

Developing Advanced Units of Learning Using IMS Learning Design Level B

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Developing Advanced Units of Learning Using IMS Learning Design Level B

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Content

Paper. Developing advanced units of learning using IMS Learning Design level B <http://hdl.handle.net/1820/333>

- Introduction to LD level B
 - Properties
 - Global Elements
 - Monitor Service
 - Conditions
- Examples of advanced pedagogical functions
 - Active and Collaborative learning
 - Adaptive learning and personalisation
 - Conditional text and runtime tracking
 - ePortfolio's and new forms of assessment

From Level A to level B

*Level B Adds **dynamics** to the learning design:*

- adaptation of activities, plays, etc.
- adaptation of external resources
- digital portfolio's
- advanced sequencing
- model new and classical forms of assessment
- change content in runtime through properties
- ask input from users, support interactions for collaborative learning
- calculations
- ...

Assignment: Example

- (*2 minutes*) think of an example where you can use 'dynamics' in your own educational setting (or a specific one you can think of).

Level B relates to 2 LD Requirements

- R1: completeness
- **R2: pedagogical flexibility (extended)**
- **R3: Personalization (realised)**
- R4: Formalization
- R5: Reproducibility
- R6: Interoperability
- R7: Compatibility
- R8: Reusability

Level A realises R1, R4..R8, but partially R2 and very limited R3

Level B realises R3 and extends R2 to a large extend

Level C realises R2

Properties: Why properties?

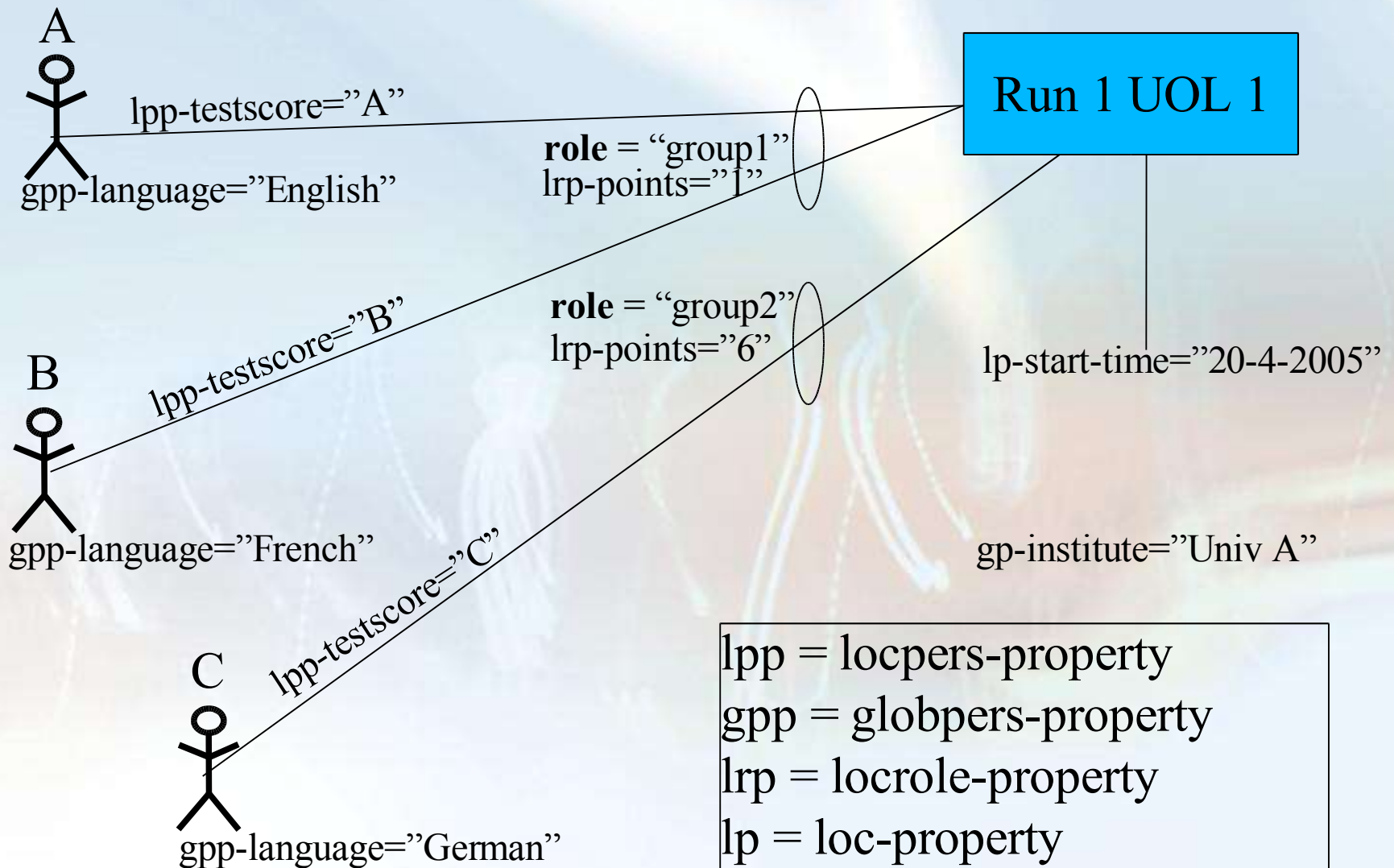
- Create user models for adaptive learning
- Ask and store user information (e.g. portfolio info)
- Add new information at runtime (e.g. teacher adds information at runtime to be read by students)
- Show information that has been added at runtime by the users (e.g. opinions, discussion conclusions)
- Use information that has been stored in another unit of learning (e.g. completion of previous activities)
- etc.

