

Instructional Management System – Learning Design

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IMS-LD is the result of the integration of the Educational Modeling Language (EML) (Open University of the Netherlands - OUNL) and existing IMS Specifications.

Reference documents (<http://www.imsglobal.org/>) are:

- IMS Learning Design Information Model
- IMS Learning Design Best Practice and Implementation Guide
- IMS Learning Design XML Binding

What is Learning Design?

It is a description of a method:

- enabling learners to attain certain learning objectives
- by performing certain learning activities
- in a certain order
- in the context of a certain learning environment

based on the pedagogical principles of the designer, specific domain and contexts variables.

IMS Learning Design goal

To allow all designs to be included into e-learning modules, the approach of a meta-language is taken, enabling the description of all kinds of learning designs, including:

- resources
- instructions for learning activities
- templates for structured interactions
- conceptual models
- learning goals, objectives and outcomes
- assessment tools and strategies

IMS-LD Specifications need to:

- describe and implement different kinds of learning approaches
- enable repeatable and efficient units of learning
- support multiple delivery models
- support reuse and re-purposing of units of learning or of their component elements
- leverage existing specifications and standard
- be culturally inclusive and accessible (internationalization)
- support multiple learners and multiple roles in a learning activity
- support reporting and performance analysis

Three levels

Learning Design is divided into three parts, known as level A, level B and level C.

XML schemas are provided for each level.

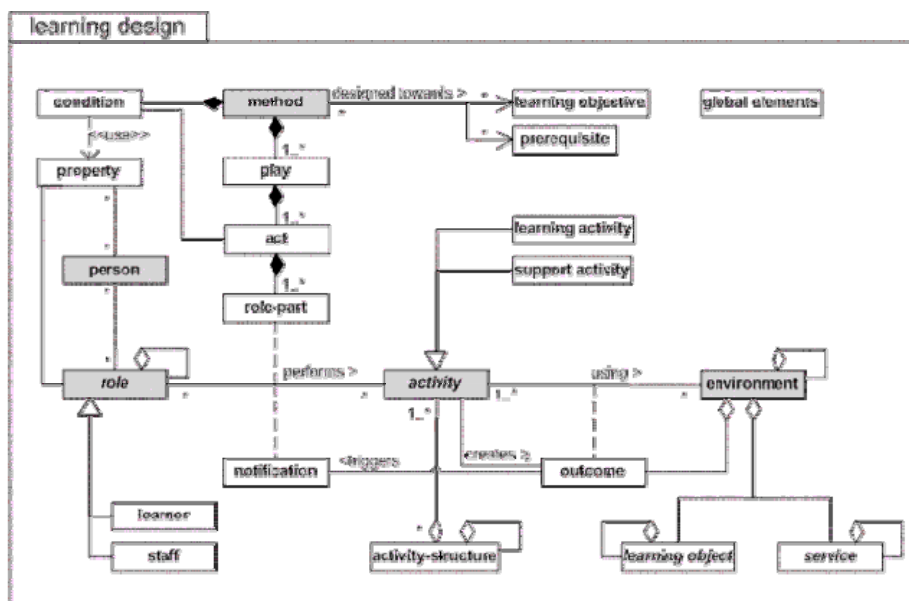
Levels B and C each extending the previous level.

Level A

At level A, a Learning Unit is considered as a theatre piece, set of acts consisting in :

- a time ordered series of activities (*acts*)
- performed by learners and teachers (*role*)
- within the context of an *environment* consisting of *learning objects* or *services*

Conceptual model :



The major elements of the Learning Design Specification are hierarchically ordered.

The method element contains a nested structure of play, act, and role-part elements; it specifies the dynamic aspects of the learning design.

The play element (often only one) contains a number of act elements; these acts will be run in sequence.

The play is complete when the last act is completed.

Within an act there is a set of role-parts which are run in parallel ; this enables different roles to do different things at the same time

A role-part contains a reference to a role and a reference to an activity ; this effectively assigns the activity to the role for this act.

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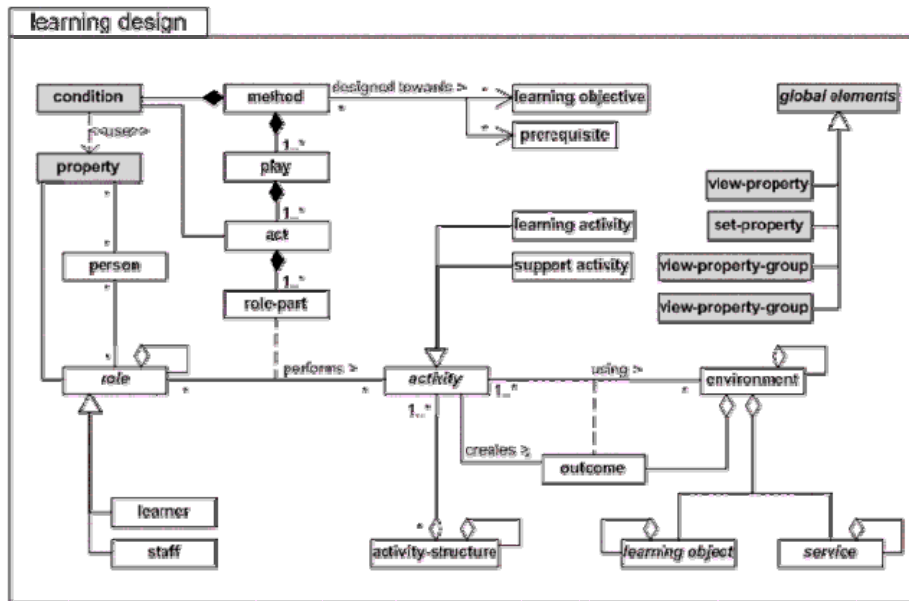
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  learning-objectives
  prerequisites
  components
  roles
    learner*
    staff*
  activities
    learning-activity*
    environment-ref*
    activity-description
    support-activity*
    environment-ref*
    activity-description
    activity-structures*
    environment-ref*
  environments
    environment*
    title
    learning          objects*
    services*
    environment-ref*
    metadata
  method
    play*
    act*
    role-parts*
    role-ref
    activity-ref
  metadata
  
