

Linked Data in Action: Personalized Museum tours on Mobile Devices



Developers workshop@ESWC 2015

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Navigation Support for the Visitor

- Problem
 - How to help visitor to navigate through the huge collection?
- Decision factors
 - Available time
 - Particular topic(s) of interest
 - Logistics



"Visiting" Process

Select starting point

Observing

Select the next one



Current location
Specific interest (if any)

What is that?
Do I like it or not?

Do I want to know more about the subject?
Do I want something different?

Solution: Living Museum



Mobile App – always with you!

Starting point → Observing → Suggesting the next



This gold chariot comes from a hoard found near the Oxus river in Central Asia. It depicts a driver and probably a satrap - a governor of the Persian Empire. ...

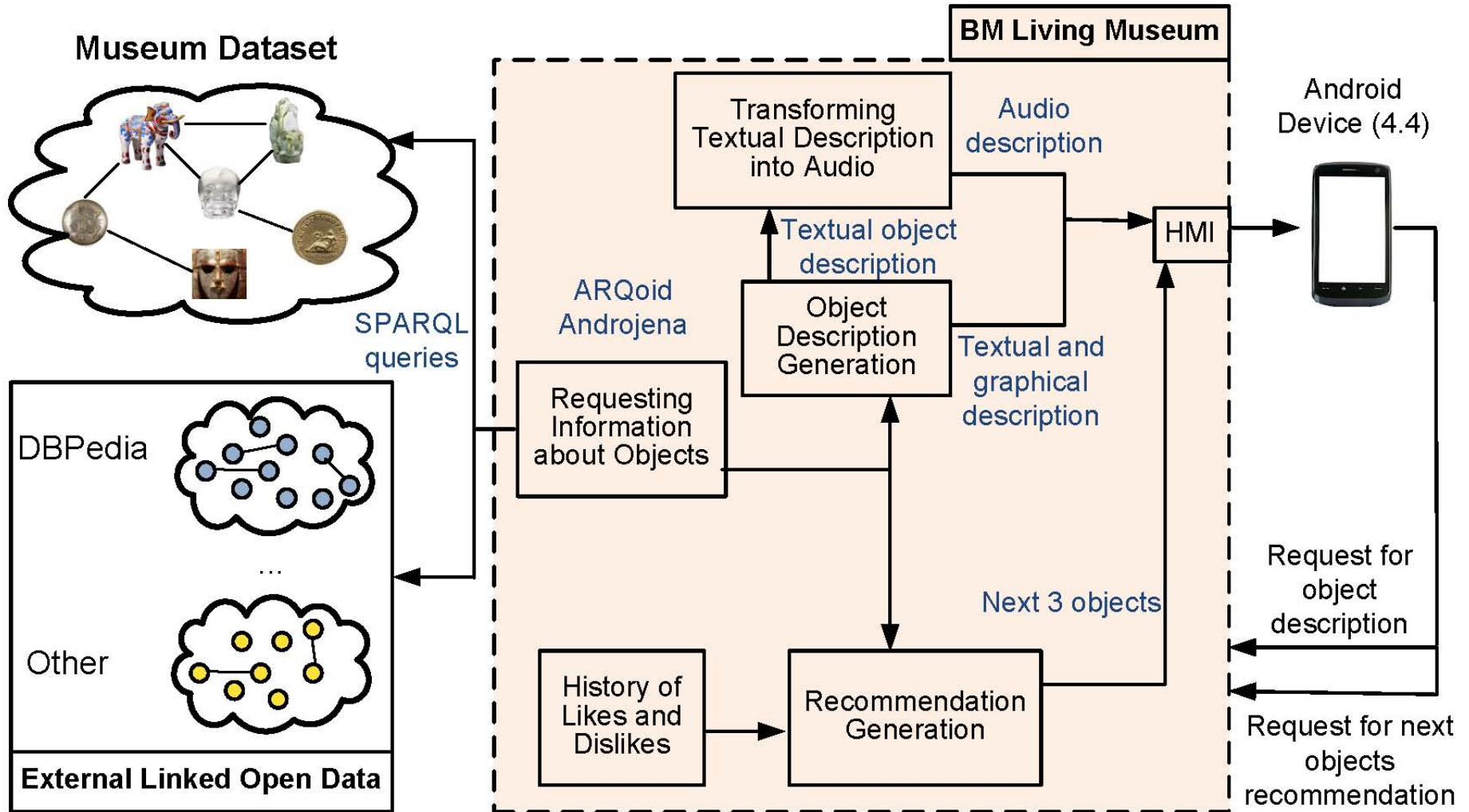


- 3 different objects to start
- W.r.t. current location

- Artifact description (also audio)
- Like or Dislike

- Suggestions based on ranking algorithm
 - Similarity
 - Physical distance
 - Already seen artifacts
 - History of “Like”s and “Dislike”s

Solution: Overview



Recommendation Algorithm

- **New Location Set (NLS)**
 - Artifacts in the current visitor location and neighboring rooms
 - Ordered according to their similarity to visitor profile
- **Visitor Profile**
 - Multi-dimensional vector representing the features visited artifacts
 - Each feature in an integer incremented acc. To number of “like” actions
 - Cosine similarity of visitor profile and artifact features
- **Recommendation** generating
 - Visitor profile updated and NLS re-ordered at
 - Each “like”/“dislike” action
 - Entering new room
 - Only last N artifacts are considered to build the visitor profile

Lessons Learned

- Data set irregularity or/and incompleteness
 - Missing picture of short synopsis
 - Artifact title is not always accessible with the same query pattern
 - Locations present in the dataset, but not in the actual floor plan
- A super cultural heritage ontology would be beneficial
- Querying
 - using SPARQL from the mobile application is the most efficient
 - Other protocols (e.g. Web services using JSON) lead to additional networking cost with a backend server
- API to directly query SPARQL endpoints from mobile devices
 - Neither mature nor well-supported

Discussion: Q&S

- Applications using Semantic Web and LOD on mobile devices – feasible or not?
- Server-based architecture VS running algorithms locally