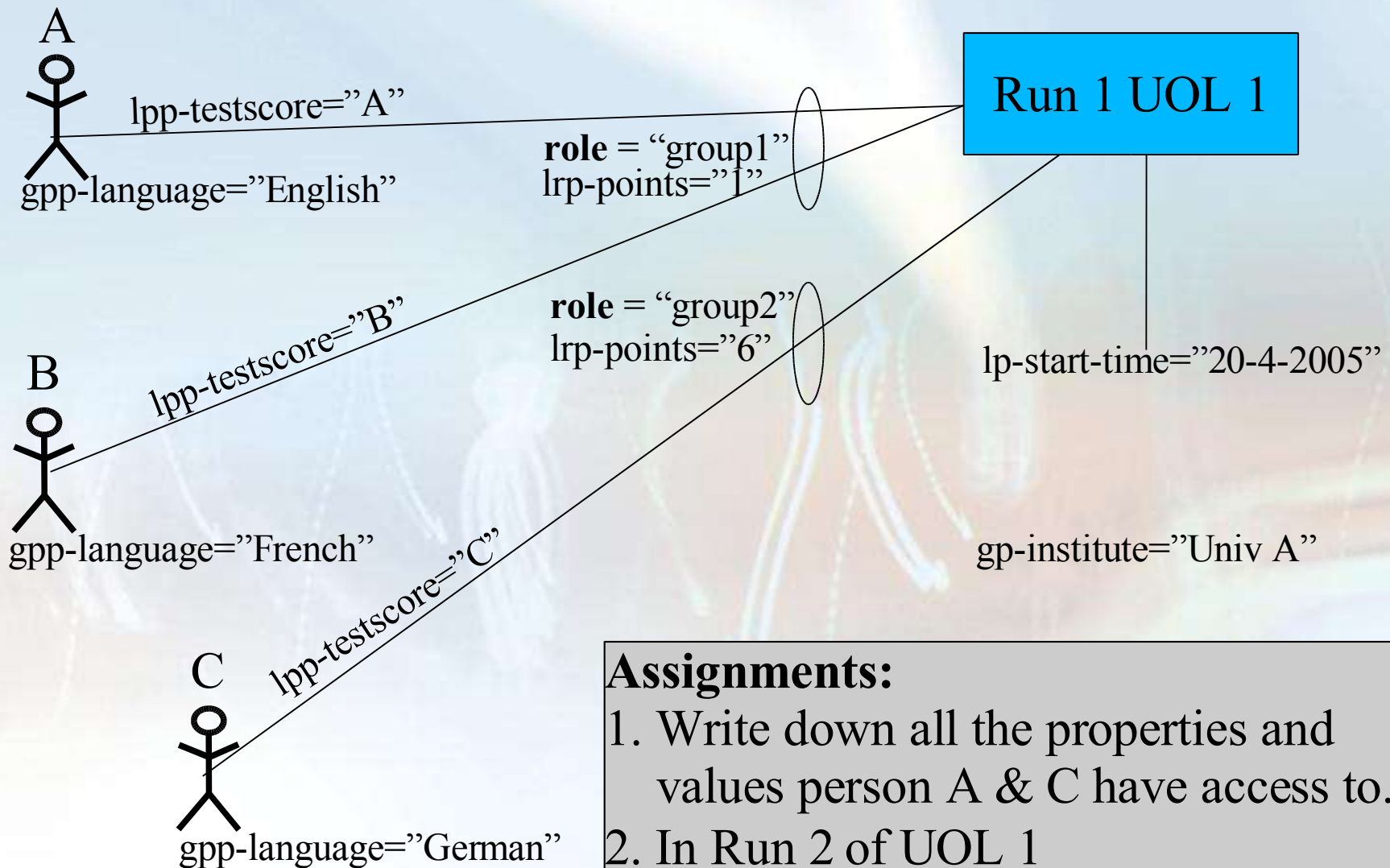
Property types

1. Local Properties (*loc-property*)
 2. Local Personal Properties (*locpers-property*)
 3. Local Role Properties (*locrole-property*)
 4. Global Personal Properties (*globpers-property*)
 5. Global Properties (*glob-property*)
- + Property Groups (*property-group*)

