CULTURE HISTORICAL HERITAGE - INSPIRATION FOR ENRICHING THE MULTI-COUNTRY ACADEMIC COOPERATION

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INTRODUCTION

- BECC environment (Bulgarian Electronic Cataloging Culture) – 10 years ago
  - It is based on the Cataloging Cultural Objects standard (CCO)
- The project was updated in connection with building an e-learning environment.
  - e-learning services and learning content for blended, self-paced, and lifelong learning
- In the part related to lifelong learning, educational content for cultural and historical heritage has been created, where the intelligent **tourist guide** is main application.

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TOURIST GUIDE

The main goal of the TG is to generate a tourist route for users in accordance with their interests and location. The life cycle of the TG includes the following basic steps:

- A tourist inquiry
- Selection of appropriate cultural and historical objects
- Generation of a tourist route implementation

Each object has two types of presentation on the guide's server:

- A cultural and historical object (CHH object) – depending on the nature of the presentation, it includes different features in accordance with the CCO standard .
- Ambient – for characterization of the location and condition as a physical feature in a real location (area) of a separate CHH object or a group of CHH objects, designated as an exposition.

TOURIST GUIDE ARCHITECTURE
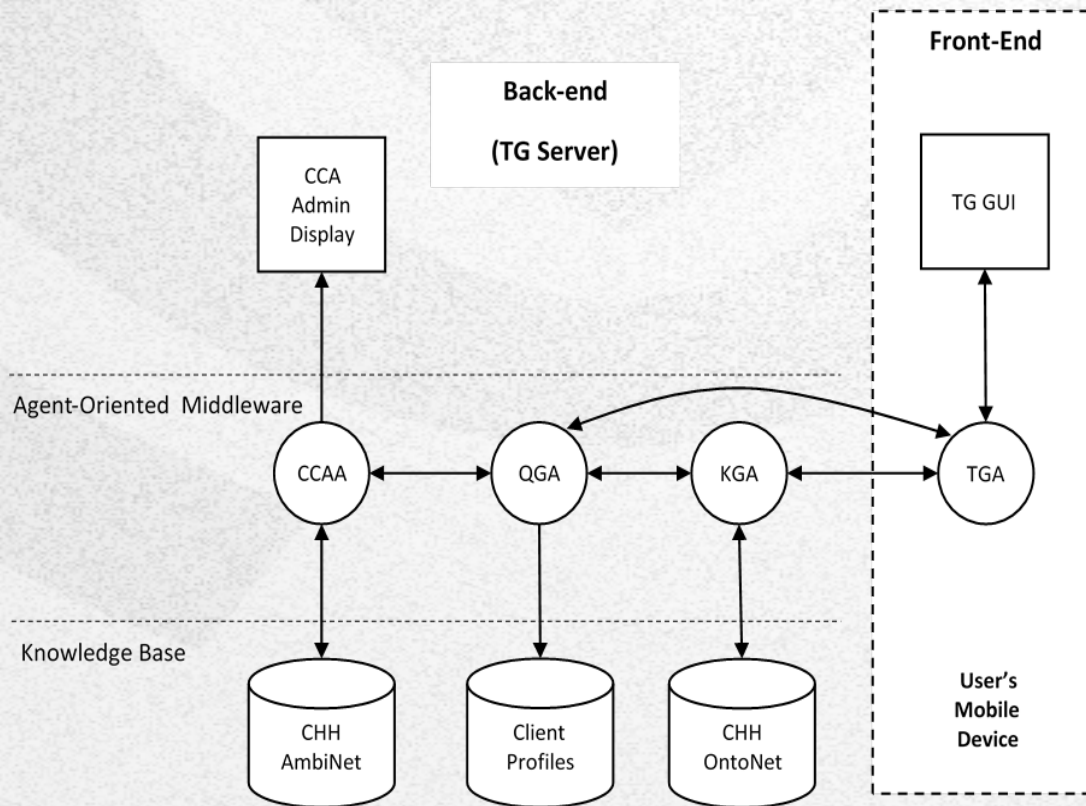
