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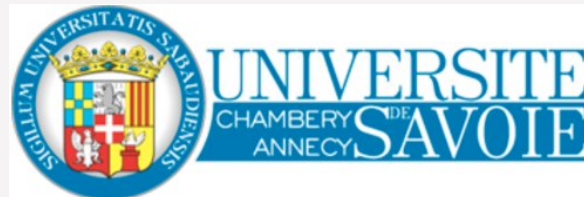
A Common Result Model for Interactive Learning Environment

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Hiroshima 11/09/2007



Introduction

Who am I?

- PhD in Computer Science,
- Working in the e-learning industry (looking for a post-doc).

What is presented here?

- An assessment result model designed during my PhD.

Why was it needed to design this model?

- No assessment results model existed,
- I needed to express assessment results for another part of my research studies,
- A model also needed to solve two problems.



The 1st Problem

A trivial one

Non understandable results

Exemple : Assessment results in Moodle

Separate groups:

<input type="checkbox"/>	<input type="checkbox"/>	First name / Surname <input type="checkbox"/>	Started on <input type="checkbox"/>	Time taken <input type="checkbox"/>	Grade/6 <input type="checkbox"/>
<input type="checkbox"/>		STUDENT 5	5 April 2006, 11:30 AM	5 mins 49 secs	5.5
<input type="checkbox"/>		STUDENT 8	5 April 2006, 01:34 AM	56 secs	4
<input type="checkbox"/>		STUDENT 13	5 April 2006, 11:23 AM	39 secs	3.5

Select all / Deselect all

1st part

Introduction

1st Problem

2nd Problem

Conclusion

What do results mean ?

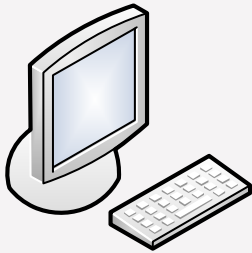
How have results been obtained?

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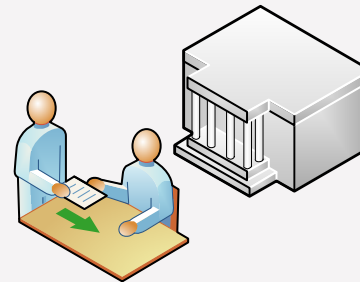


The 2nd Problem

A bigger one



Results obtained
in ILE



School, Enterprise, etc.
services

Difficult to use results obtained in ILE
elsewhere.

1st part

Introduction

1st Problem

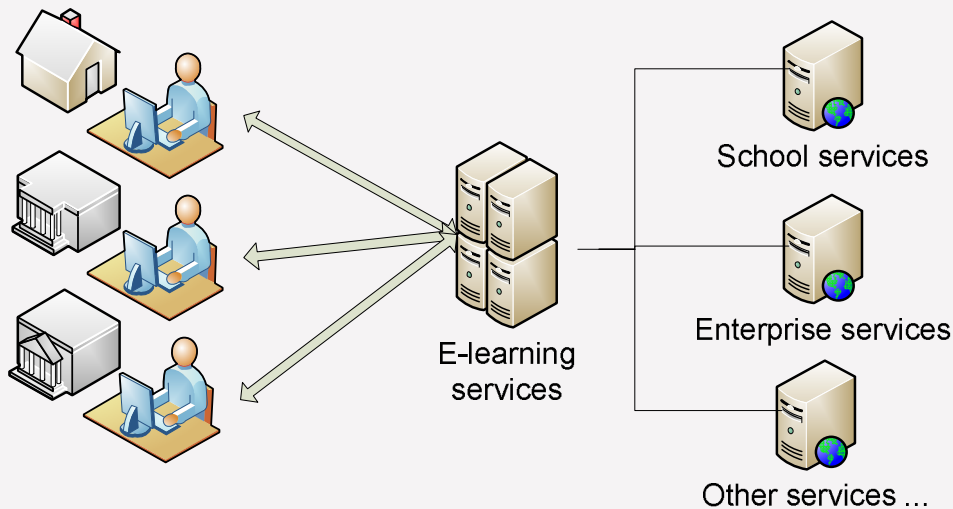
2nd Problem

Conclusion



The 2nd Problem

An absurdity in a world of interoperability



1st part

Introduction

1st Problem

2nd Problem

Conclusion

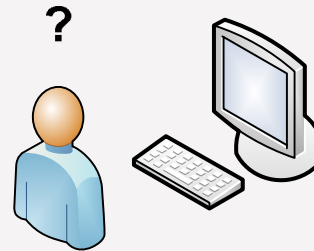
- Services interoperability,
- Information exchange,
- Agregation of business services.



