



A mobile and Adaptive Language Learning Environment

based on Linked Data

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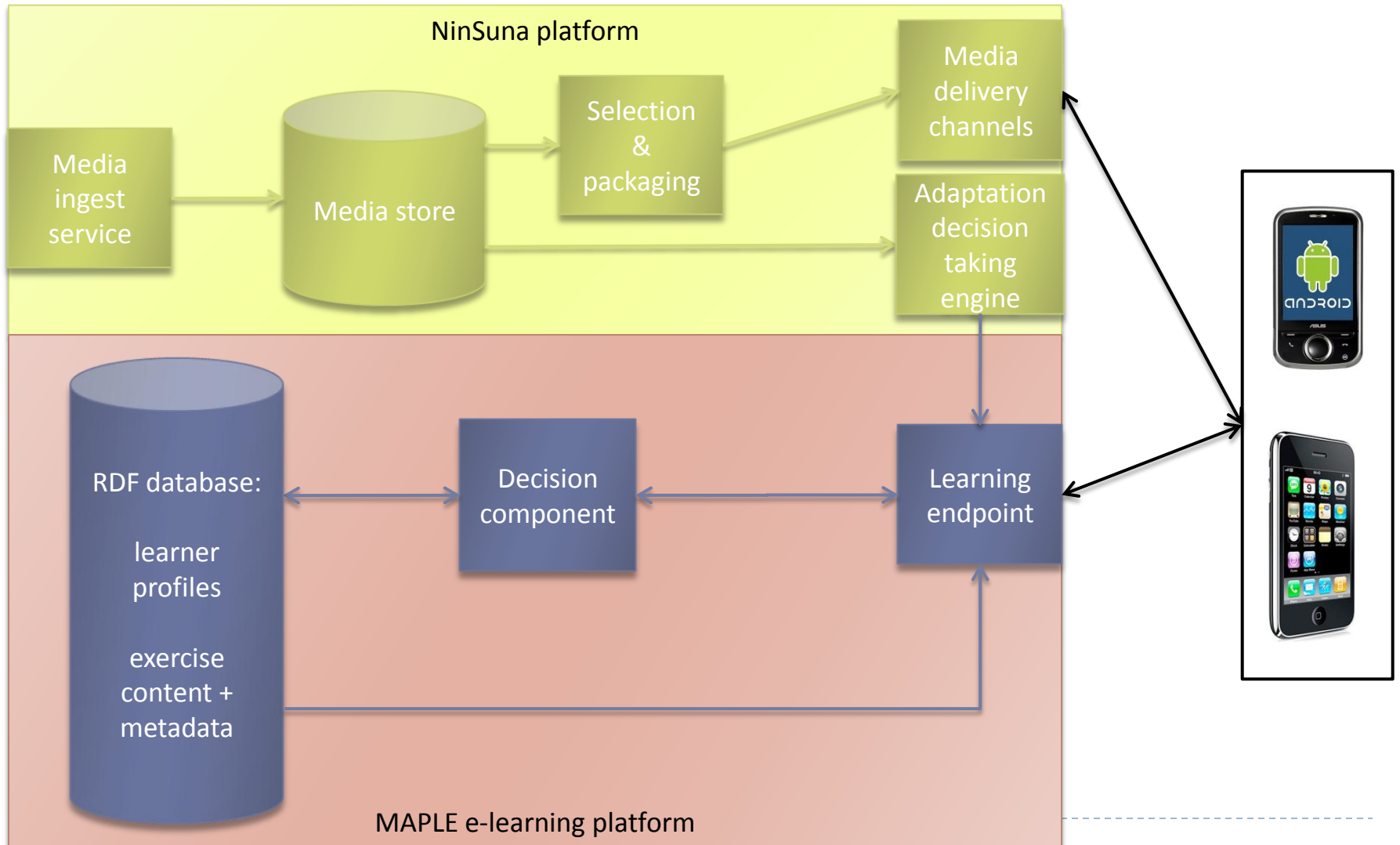
- ▶ The MAPLE project
- ▶ The platform
- ▶ The data models
- ▶ The decision component
- ▶ Future work

