



An interoperable repository of questions and questionnaires to support quality assurance in eLearning

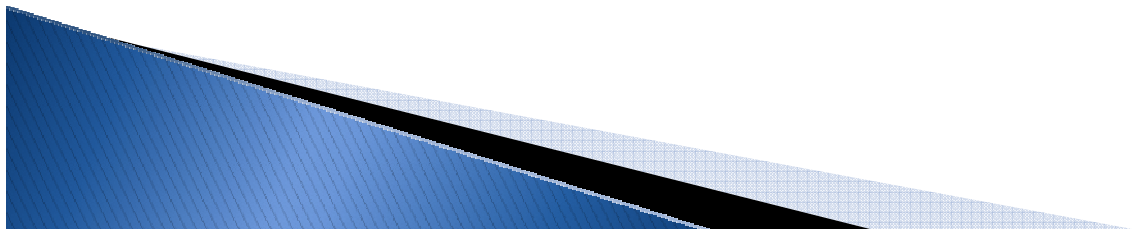
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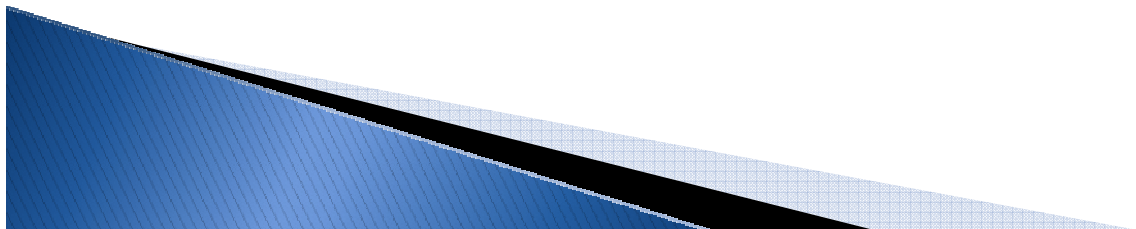
Presentation outline

- ▶ The iQTool Evaluation Component
- ▶ The Evaluation Component Repository
- ▶ METS and its usage in the repository
- ▶ QTI and its usage in the repository
- ▶ Evaluations, statistics, profiles
- ▶ Conclusions – Future work