Intermediate conclusion

The problems

- Non understandable assessment results
- No exchange of the assessment results between services



1st part

Introduction

1st Problem

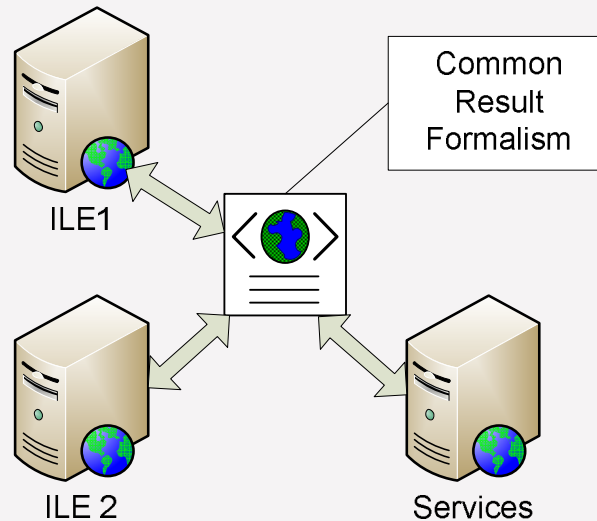
2nd Problem

Conclusion



Intermediate conclusion

The main Solution



Designing a **C**ommon assessment
Result **M**odel : **CRM**

1st part

Introduction

1st Problem

2nd Problem

Conclusion



2nd Part

The Common assessment Result Model



2nd Part

Methodology

Model's key points

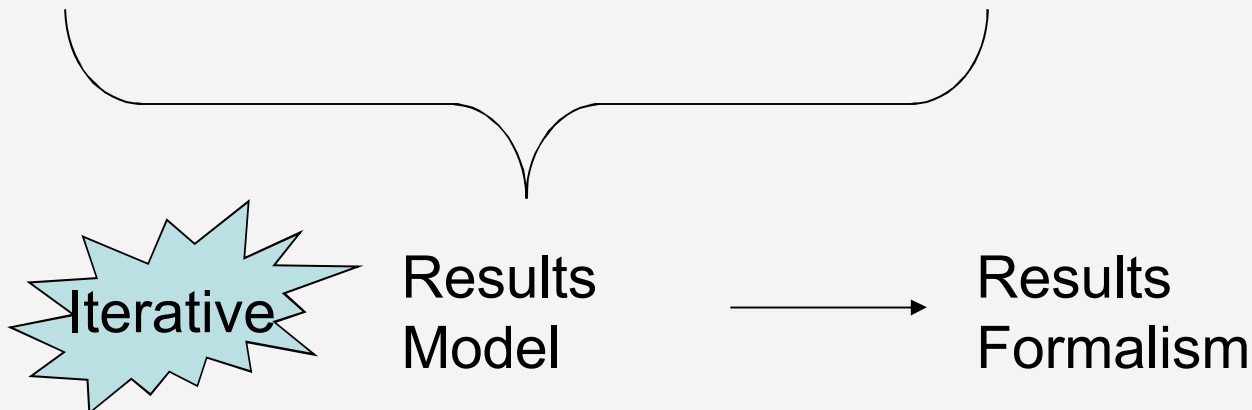
CRM Model

CRM Formalism

Conclusion

Methodology

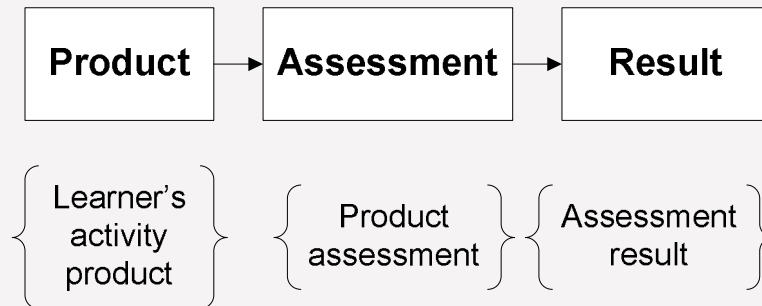
- Existing formalism (IMS-QTI, IMS-LIP, SCORM, etc.)
- ILE (Oasys, Pépite, etc.)
- LMS (Moodle, Sakaï, etc.)
- Distance learning projects (TenCompetence, Kaleidoscope)
- Tracks formalisms (MTSA, UTL, etc.)
- Teachers (University)





