Observe: Semantic Context-based Content Recommendation for Adaptive Public Screens

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MOTIVATION
Media screens are found in many urban public spaces. The social potential of these public screens smart cities have been recognized. Currently, audiovisual content is often pre-programmed in repetitive loops, ignoring the context.

For effective use of interactive public displays in smart cities, **adaptivity** to this context is one of the key design challenges.

SEMANTIC CONTEXT AND CONTENT MODELS
We use Semantic Web standards and models to model these context profiles allowing for easy reuse (such as RDF Data Cube) and structured data from the Semantic Web. A **context** is defined by a specific location and a timestamp, this is also used in the URI of the context. It is linked to one or more observations. These observations can either come from (linked) open data (for example http://linkededgeodata.org) or from sensor data.

http://semanticweb.cs.vu.nl/observe

SENSORS
An example of a sensor used in the Observe system is the sensor that detects crowdedness in front of the screen. The crowdedness sensor consists of three components: a camera, a capture device that captures pictures and a recognition server.

RECOMMENDER SYSTEM
Content selection is done by comparing the current values in the context profile with the **metadata of the content**. Including information about the context for which the content is suitable.

The recommender uses OptaPlanner to optimize a playlist based on:
- Match between current context and content profiles.
- **Constraints** (non-repeating, uniqueness, time-constraints)

PRELIMINARY EVALUATION AND PILOTS
Manually created content items (n=29) in 7 different categories: Advertisement and promotion, Arts and Culture, Influencing the mood, Entertainment, Information, Participation, Communication to the public. Each piece of content was rated for different contexts. For 7 contexts, we generated playlists and let experts (n=6) compare them to random playlists. Results show that in 62% of the cases the optimal playlist was preferred.

Two pilots in Enschede (www.actmedialab.nl/resultaten-eerste-pilot-observe/) show different user groups interact differently with the screen.

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PRESENTER