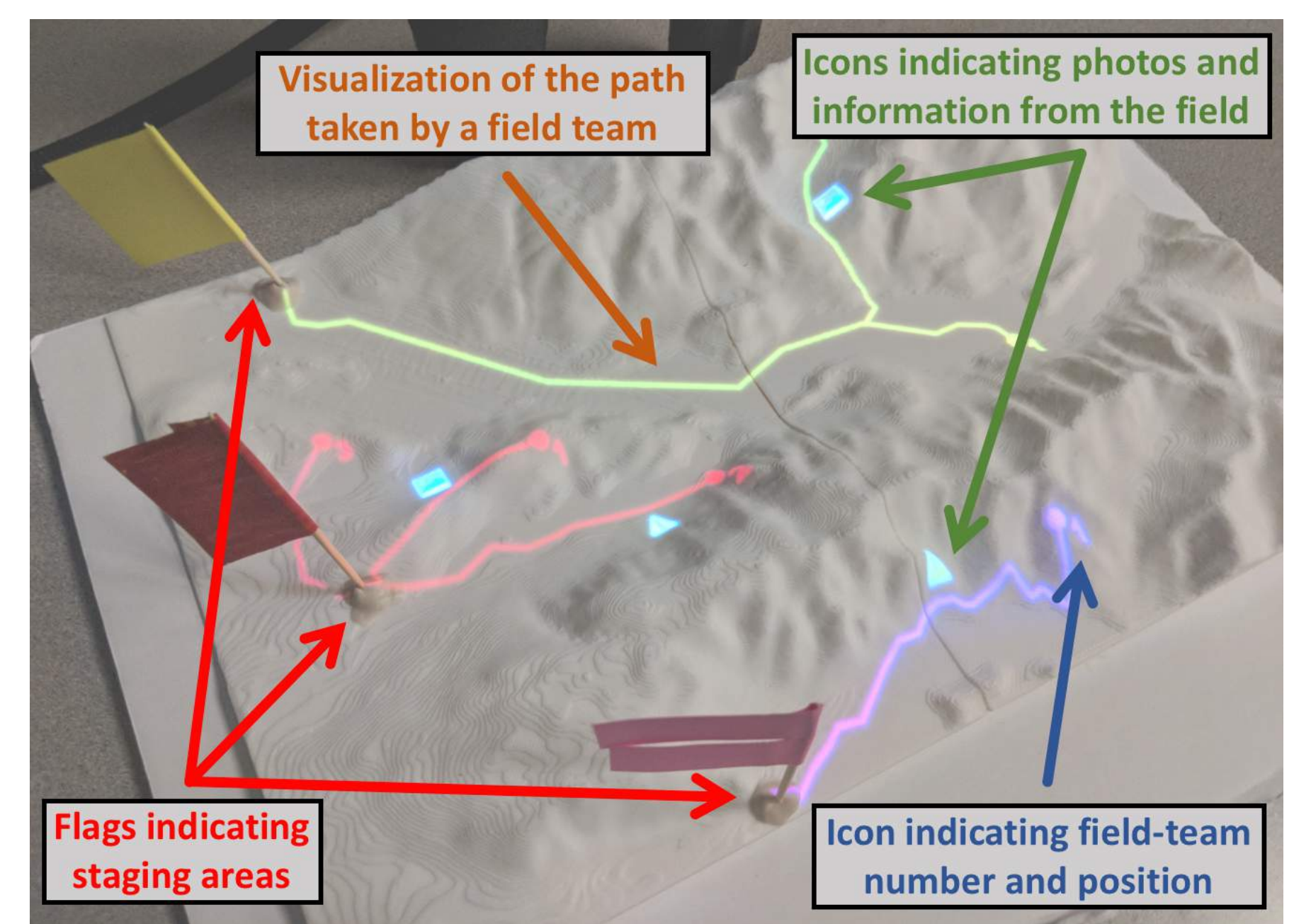
- A **3D topographic map** of the search area as the central point of interaction.
- A **projector** projecting **dynamic information** over the terrain map.
- **Physical props** placed over the terrain to represent **static information**.



Lines move across the terrain to represent the speed and direction of wind.

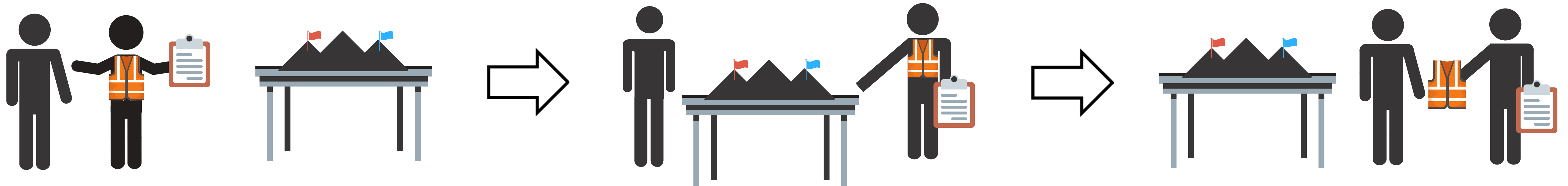


Representations of cloud cover and wind over the terrain.



Basic viewing mode, with representations of the paths taken by field teams.

SAMPLE USAGE SCENARIO



A SAR manager has been on duty for 10 hours, and another SAR manager is about to take his place. The outgoing manager is briefing the replacement manager.

The outgoing manager uses the terrain interface to help explain the status of the search and the field teams to the replacement manager.

After both are confident that the replacement manager has all the information he needs, the outgoing manager transfers his duties to the replacement manager.

KEY DESIGN FEATURES

- **Multiple viewpoints** enable SAR managers to observe the status of:
 - (1) The **search area**
 - (2) The **field teams**
 - (3) The **search activity**
- SAR managers can explore through **visual observations**, **touch**, and **physical manipulation** of objects.
- Intended to be **left turned on** and placed **in the middle** of a SAR-management office, while updating with new and changing information.

FUTURE WORK

- Work with SAR managers to:
 - (1) **Iterate** on the design
 - (2) Use the design as a **probe** to understand how to design other new SAR technologies
- **Evaluate** a more-refined version of this prototype through **field trials**.