Model's key points

Obtaining results



2nd Part

Methodology

Model's key points

CRM Model

CRM Formalism

Conclusion

• Examples :

ILE	Product	Assessment	Result
Moodle	Questions	Summative	Score
Oasys	Discussion	Self assessment	Score
Pépité	Questions	Diagnostic	Percentage of mastering a competence



Model's key points

What is assessed and in which manner ?

2nd Part

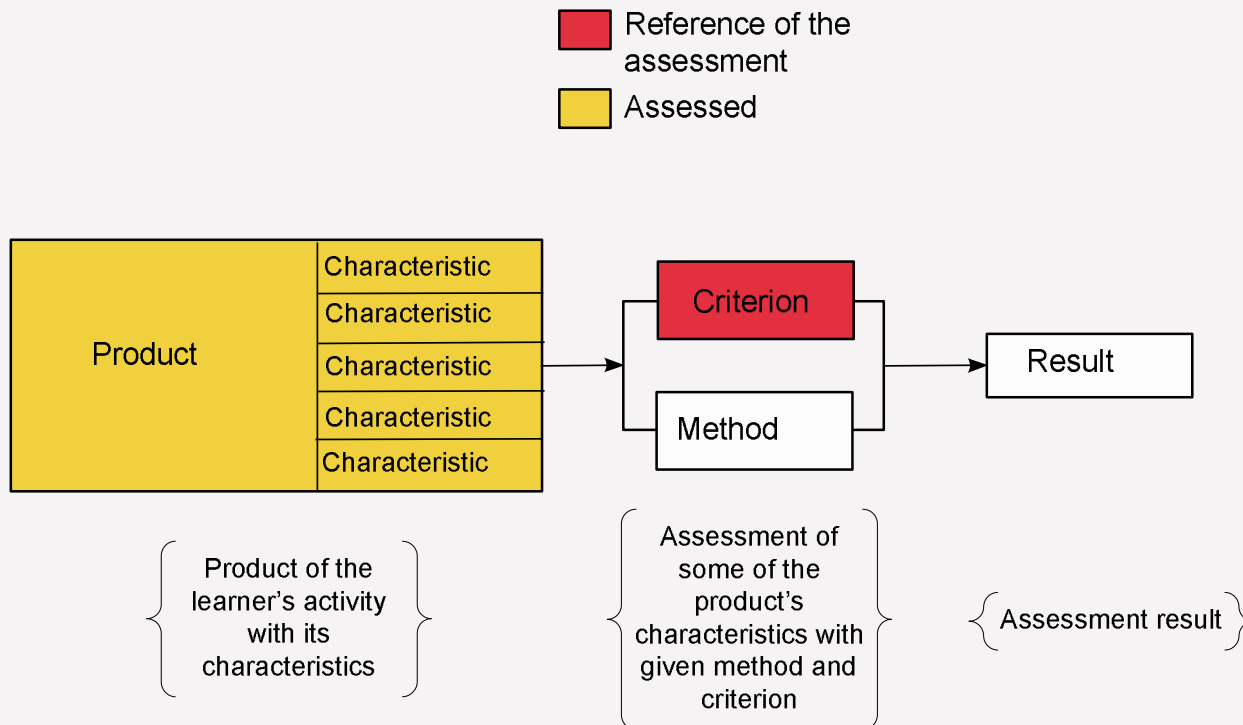
Methodology

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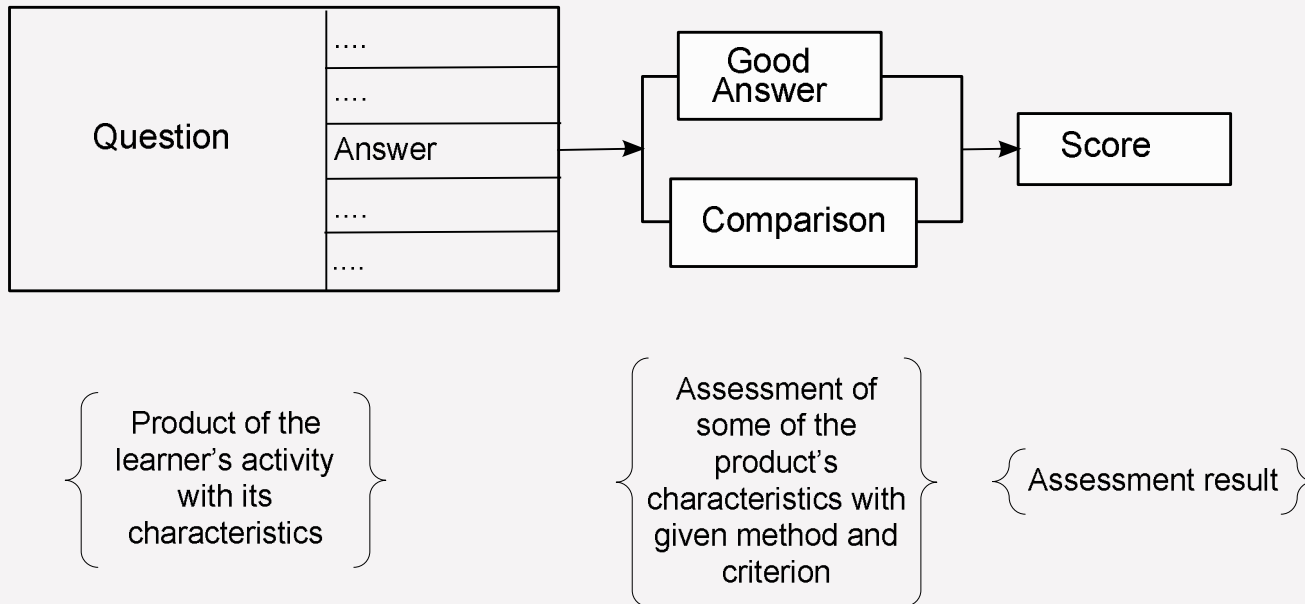




Model's key points

Example

- A quizz in Moodle:



2nd Part

Methodology

Model's key points

CRM Model

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Conclusion



2nd Part

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Model's key points

Roles of the actors

- **Several actors** in the assessment process depending on the assessment type.

Assessment's type	Assessed	Person who assesses the assessed
Formative assessment	Learner	Teacher
Self assessment	Learner	Learner



