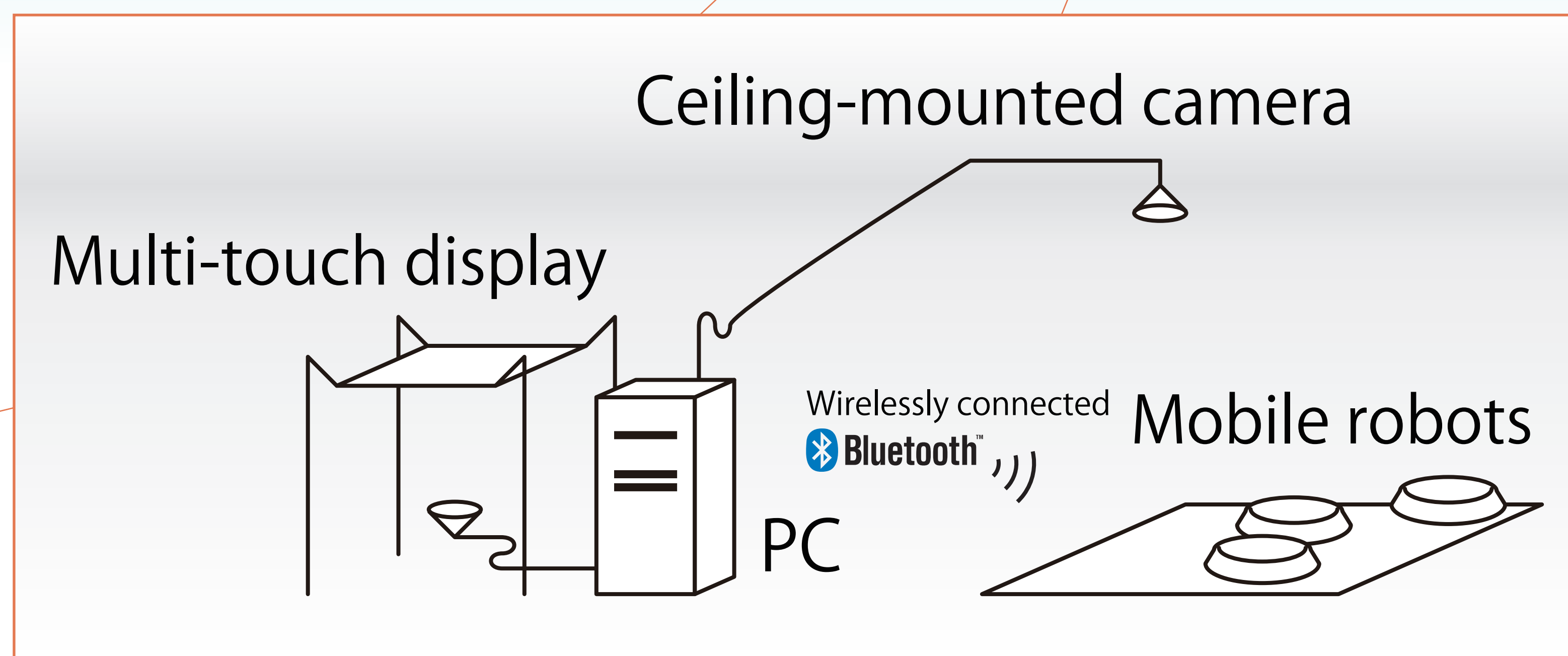# Multi-touch Interface for Controlling Multiple Mobile Robots

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Ceiling-mounted camera

Multi-touch display

Wirelessly connected
Bluetooth™ Mobile robots

PC

We developed a multi-touch interface with a top-down view from a ceiling-mounted camera for controlling multiple mobile robots.
Users can manipulate a vector field followed by all robots on the view.

We must give some form of an order to robots in order to have the robots do a complex task. We therefore need interfaces for the operation and teaching of robots.

