ACMMULTIMEDIA 2015

26 - 30 October 2015, Brisbane, Australia

smArt: Open and Interactive Indoor Cultural Data

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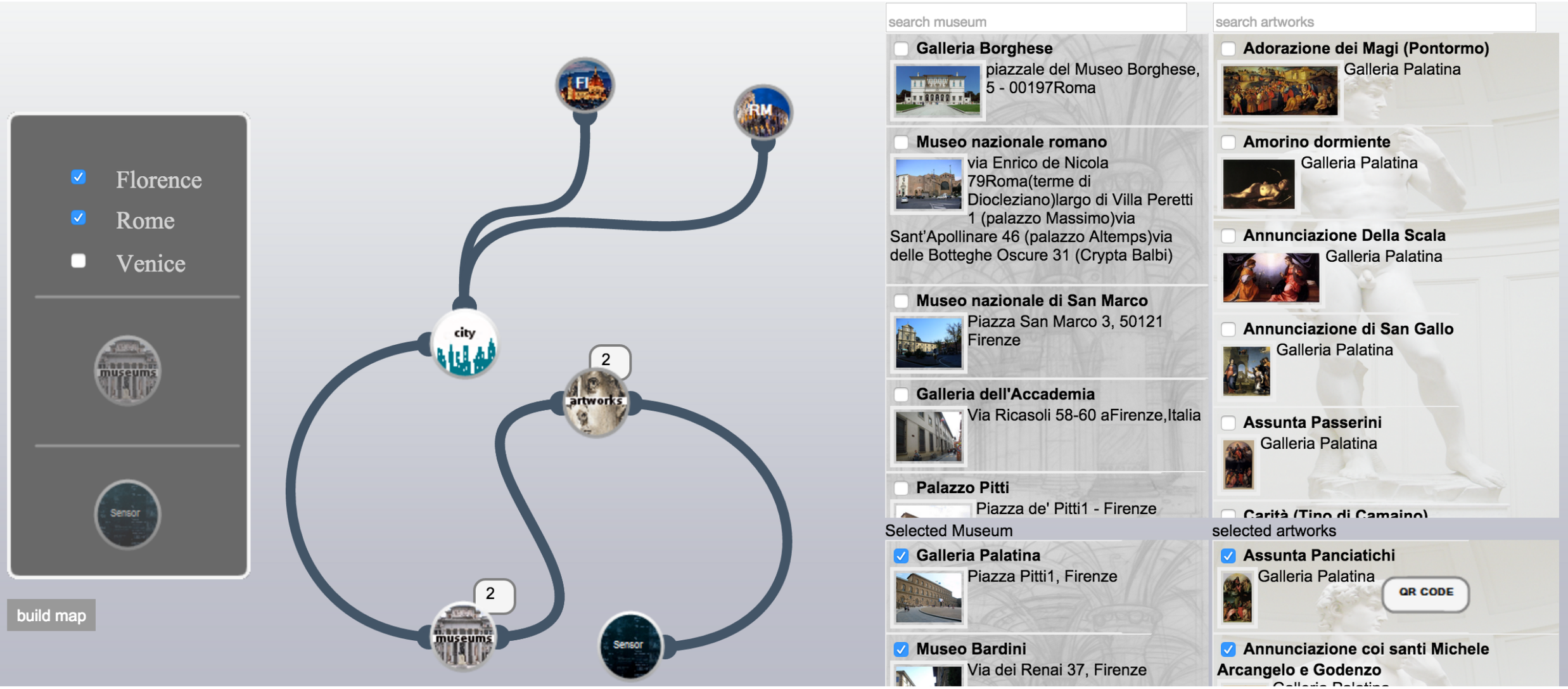
smArt is a low-cost framework to **quickly set up indoor exhibits** in museums featuring a **smart navigation system**. The framework is web-based and allows the design on a digital map of a sensorized museum environment and the dynamic and assisted definition of the multimedia materials and sensors associated to the artworks.