The MAPLE project

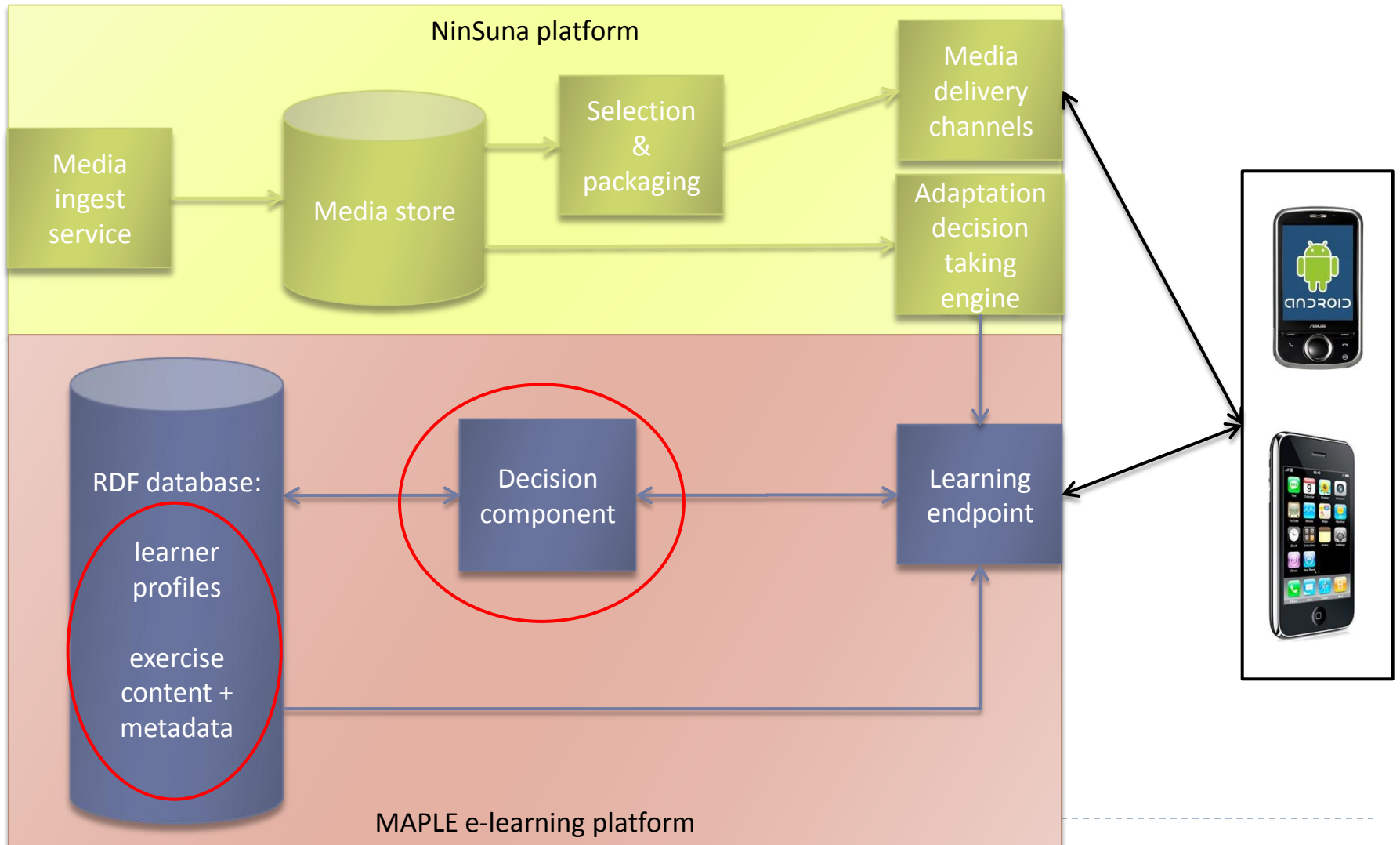
- ▶ **M**obile, **A**daptive & **P**ersonalized **L**earning **E**xperience
- ▶ A cooperation between
 - ▶ 5 industrial partners: Belgacom, Streamovations, BLCC, Televic Education and RMM
 - ▶ 4 IBBT research groups: ITEC@K.U.Leuven, CUO@K.U.Leuven, SMIT@VUB and MMLAB@UGENT
- ▶ **Main Goal**
 - ▶ To develop a **web based e-learning environment** that is able to provide rich, **personalized** experiences to a **wide range of devices**

Context: language learning

The platform



The platform



Data models

- ▶ The following models have been used
 - ▶ Learning items
 - ▶ Model for the content
 - ▶ Model for the metadata
 - ▶ Learner profile
 - ▶ Learner characteristics
 - ▶ Logging
 - ▶ Learning domain
 - ▶ Media resources

The items: content + metadata

▶ Examples of items:

- ▶ Exercises
 - ▶ multiple choice, translate, click in zone, ...
- ▶ Related items
- ▶ Theory
- ▶ Navigation items