Handling tasks with multiple robots is a desirable research issue, but existing interfaces have difficulty in operating multiple robots simultaneously.
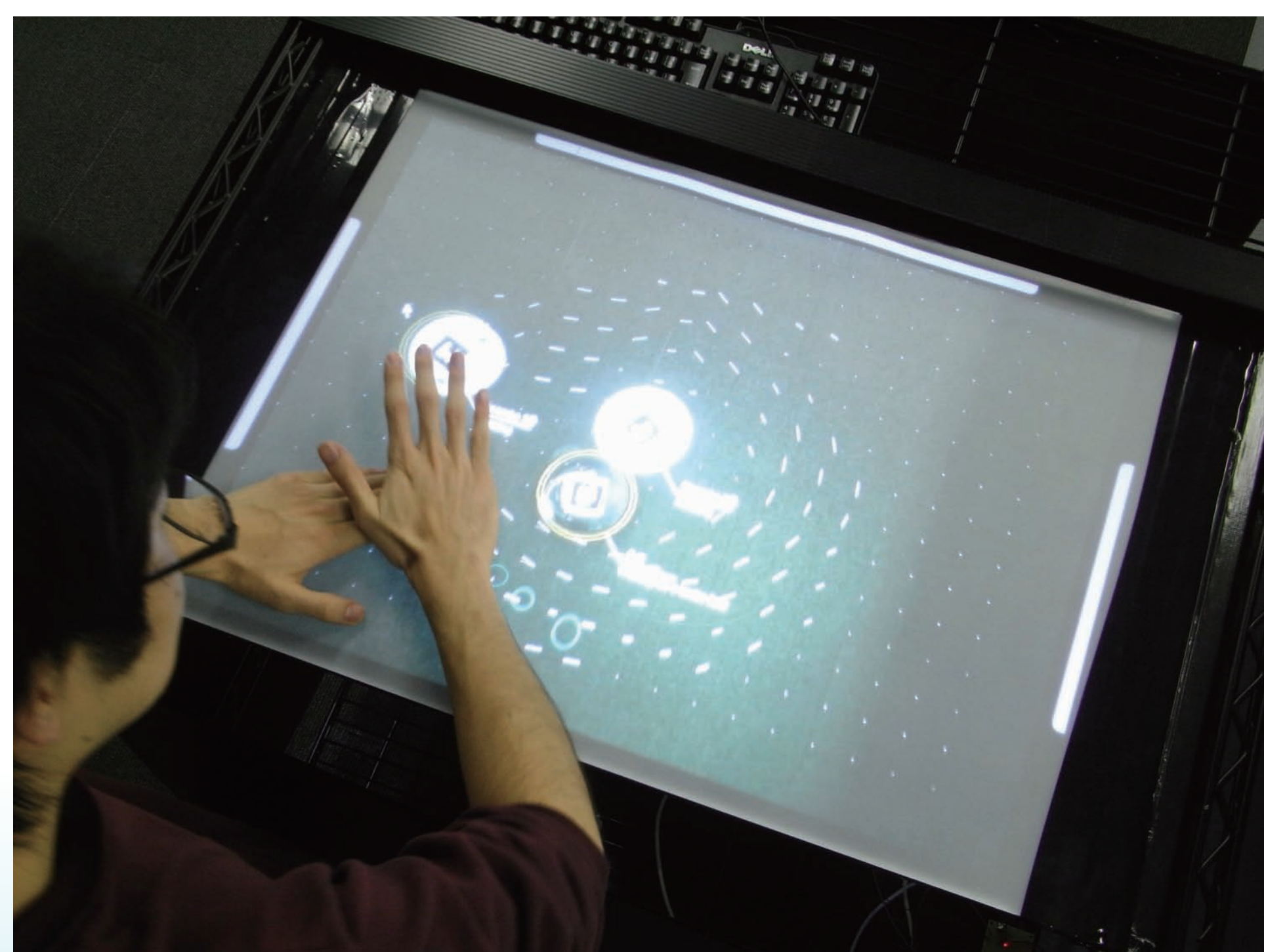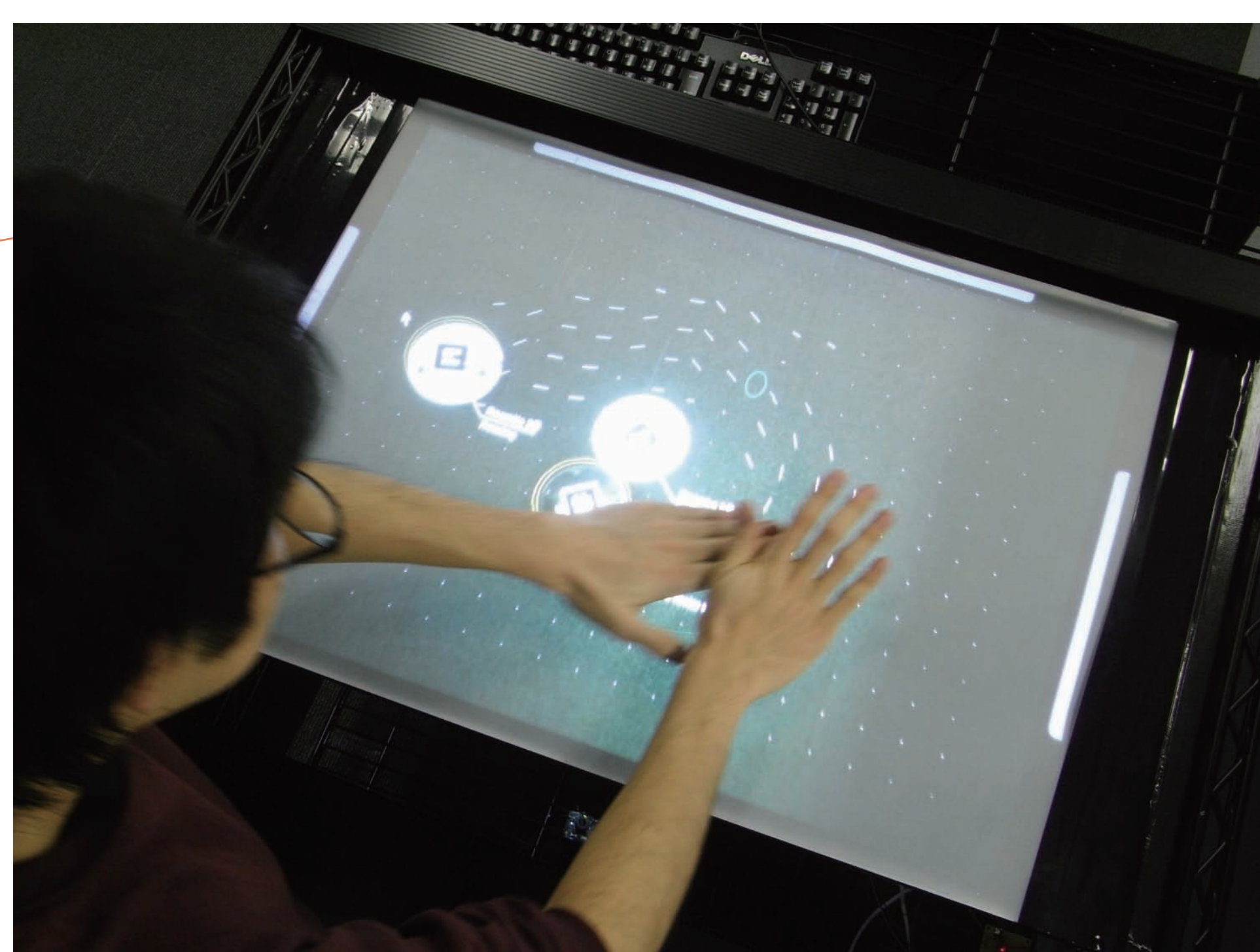

