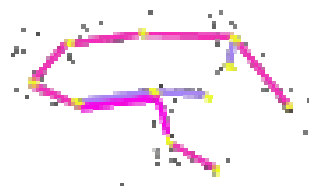


# A SPECIFIC ONTOLOGY AND RELATED WEB SERVICES FOR ASSESSING ACCESSIBILITY ISSUES IN CULTURAL HERITAGE ENVIRONMENTS

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Valverde, Mercedes Martínez and  
Javier Finat



PatvAc

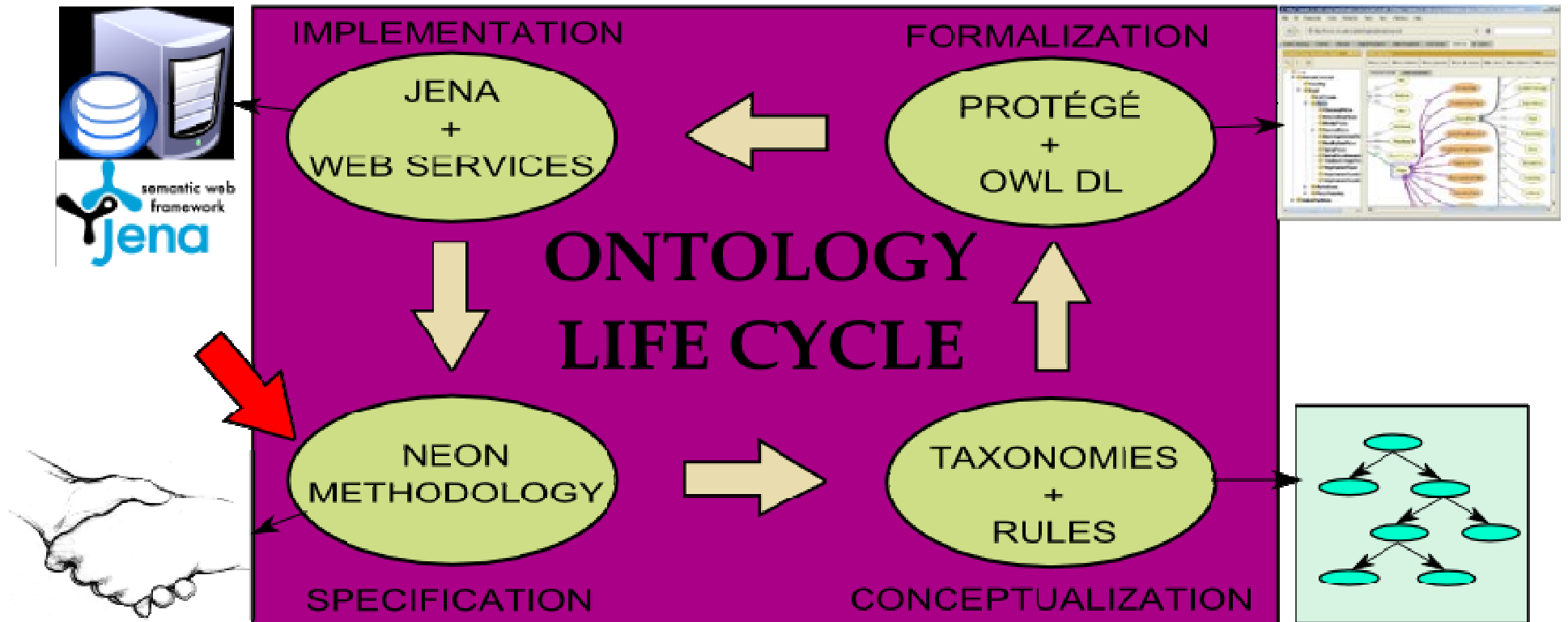
# AGENDA

- INTRODUCTION
- THE PATRAC ONTOLOGY
- ONTOLOGY IN THE GIS FRAMEWORK
- ACCESSIBILITY ASSESSMENT
- CONCLUSIONS

# INTRODUCTION

- Goal: accesibility assessment in Cultural Heritage Environments
  - Which zones are accesible by a disabled person?
- GIS framework augmented by a semantic layer provided by the PATRAC Ontology
  - Knowledge modelling
  - Thessauri and taxonomies
  - Reasoning, reuse and sharing
  - Methontology: ontology development life cycle