Five types of Properties

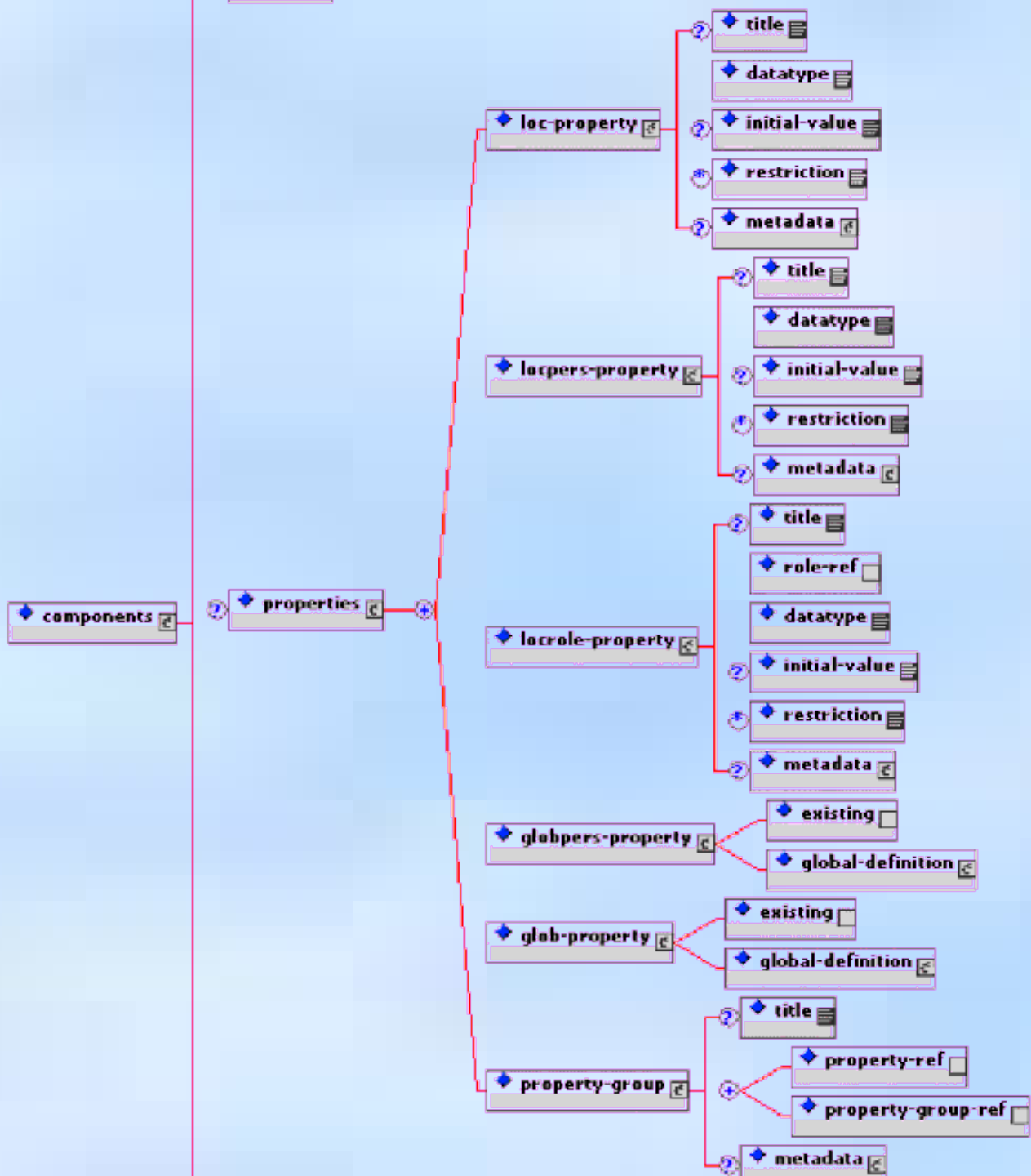
* Roles are local, not global





Assignments:

1. Write down all the properties and values person A & C have access to.
2. In Run 2 of UOL 1
Draw properties like above
3. In Run 1 of UOL 2
Draw properties like above



Global Elements: Why global elements?