Draw similar paths for many times?

Switch among many views?

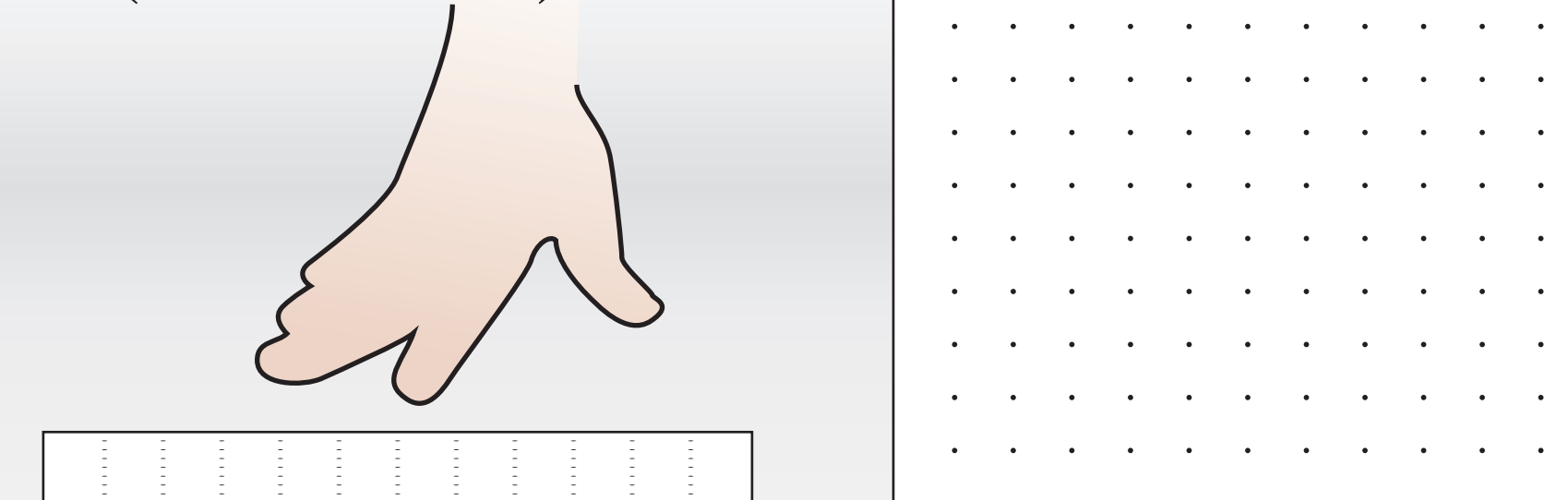FTIR Multi-touch Display with PC   