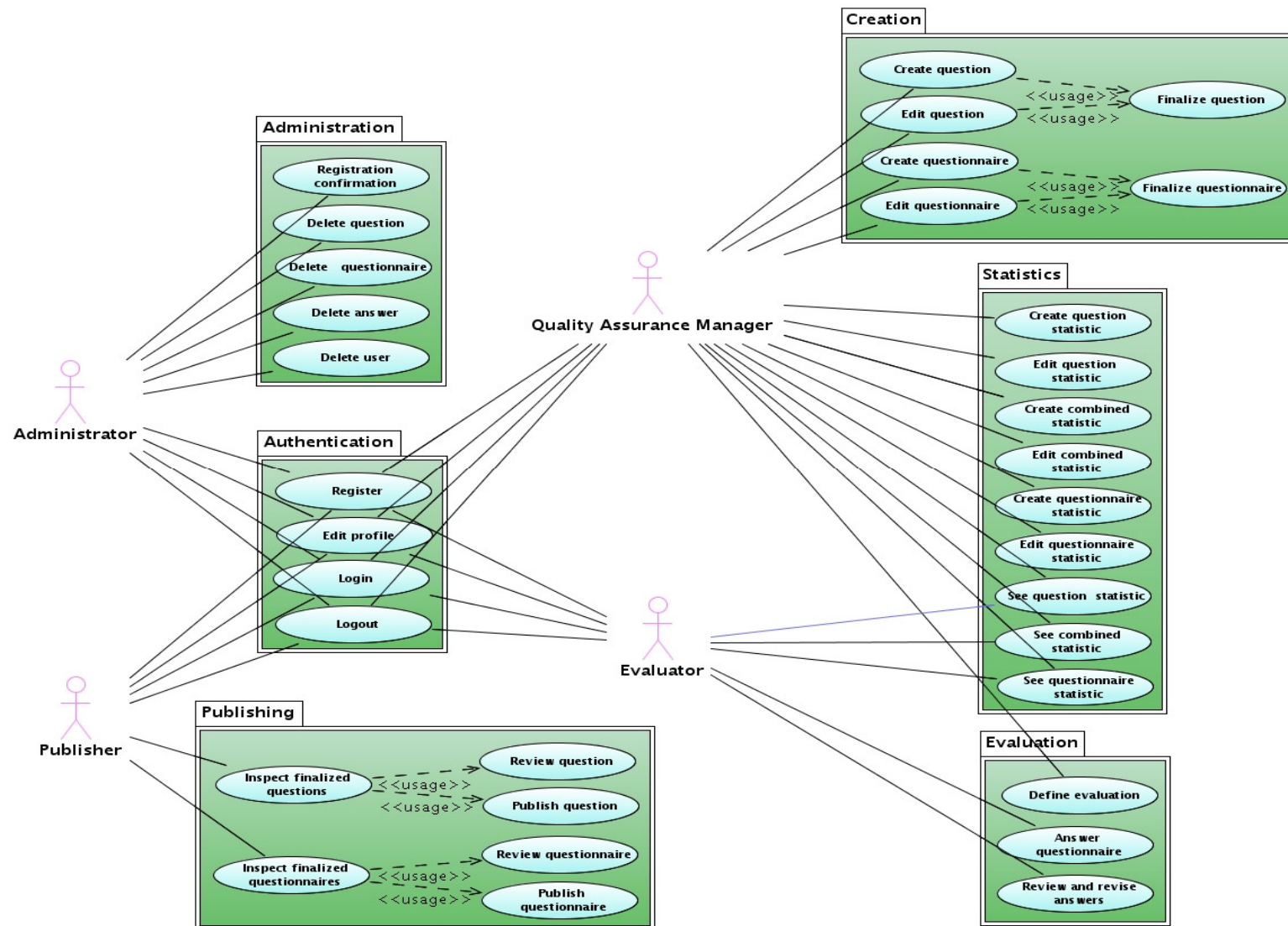


iQTool Evaluation Component

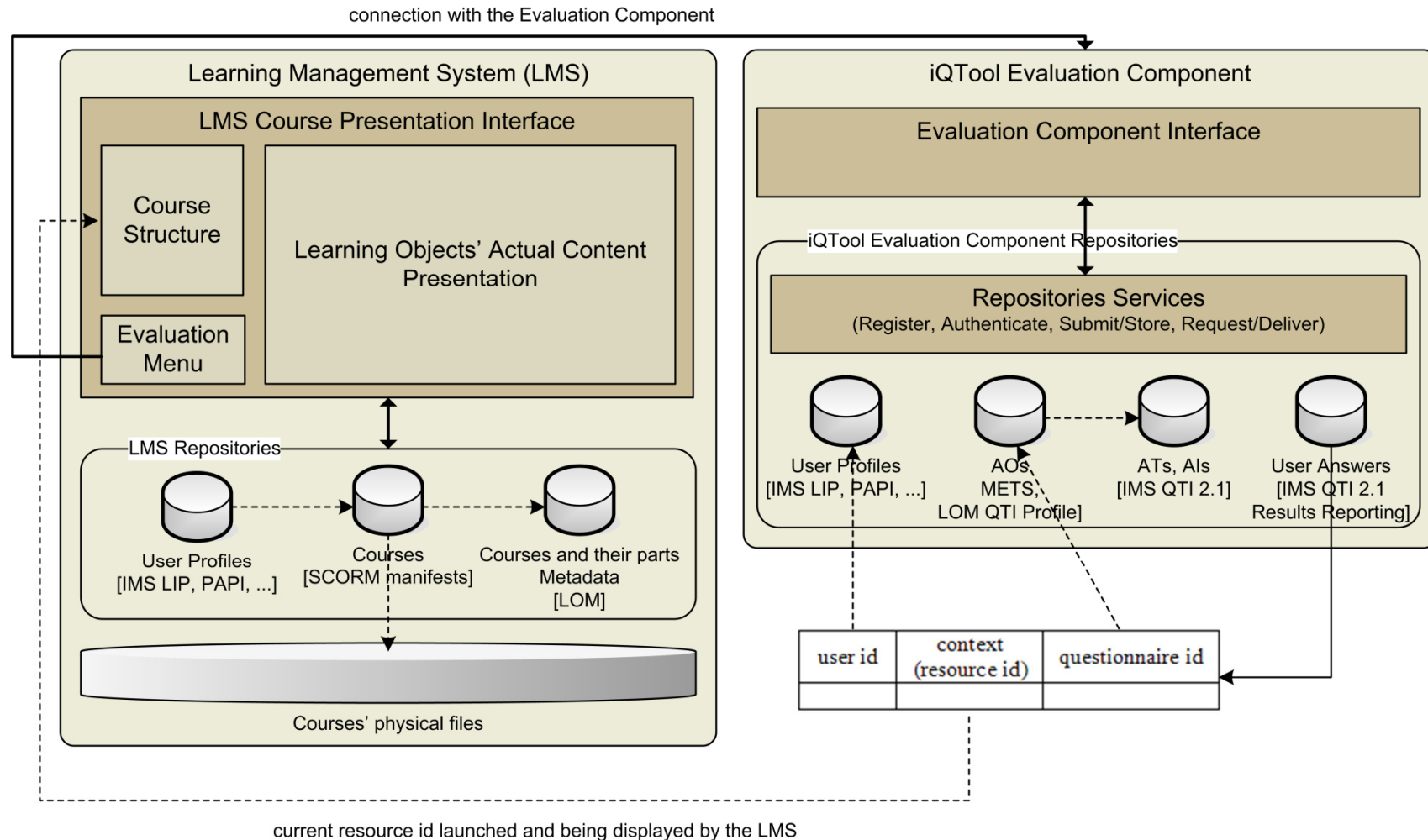
- ▶ Self-standing component that can be used in many LMSs with minimal adaptation each time
 - It can also be used for evaluation in other contexts (not only e-learning)
- ▶ By integrating this component in an LMS, the Evaluator can evaluate what (s)he actually experiences
- ▶ It can store the answers related to the quality simultaneously when the training material pages are displayed on the screen.
- ▶ Standards-based and service-oriented