- A back-end component: it consists of different modules, distributed in two layers – a knowledge base and operational assistants performing the tasks of gathering information for the client's needs and generating it in an appropriate cultural and historical route;
- A front-end component: it consists of an intelligent assistant that takes care of presenting the route and object information to the client's mobile device using the information generated by the operational assistants in the back-end layer.
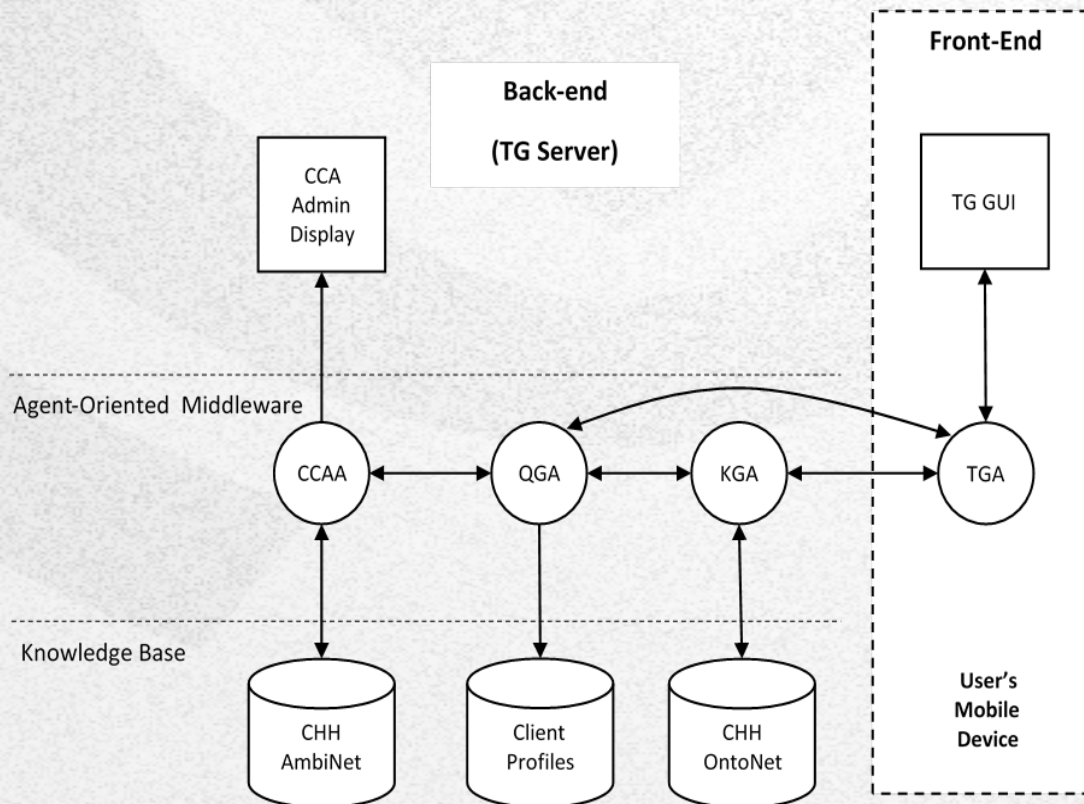
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BACK-END COMPONENTS
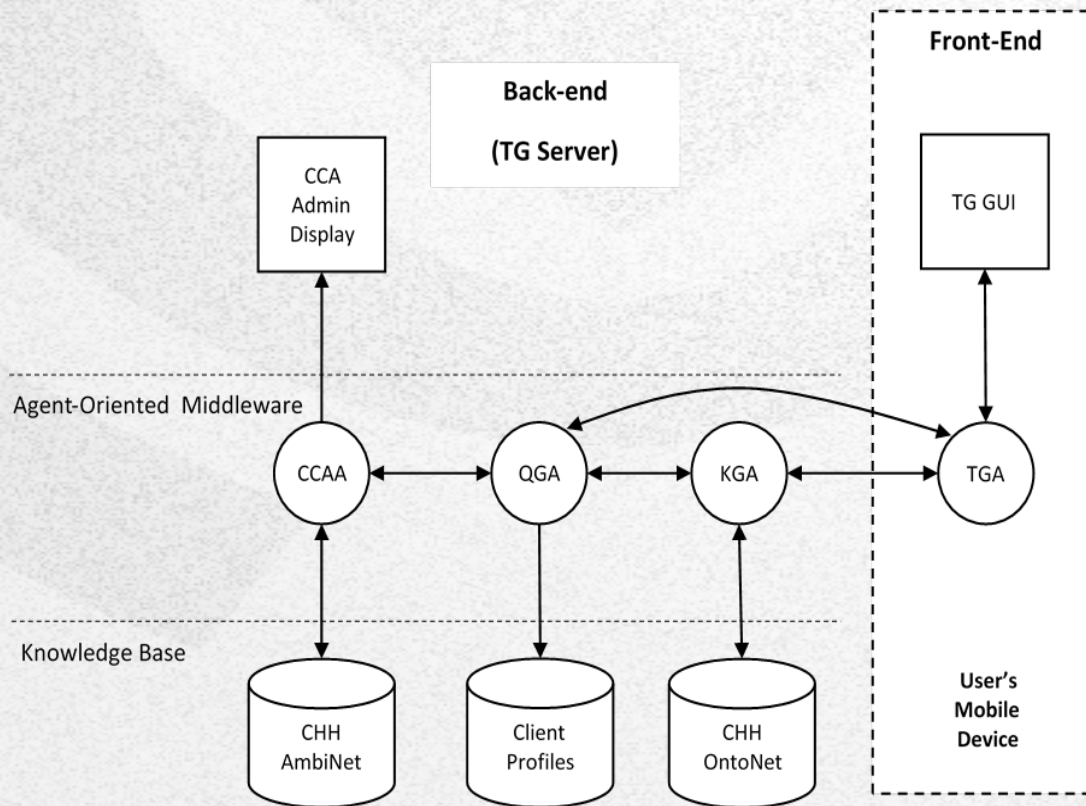
- QGA (Questioner Generation Assistant) – the responsibility of this operational assistant is to generate and conduct a survey with the tourist to identify his or her preferences, wishes, and time available. The survey results are used to generate a tourist profile.
- KGA (Knowledge Generation Assistant) – using the tourist profile, the assistant selects the elements of the primary route. The primary route elements are expositions or separate CHH objects.
- CCAA (Calculus of Context-aware Ambients Assistant) – it generates a final route by completing the primary route with additional information such as the location and status of the expositions (or individual objects), the working time, etc. The assistant uses the ambient presentation of the CHH objects included in the primary route. In fact, the final route is a set of possible sequences for viewing the objects.
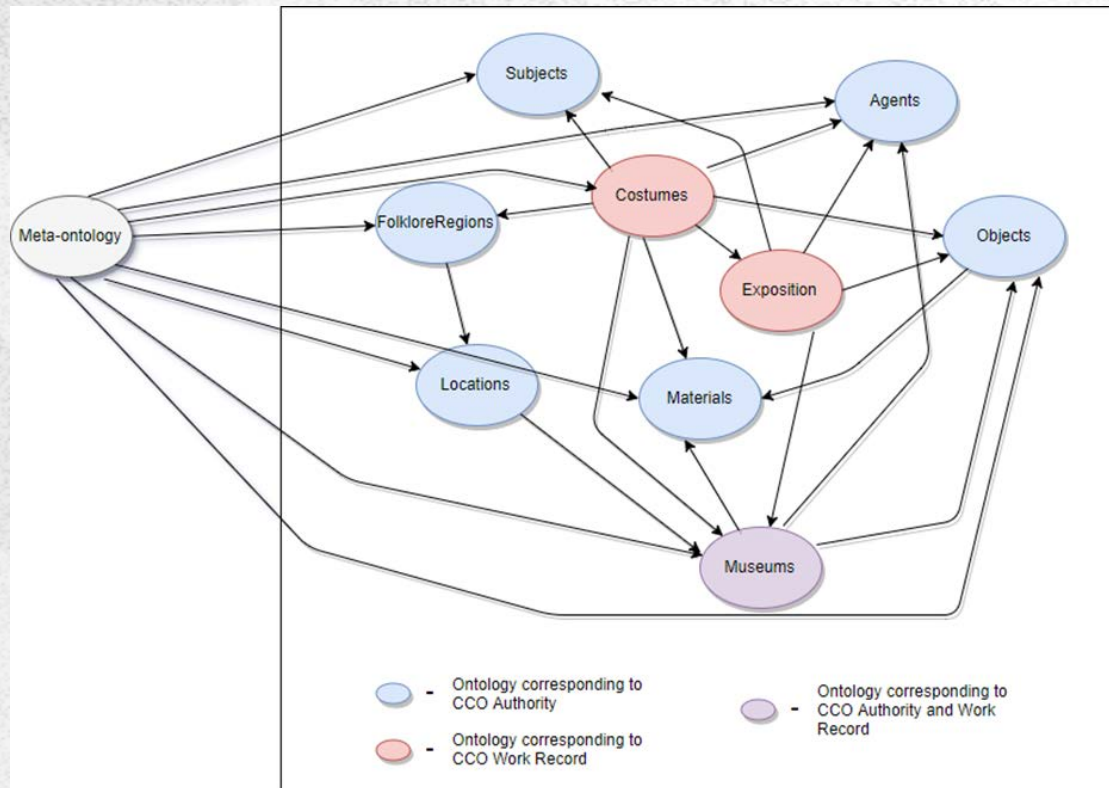
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FRONT–END COMPONENT