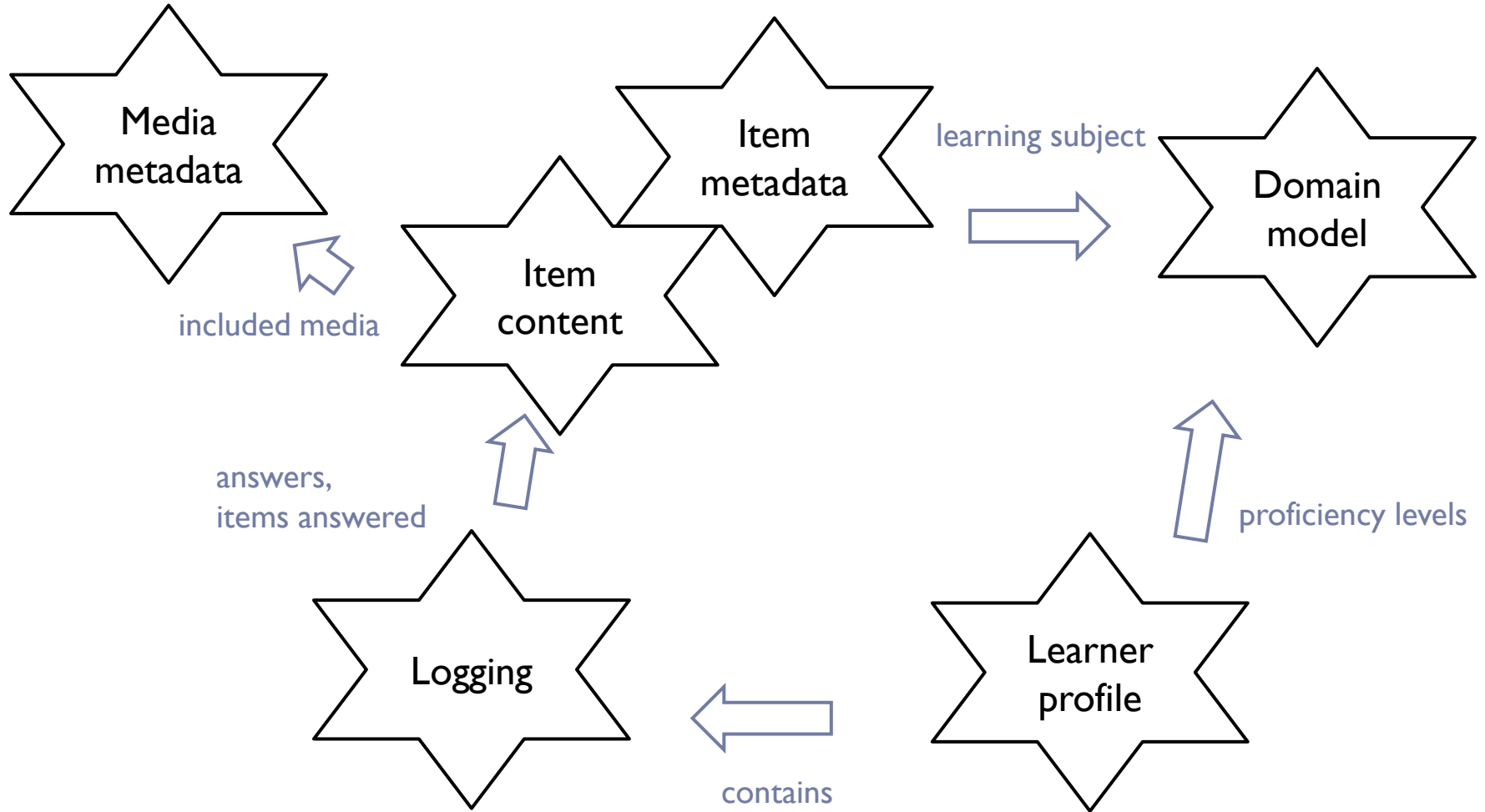
▶ We modeled

- ▶ The metadata of the items
 - ▶ LLOM+ = Language Learning Object Metadata+
 - based on IEEE standard LOM
- ▶ The content of the items
 - ▶ MAPLE Content ontology

The logging

- ▶ Part of the learner profile [...]
- ▶ Sessions
 - ▶ Learner session
 - ▶ ItemObjectSession
 - ▶ ...
- ▶ Events
 - ▶ AnswerSubmittedEvent
 - ▶ ButtonClickedEvent
 - ▶ CheckboxCheckedEvent
 - ▶ EvaluationEvent
 - ▶ ...

