Quick-Glance and In-Depth Exploration of a Tabletop Map for Visually Impaired People

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Two Steps Exploration :

Interactive maps can make geographic information accessible to visually impaired people. Yet, the exploration of such maps on large tabletops is long and tedious.

We propose 2 steps to improve accessibility of geographic maps on a large touch screen and to speed up exploration :

- Step 1: Quick-Glance exploration permits creating a mental representation of the map by using mid-air gestures
- Step 2: In-Depth guidance allows users to be guided to a point of interest (POI) by touching the tabletop surface
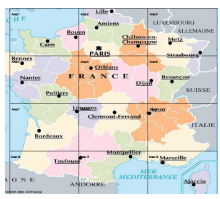
Map design

Map customized in a 3x4 grid (T12 layout)

Each area contains POIs.

Well-known T12 layout suggests easy memorization
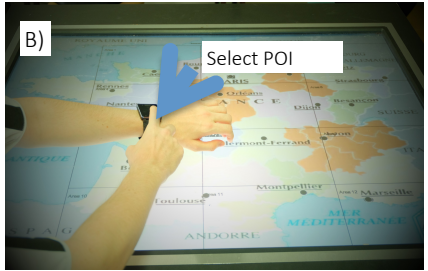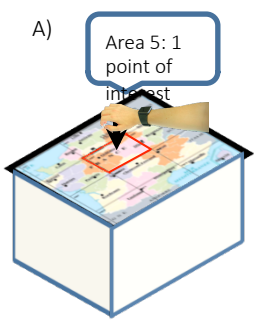
Goal: Acquire global representation of the map.

1. Quick-Glance exploration

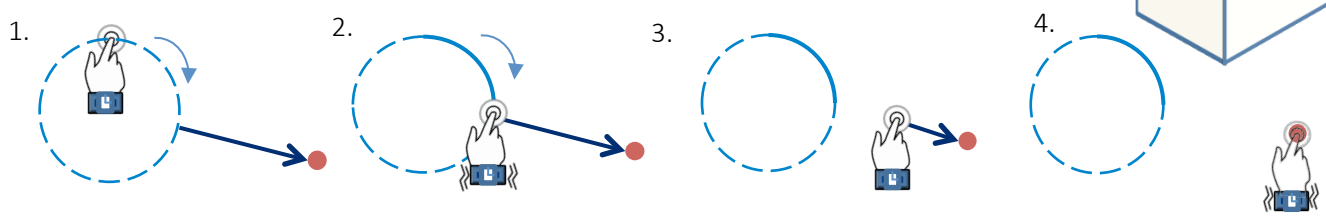### Exploration without touching the tabletop map

Smartwatch enables user to interact with the map

- A) Swipe on smartwatch screen: POIs are read out
- B) Tap on smartwatch screen: select a POI and switch to In-Depth guidance.

A) Area 5: 1 point of interest

B) Select POI

2. In-Depth guidance

Users are guided to the POI exact location by using vibrations on the smartwatch

1. Users touch the tabletop map and perform a clockwise circle

2. At the corresponding angle, the smartwatch vibrates

3. Users move their finger following the angle

4. The smart watch

vibrates when destination is reached

Future work

1. Quick-Glance: Implement stand-alone prototype

2. In-Depth: Implement error recovery technique

3. Evaluate the approach with visually impaired users