Functionality of Evaluation Component

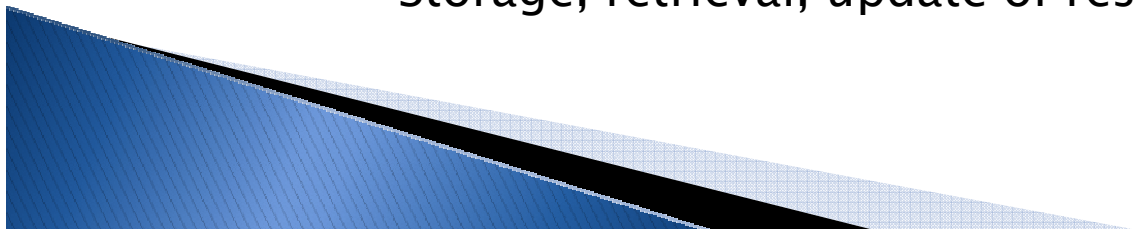


iQTool Evaluation Component Architecture



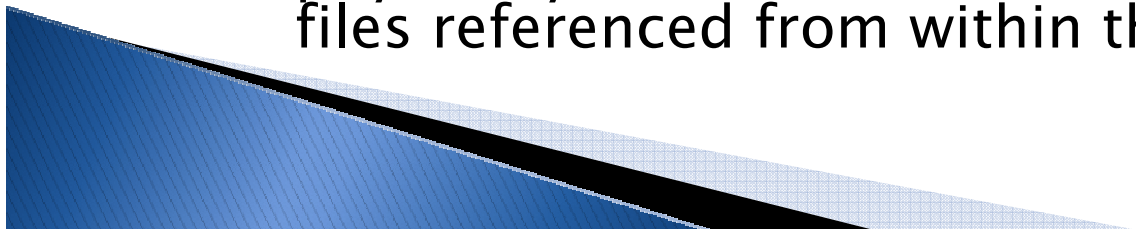
The Evaluation Component Repository

- ▶ User Profiles
 - Represented using IMS LIP
 - Web services allowing:
 - Creation, retrieval, update, export, import of user profiles
- ▶ Assessment Objects (items/tests)
 - METS, LOM, QTI
 - Web services allowing:
 - Creation, retrieval, update, searching of Assessment Objects (boolean and fuzzy filters)
- ▶ Responses
 - Represented using QTI
 - Web services allowing:
 - Storage, retrieval, update of responses