# ONTOLOGY DEVELOPMENT METHONTOLOGY



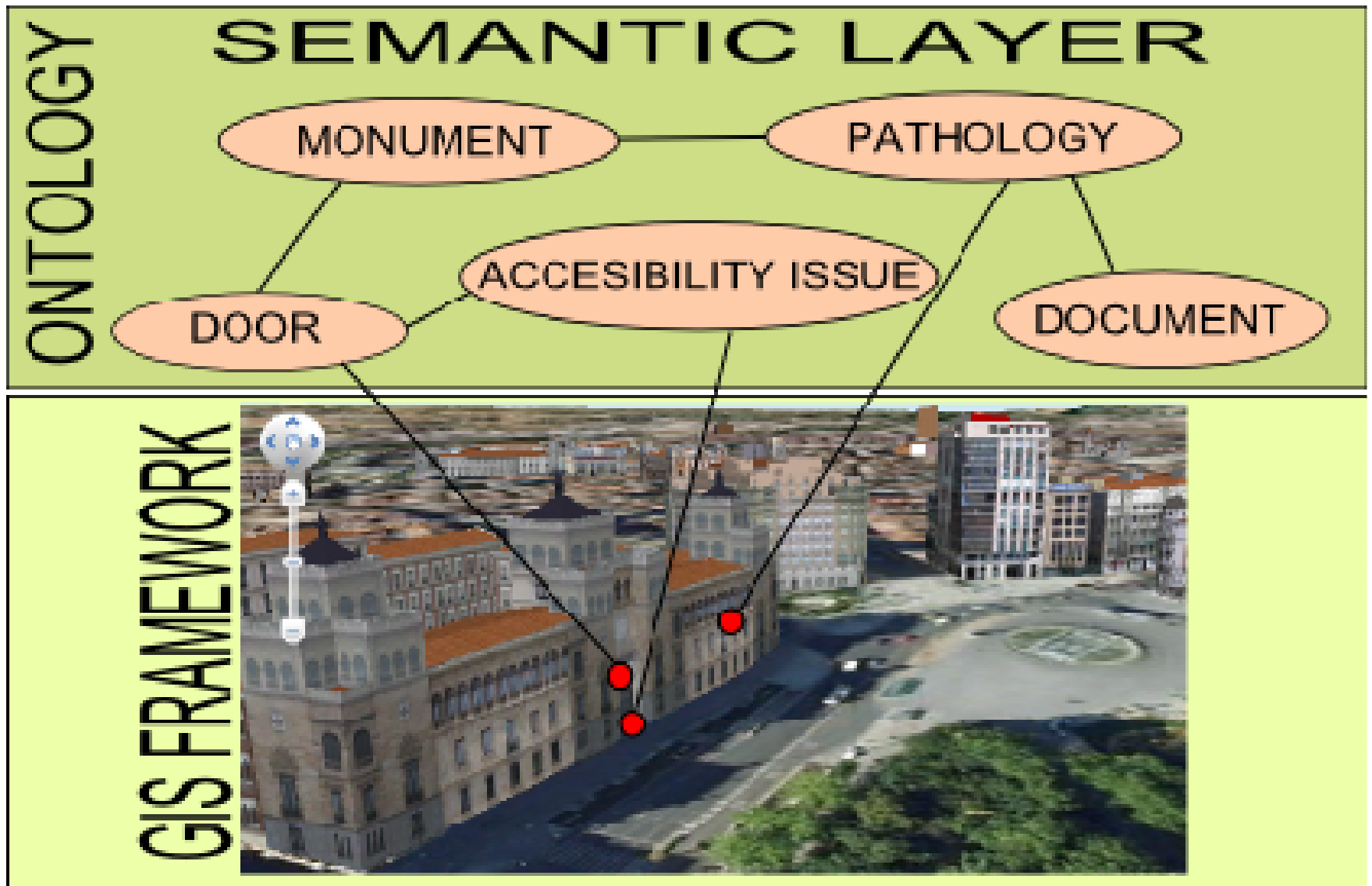
# ONTOLOGY DEVELOPMENT

- Specification (NeOn Methodology)
  - Main Purpose: model accessibility issues and possible interventions to solve or improve these issues
  - Application domain: accessibility conditions
  - Level of formality: OWL DL
  - Users: technicians, visitors, service providers
  - Uses: for each type of user
  - Competency question: what kind of accessibility issues could a person in a wheelchair find around the Maritime Museum of Barcelona?