- Set property values in the context of a resource

Enter your email address:

Enter a course introduction:

- Create questions (e.g. surveys)

Who is the Queen of Luxembourg?

- a. Beatrix
- b. Christina
- c. No Queen

Answer:

- View runtime added content in a resource context

Course introduction: [[runtime included text:]]

Hello my name is John, and I am your tutor for this course. When you have any questions, please contact me at john.paper@abc.edu
The first activity you have to perform is *[[standard text]]*

Four global elements

1. view-property
2. view-property-group
3. set-property
4. set-property-group

Declare, set and view properties

- *Declare* properties in the context of the learning design (can set a default value)
- *Set* property values in an external XML resource using global elements
- *View* property values in an external XML resource using global elements

Declare property

```
<learning-design>
```

```
....
```

```
<components>
```

```
...
```

```
<properties>
```

```
  <loc-property/> {for details see schema}
```

```
</properties>
```

```
...
```

```
</components>
```

```
....
```

```
</learning-design>
```

Set property

XHTML resource:

```
<xhtml>  
  <p>Type your Name?</p>  
  <imsld: set-property ref="name"/>  
</xhtml>
```

-----Interface-----

What is your name? [Rob]

View Property

XHTML resource:

```
<xhtml>  
  <p>Your Name is:</p>  
  <imsld: view-property ref="name"/>  
</xhtml>
```

-----Interface-----

Your Name is: [Rob]

Monitoring: Why monitoring?

- Teacher tracks the performance of the group
- Students access the results of fellow students
- Look at your own portfolio
- Look at selected items from portfolio of others
- Aggregate a list of opinions that have been entered by each individual student
- ...

Declare monitor service

```
<environment>
```

```
  <service>
```

```
    <monitor>
```

```
      <role-ref ref="student-groups"/>
```

```
      <item identifier="X" identifierref="Y"/>
```

```
    </monitor>
```

```
  </service>
```

```
</environment>
```

```
<resource identifier="Y" type="imsldcontent" href="Monitor.xhtml">
```

```
  <file href="Monitor.xhtml" />
```

```
</resource>
```


Define the monitor content

Create XHTML file with embedded global elements to view property values

```
<xhtml>  
  <p>The results of all the subgroups:</p>  
  <imsld: view-property property-of="supported-persons"  
    ref="report"/>  
</xhtml>
```

Example

stored in locpers-property

- Upload the report of your subgroup:

- The results of all the subgroups:

Report1.doc
Report2.doc
Report3.doc
<no value>

read the locpers-property
for all persons in the role
student-groups

Conditions: Why conditions?

- Show or hide activities, structures, plays depending on the property values
- Show or hide content in external XML files depending on property values
- Calculate values (e.g. test results)
- Change property values when other properties values have a certain value (e.g. provide a score when a certain treshold is reached)
- Calculate timed events (after x minutes, activity y should be provided)
- ...

Conditions

If {expression}

THEN Show {class, item, environment, learning activity
support-activity, activity-structure
play, unit-of-learning} OR

Hide {class, item, environment, learning activity
support-activity, activity-structure
play, unit-of-learning} OR

Change-property-value

Example

If {competence-level English writing > 4 AND
activity2 is completed}

Then Show {activity3}

Show {environment4}

Hide {activity-structure1}

Examples

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Collaborative Learning

- A pedagogical approach in which students at various competency levels work together in groups towards a common learning objective
- What functions are needed in a learning management system to support collaborative learning?
- What part of it can be modelled using IMS LD?
- See paper for a worked example

Adaptive learning and personalization

- Aim is to personalize instruction by providing each individual learner a set of learning activities and resources that fits the individual learners properties, such as: personal learning objectives, prior knowledge, situational circumstances.
- What functions are needed in a learning management system to support adaptive and personalized learning?
- What part of it can be modelled using IMS LD?
- See paper for a worked example

Conditional Text and runtime tracking

- Aim is to add text and other information at runtime (instead of designtime only) and to track the progression of students (teacher only or peers).
- What functions are needed in a learning management system to support conditional text and runtime tracking?
- What part of it can be modelled using IMS LD?
- See paper for a worked example

ePortfolios and new forms of Assessment

- In new forms of assessment learning and assessment are integrated more than in traditional approaches. Examples: peer assessment, portfolio assessment, competence assessment.
- What functions are needed in a learning management system to support new and classical forms of assessment?
- What part of it can be modelled using IMS LD?
- See paper for a worked example

Questions, Discussion, ...