Roomba Robots by iRobot Corp.
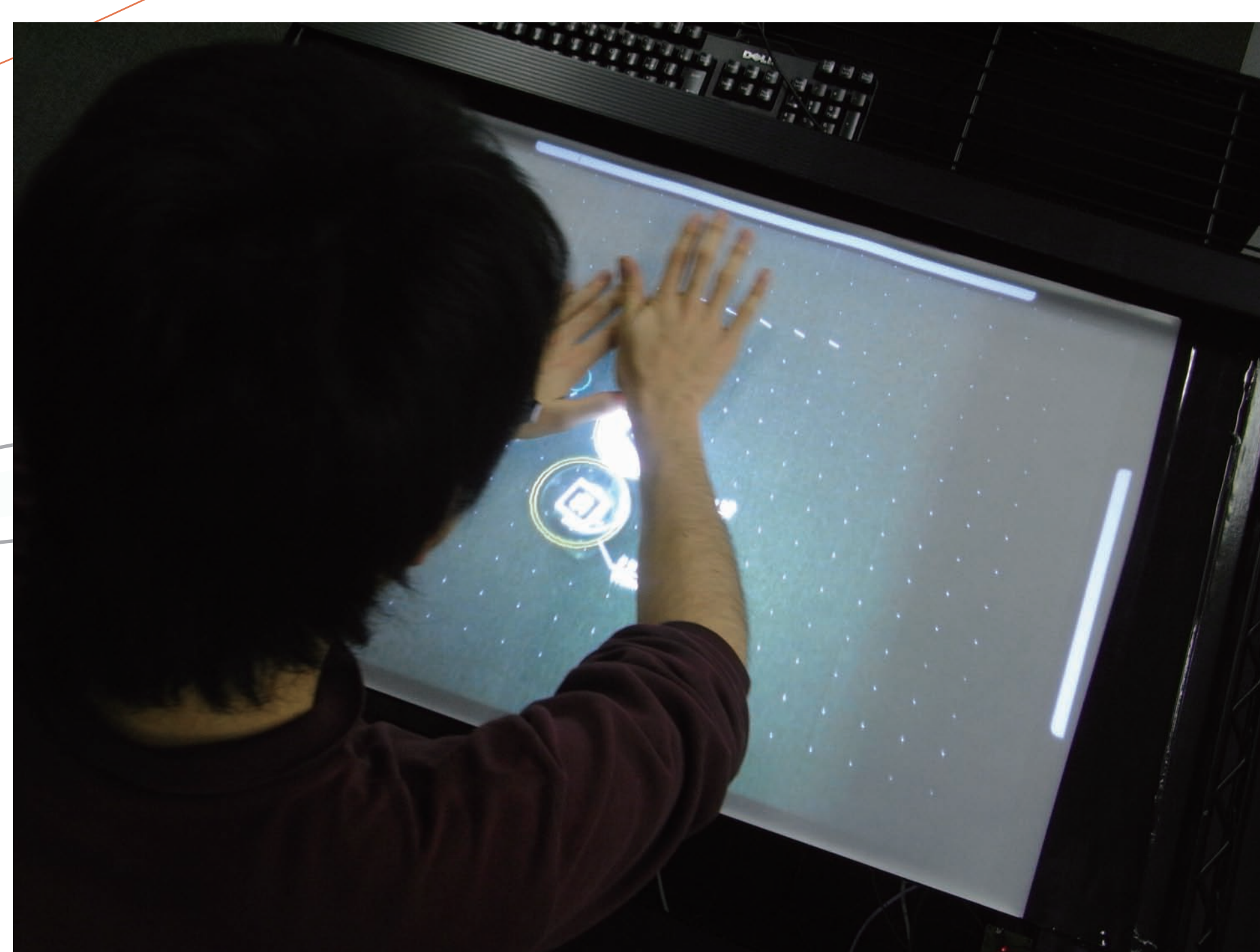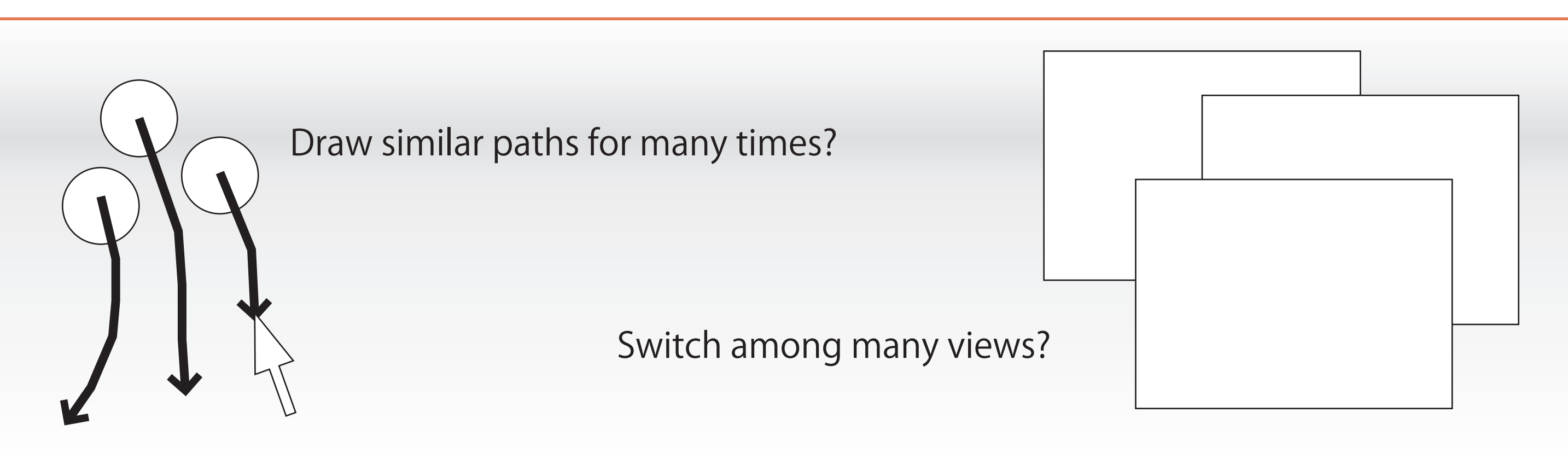
Draw a Stream, Drift Robots.