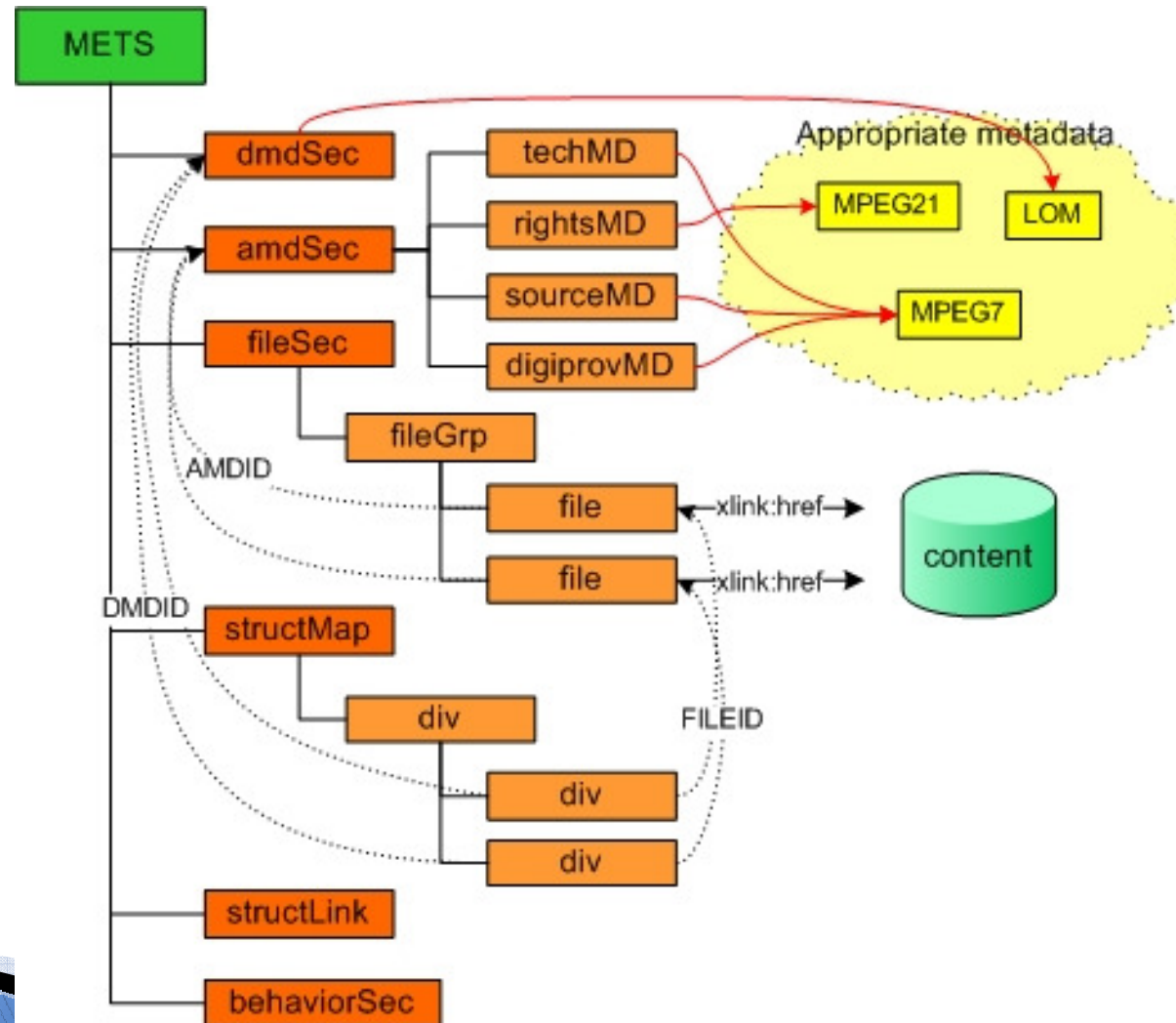


The Metadata Encoding and Transmission Standard (METS)

- ▶ A widely-accepted Digital Library standard
- ▶ A flexible, but tightly structured container for all metadata necessary to describe, navigate and maintain a digital object (XML):
 - Descriptive,
 - Administrative and
 - Structural metadata
- ▶ Each type of metadata is described in a separate section, which is linked to its counterparts by internal identifiers
- ▶ These metadata (any preferred scheme) may be physically stored within the METS file, or in external files referenced from within the METS document

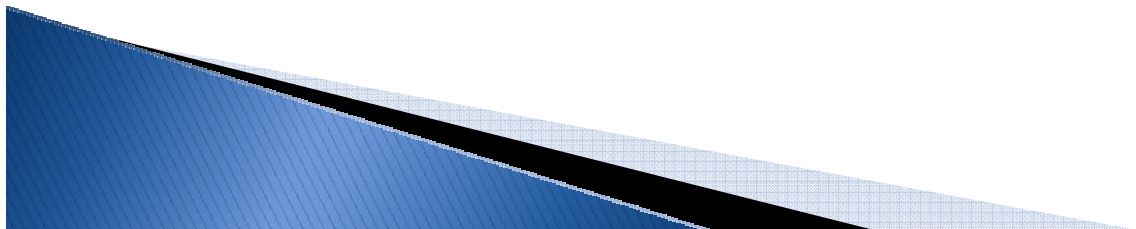


The Metadata Encoding and Transmission Standard (METS)



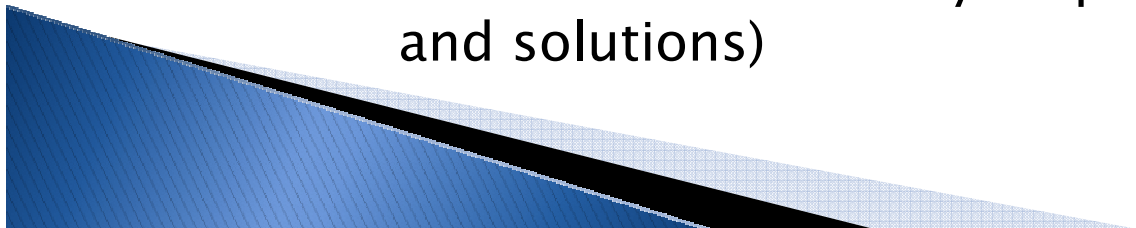
IMS Question and Test Interoperability (QTI) Specification v2.1

- ▶ Describes a data model for the representation of
 - questions (assessmentItems) and tests (assessmentTests) data and
 - their corresponding results reports
- ▶ It allows the exchange of items, tests and results data between authoring tools, item banks, test constructional tools, learning systems and assessment delivery systems
- ▶ The interchange of items and tests is done with appropriate XML documents