# ONTOLOGY DEVELOPMENT II

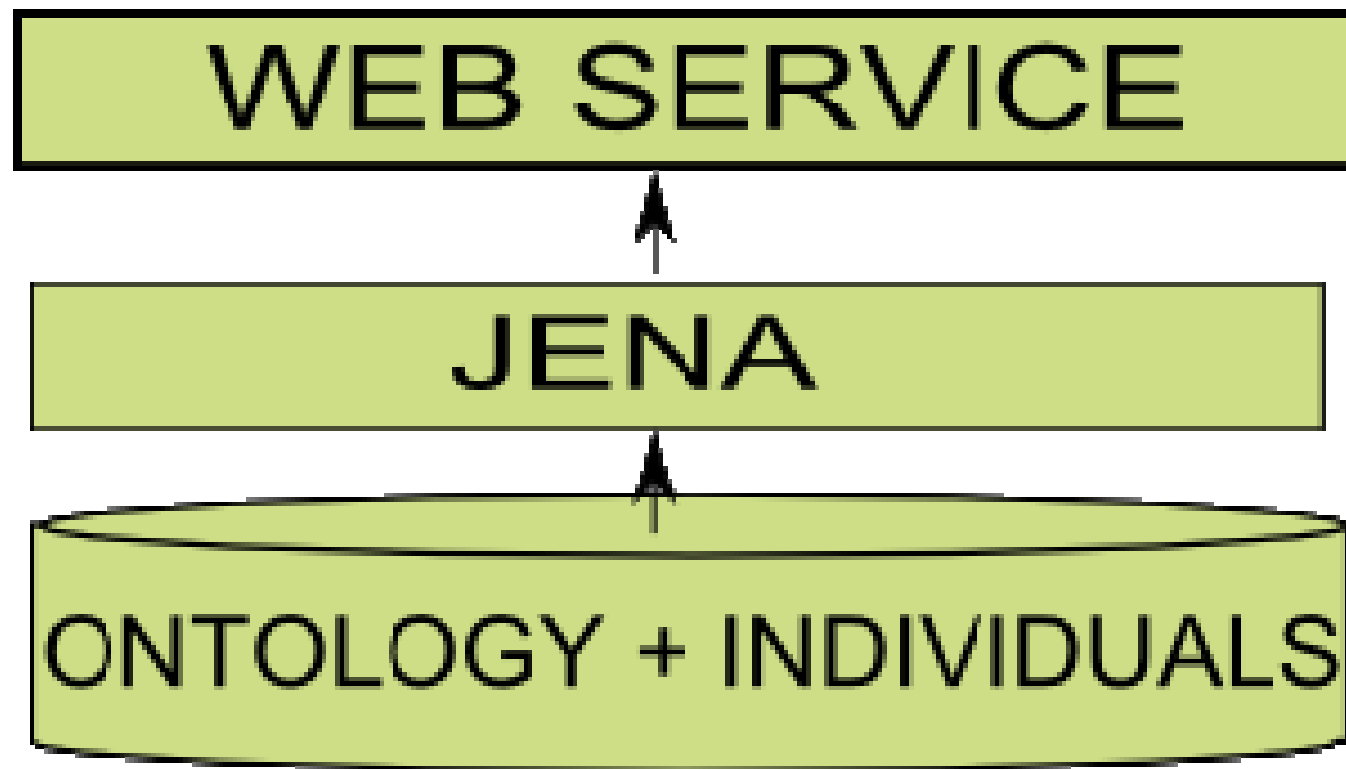
- Conceptualization: 3 subdomains
  - Physical domain: monument, architectural features and accesibility issues
  - Task : interventions
  - User: classifies and models properties
- Formalization
  - OWL, due to disjoint classes and transitive properties
  - PROTÉGÉ: ontology editor
- Implementation: Jena and SPARQL