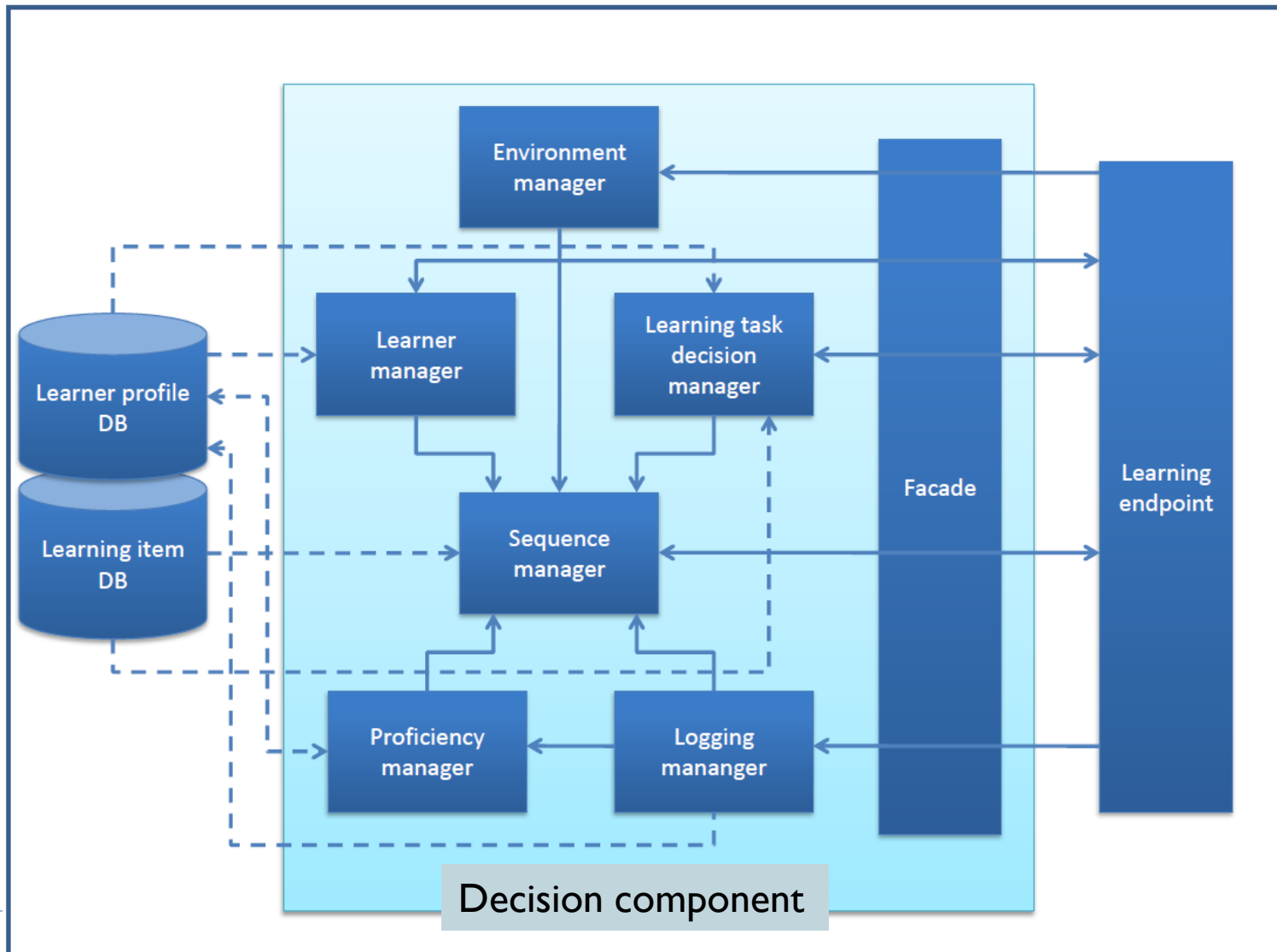
Links within the data



The decision component

- ▶ **Item-based**
- ▶ **Adaptive**
 - ▶ Automated sequencing
 - ▶ tuned difficulty
 - ▶ preferred exercise types
 - ▶ Learner control
 - ▶ learning subject selection (by the learning subject tree)
 - ▶ navigation items
- ▶ **Observation and measurement**
 - ▶ State-of-the-art proficiency scores updating algorithm

The architecture of the decision component



Conclusion

- ▶ **Adaptive exercise based learning environment**
 - ▶ Decision component
 - ▶ Automated sequencing
 - ▶ Learning control
 - ▶ Integration with Ninsuna Media Delivery Platform
 - ▶ Adaptation to the mobile device

→ adaptive e-learning system working on a large set of mobile devices

Some screenshots



Future work

- ▶ Validation of the platform
- ▶ Extending decision component functionality
- ▶ Enriching the data models
- ▶ Exploiting possibilities of the Semantic Web by linking learning items to the Linked Open Data cloud.

Thank you!