"*Users can maintain their situational awareness at a glance.*
When controlling robots through this interface,
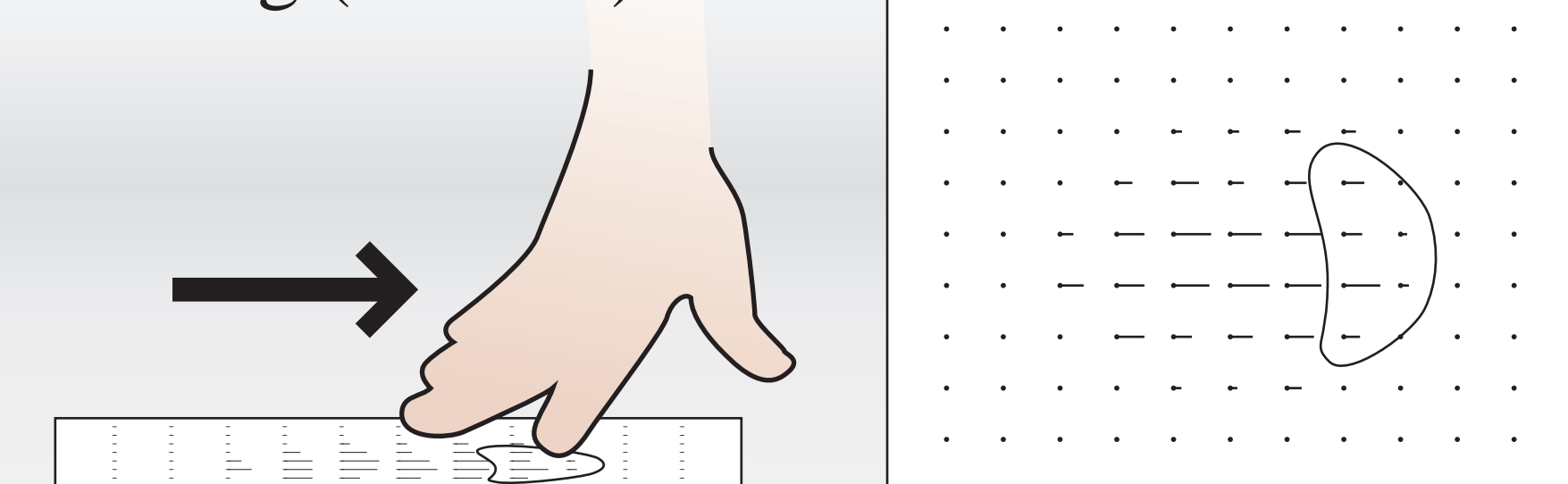*they need not focus on each robot but only on the field.*"
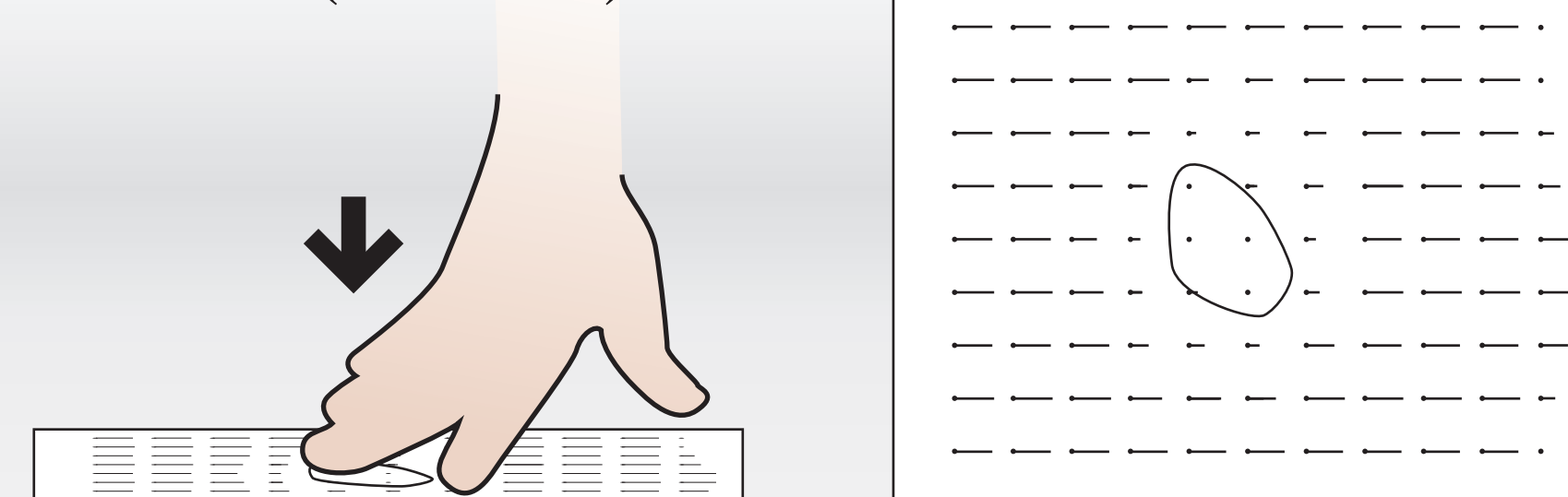
1. (Initial state)