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Level B

Level B provides additional elements, which extend the ability of a learning designer to control the learning flow within a Unit of Learning:

- it provides for the inclusion of generic properties and conditions
- to the single learner model, it adds learner personalization, supporting pre-knowledge, preferences, and accessibility

The grey marked classes are added to the model of level A:

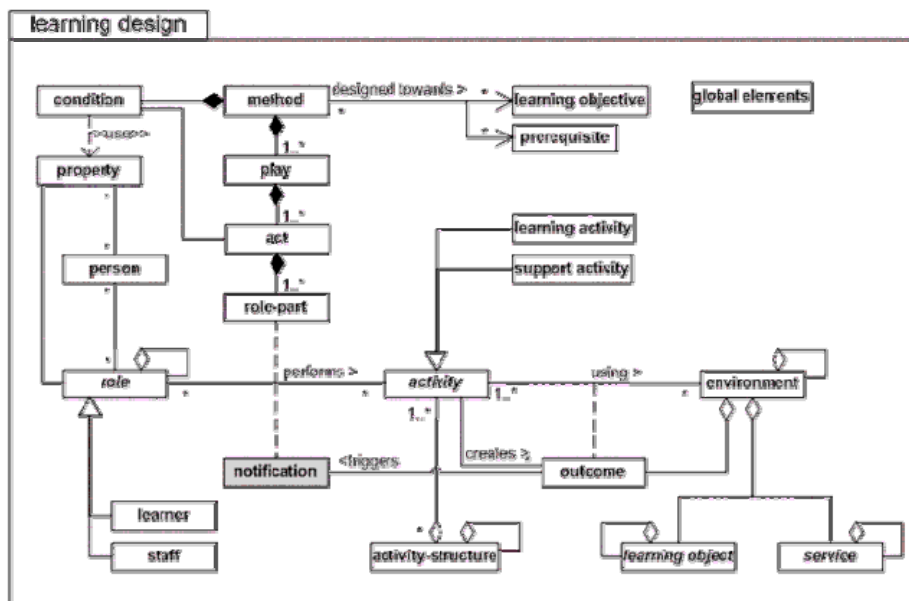


Level C

Level C introduces notification or "messaging" both between system components and between roles

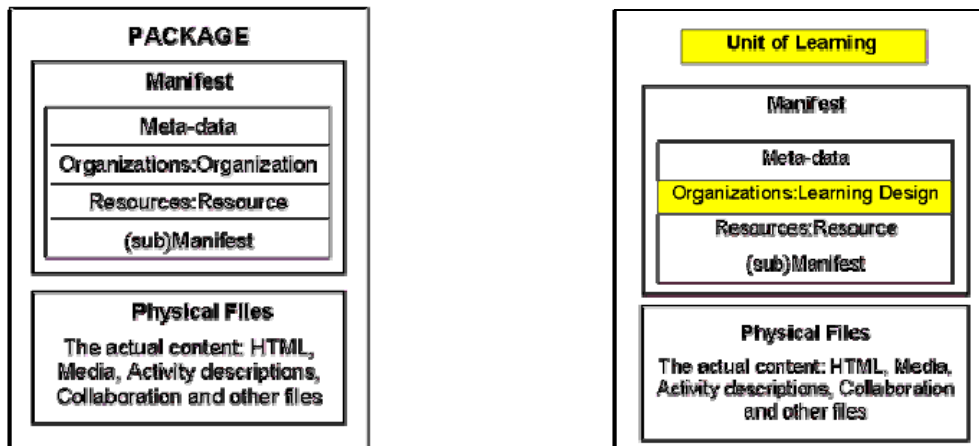
- o a notification happens after an event, which is known by the runtime environment
- o this adds a new dimension by supporting real-time event-driven work/learning flow

The grey marked class is added to the model of level B:



Unit of Learning = IMS Content Package + IMS Learning Design

The IMS Learning Design is preferably integrated into an IMS Content Package to create a so called 'Unit of Learning':



IMS-LD benefits

Completeness : the teaching-learning process is fully described in a unit of learning. This includes:

- integration of the activities of both learners and staff members.
- integration of resources and services used during learning.
- support for a wide variety of approaches to learning.
- support for both single and multiple user models of learning.
- support mixed mode (blended learning) as well as pure online learning.

Pedagogical Flexibility : the specification allows the description of all different kinds of pedagogies and doesn't proscribe any specific pedagogical approach.

Personalization : content and activities within a unit of learning can be adapted to users. In addition, the control over the adaptation process must be given, as desired, to the student, a staff member, the computer, and/or the designer.

Formalization : a unit of learning is described in a formal way, so that automatic processing is possible

Reproducibility : the learning design is described in such a way that repeated execution in different settings with different persons is possible.

Interoperability : the specification supports interoperability of learning designs.

Compatibility : the specification uses available standards and specifications where possible, mainly IMS Content Packaging, IMS Question and Test Interoperability, IMS/LOM Meta-Data and IMS Simple Sequencing.

Reusability : the specification makes it possible to identify, isolate, de-contextualize and exchange useful learning artefacts, and to re-use these in other contexts.