# ONTOLOGY IN THE GIS FRAMEWORK



# HOW MANY DATABASES?

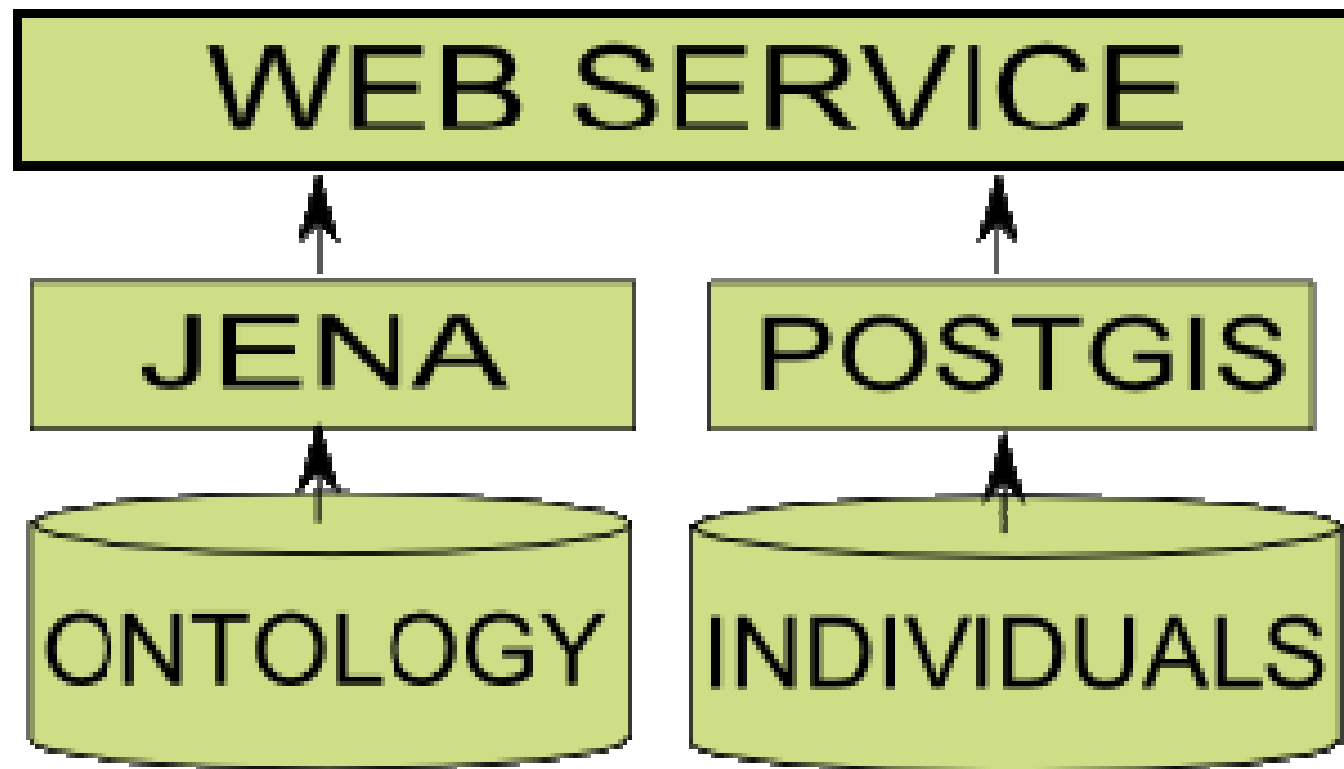
RDF Persistent Storage approach: more space, no GIS features