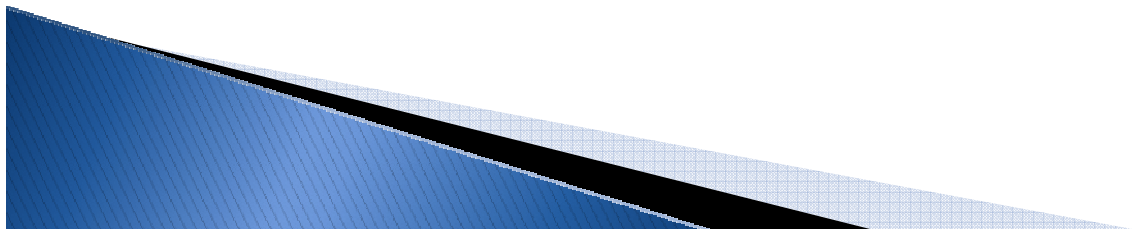
IMS Question and Test Interoperability (QTI) Specification v2.1

- ▶ Assessment Item (AI):
 - smallest exchangeable object that can be used for assessment
 - encompasses the information that is presented to a candidate and information about how to score the item
 - it can be considered as a simple Question, but it is more. It contains:
 - the **question and instructions** to be presented,
 - the **response processing rules** to be applied to the candidate's response(s), and
 - the **feedback** that may be presented (including hints and solutions)