The TGA (Touristic Guide Assistant) operates in the Front-end component and performs the following basic functions:

- It serves as a tourist's GUI – the tourist can only communicate with the guide through this assistant. This agent is responsible for the proper visualization of the information received from the operating agents on the client's mobile device. It visualizes the questions that the QGA generates and returns the received answers back to it. It is responsible for visualizing the information about the various cultural and historical objects and for visualizing the route generated by the CCA.
- Establishing the tourist location – by using the GPS capabilities of the client's mobile device to determine his or her position.

Back-end
(TG Server)

CCA Admin Display

Front-End

TG GUI

Agent-Oriented Middleware

CCAA — QGA — KGA — TGA

Knowledge Base

CHH AmbiNet

Client Profiles

CHH OntoNet

User's Mobile Device

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CHH-ONTONET

- Ontology corresponding to CCO Authority
- Ontology corresponding to CCO Work Record
- Ontology corresponding to CCO Authority and Work Record

- **Consists of ten ontologies**
  - nine of them represent cultural-historical heritage of Bulgaria
  - one of them contains supporting information used by QGA
- **Concepts in different ontologies are related and reused to create an ontology network**
- **CHH-OntoNet architecture is based on CCO(Cataloging Cultural Objects) standard**

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CONCLUSIONS

- There is too much work – especially for the development of the ontologies;
- It is possible the project to be extended with development of new ontologies for CHH-objects from other countries;

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