# HOW MANY DATABASES?

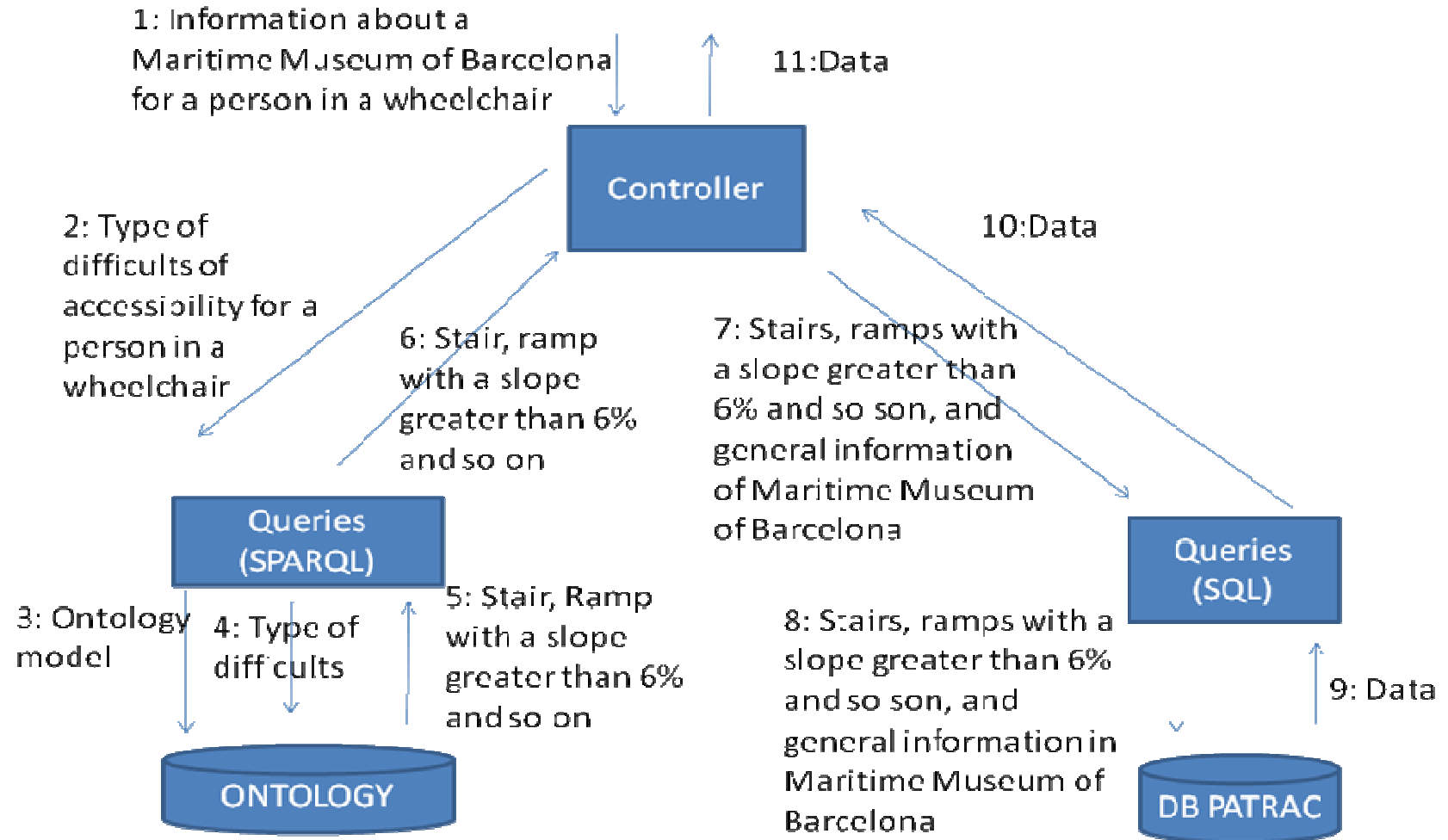
Relational Database approach: more difficult and high cost



# ACCESSIBILITY ASSESSMENT WEB SERVICES

- Context-aware services
  - User type, position and task
- Two different services
  - Technicians → detect new accessibility issues, pathologies or interventions in a monument
  - Visitors → information tailored to their interest, disability and geographical position

# WEB SERVICE ARCHITECTURE



# CONCLUSIONS

- The ontology provides SIG semantic support
- It solves physical and digital accesibility issues
- Validated in Maritime Museum of Barcelona
- The Web Services enable the integration of J2EE and .NET client applications
- Two databases give efficiency and flexiblility
- In the future: extend the ontology for representing the multimedia contents.

# THANK YOU FOR YOUR ATTENDANCE

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