The view is virtually divided into grids, and every grid has 2-dimensional vector information. Together, the grids construct a vector field that is followed by all robots.
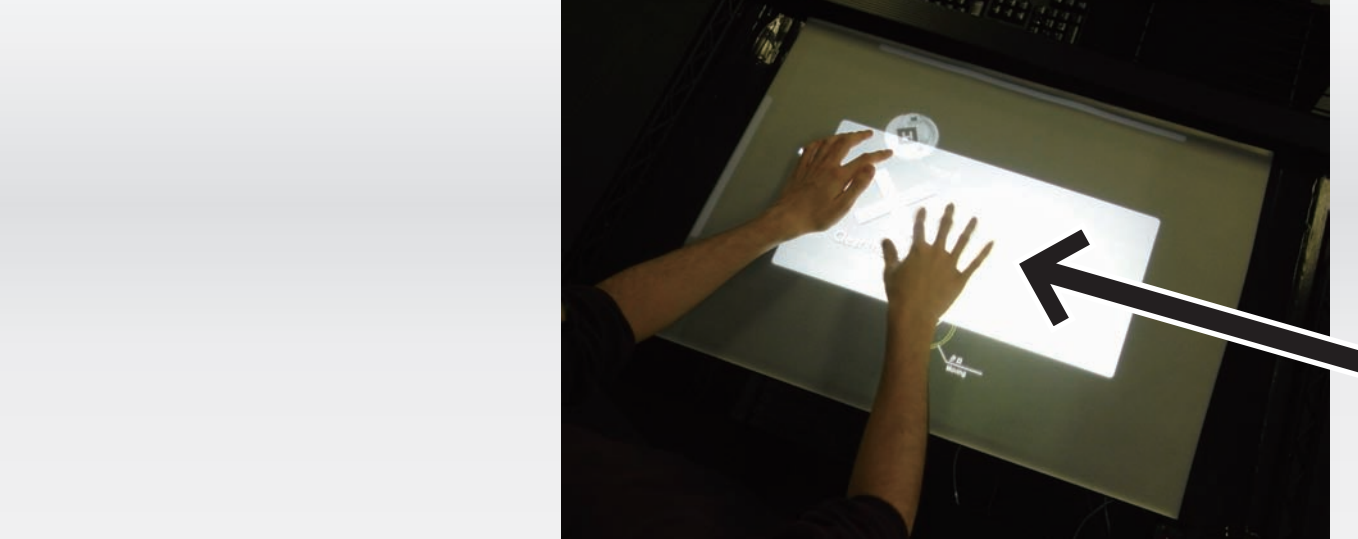
2. Drag (= Draw)

When users touch and move their hands on the panel, a virtual stream appears on the vector field and robots move in accordance with the stream.

3. Hold (= Clear)

Touching the panel without further motion will reset the vectors under that hand. Thus, we can stop a robot by touching and holding an area in front of the robot.

4. Clear all

There is a button labeled "Clear the field" hidden outside of the screen. It appears when the user pulls the handle at the right edge of the panel. We can use the button to stop all the robots at once.