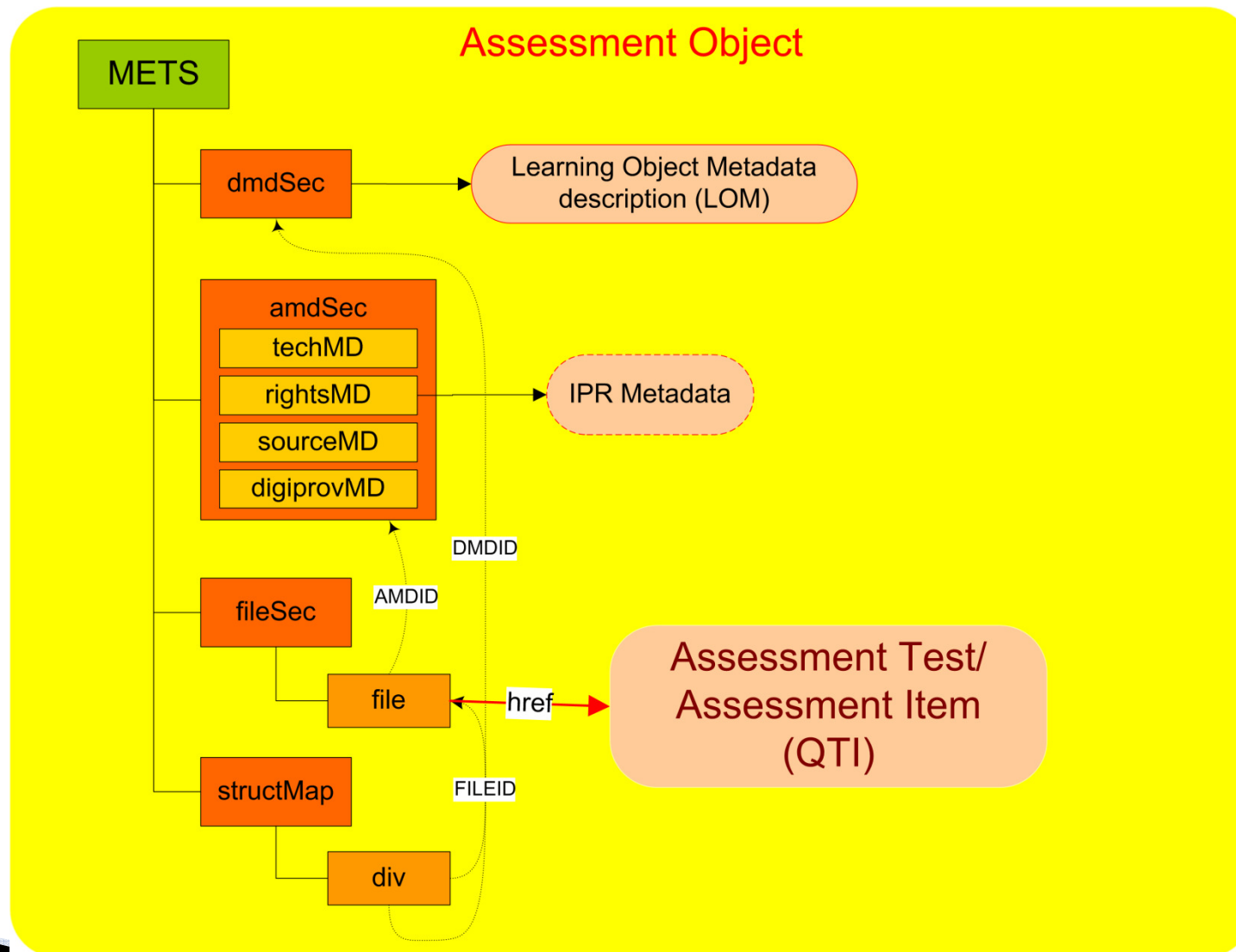


IMS Question and Test Interoperability (QTI) Specification v2.1

- ▶ Assessment Test (AT):
 - An organized collection of Items → questionnaire
 - It contains all necessary instructions to enable
 - the sequencing of the items, and
 - the calculation of the outcome values (e.g. the final test score)

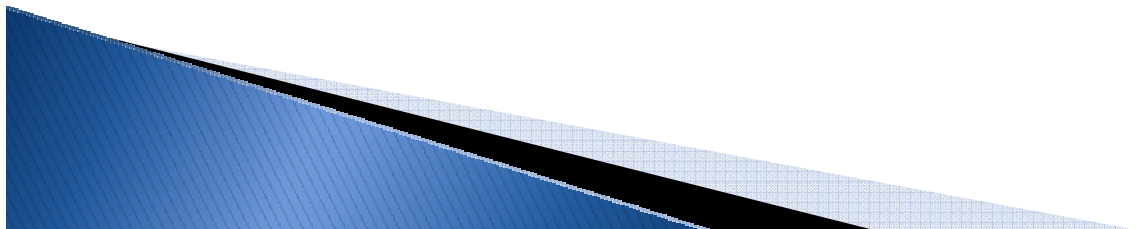


Using METS in the case of iQTool



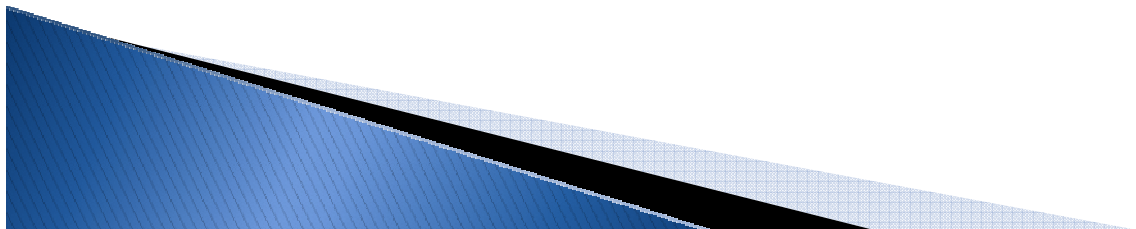
Additional Services of the Evaluation Component Repository

- ▶ Specification of evaluation (quality control) parameters
 - Who evaluates, what, when and how
- ▶ Specification and presentation of statistics
 - Statistical processing of responses given in the context of an evaluation (quality control) process
 - Simple and combined statistics
- ▶ Special kind of questions/questionnaires are used to address the need for extensibility of user profiles



Conclusions – Future work

- ▶ Successful integration with the Evaluation Component Interface
- ▶ The repository supported the testing activities of the iQTool project without any problems
- ▶ Plan to integrate the repository with the Web Courses open learning environment
 - Quality control of educational material (lectures, laboratory material etc.)
 - Feedback from learners regarding the courses.



Thank you for your attention!