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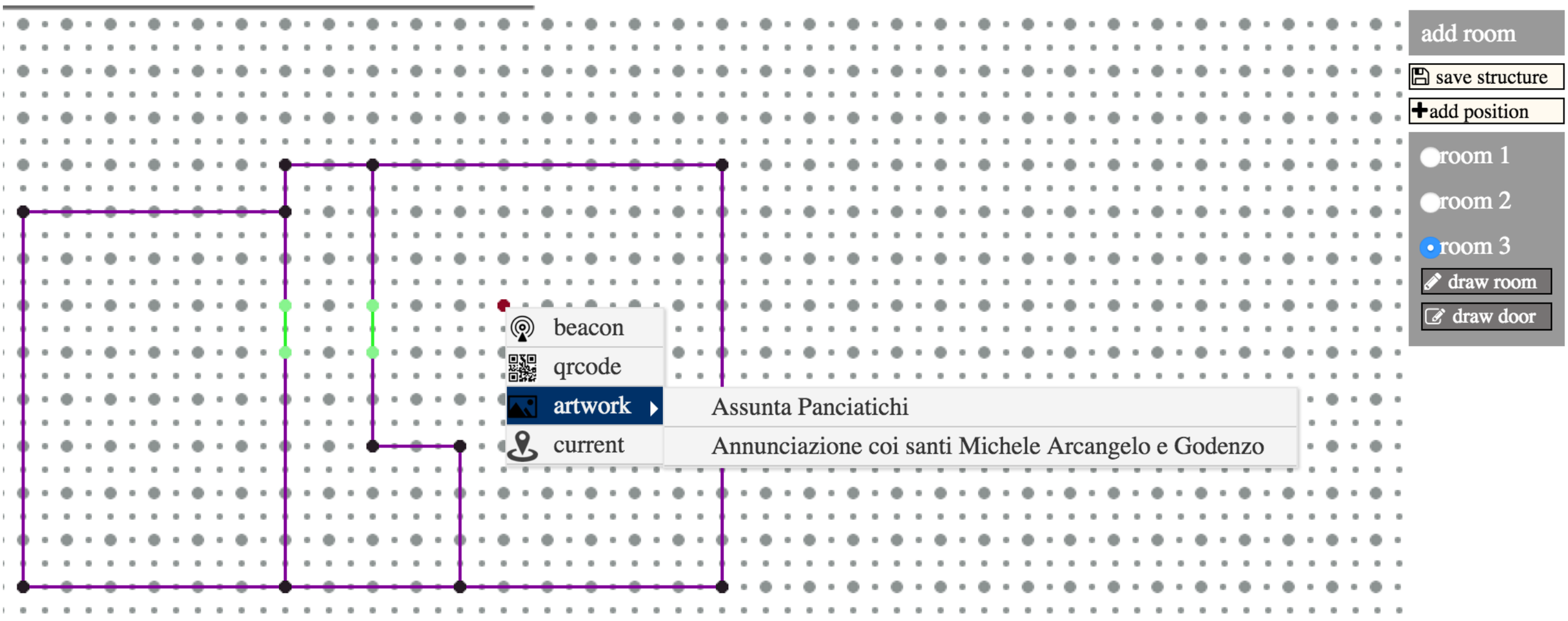
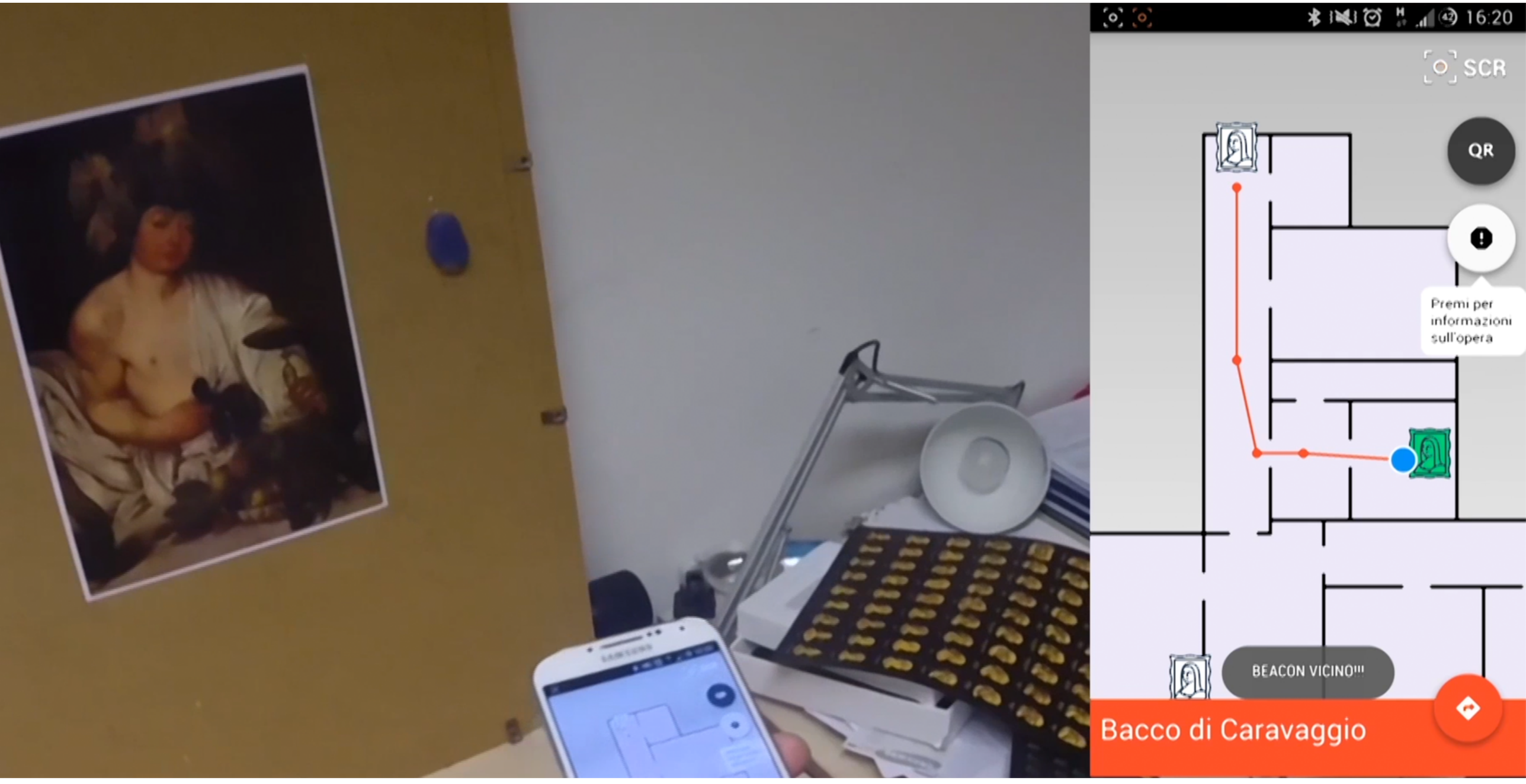


A **mobile Android application** exploits the data generated by the web app and reacts to the expected signals in the **real environment**.



smArt exploits **bluetooth beacons** and **QR Codes** as sensors.

The app provides **indoor localisation** and **routing** exploiting available sensors.

Passable spots have been defined by the web app user on the map and can be **sensorized artworks**, **door spot** or **localisation spots**. The **shortest path** to an artwork is computed by the indoor engine using the **Dijkstra's algorithm**.

The engine provides also a completely automatic system to calculate the shortest path which uses automatic **2D polygon convex partitioning** of the museum map: the Hertel-Mehlhorn algorithm is exploited. Then the **center of mass** of each partition is treated as a path spot to be used in the graph by the Dijkstra's algorithm.

More Info

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