2nd Part

Methodology

Model's key points

CRM Model

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Model's key points

Notion of competence

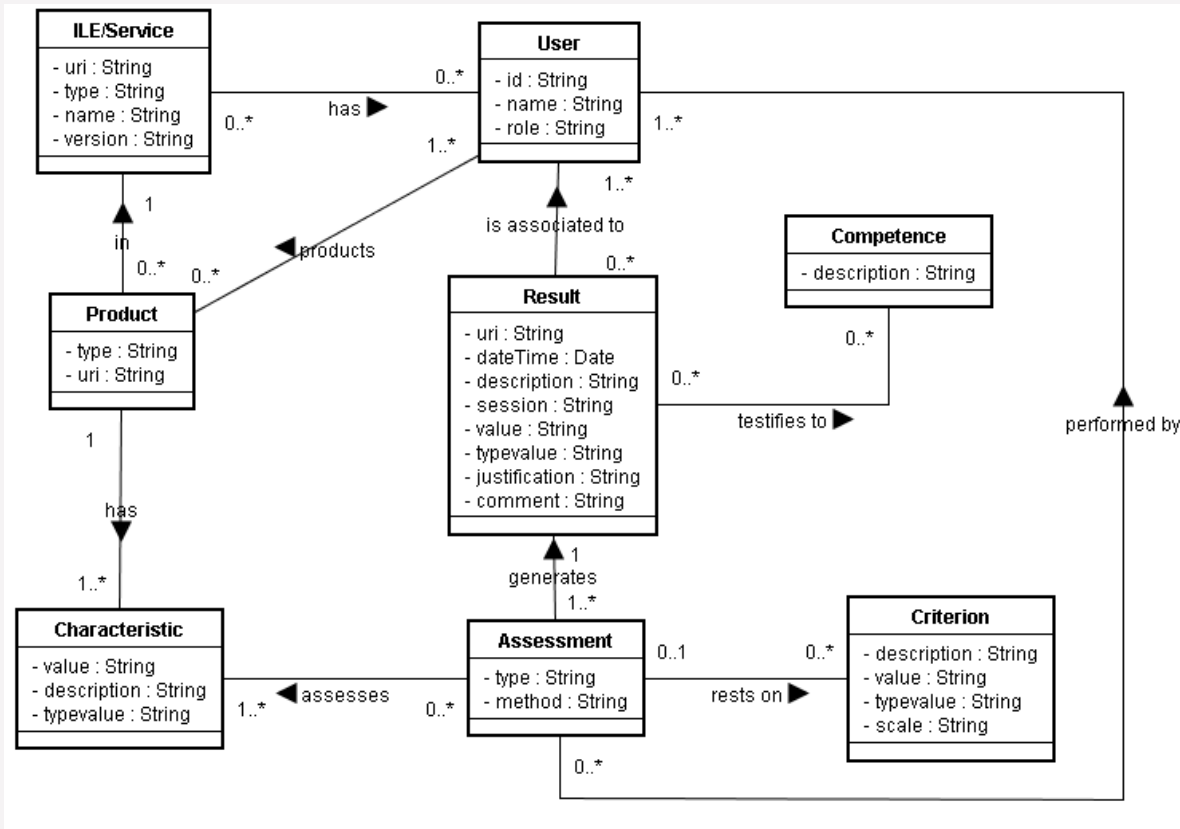
- **Results** may be **linked with competences** and competences' scales:

ILE	Competences types
Pépité	Disciplinary/Transversal competences
Moodle	No explicit competences.



CRM Model

Global view



2nd Part

Methodology

Model's key points

CRM Model

CRM Formalism

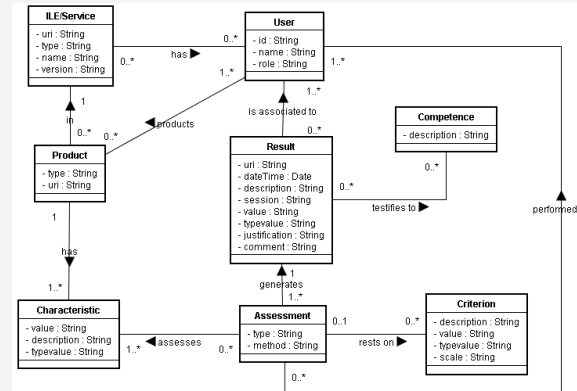
Conclusion



CRM Model

CRM with Moodle

CRM	Moodle
Actors	Learner/Moodle
ILE	Moodle
Product	Question
Characteristic	Answer
Assessment	Comparison
Criterion	Good answer
Result	Score
Competence	No explicit competences expressed in Moodle.



2nd Part

Methodology
Model's key points

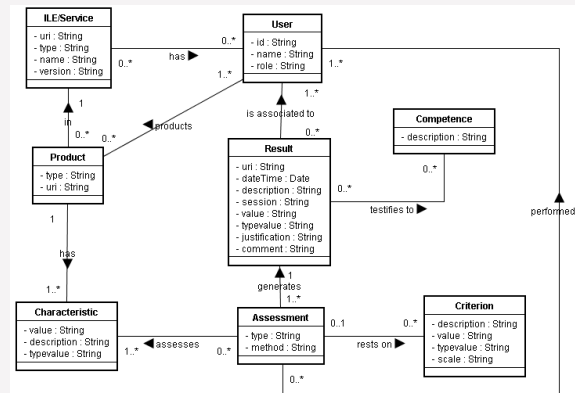
CRM Model
CRM Formalism
Conclusion



CRM Model

CRM with a diagnosis system (Pépité)

CRM	Pépité
Actors	Learner/Pépité
ILE	Pépité
Product	Question
Characteristic	Answer
Assessment	Comparison
Criterion	Good answer
Result	Percentage
Competence	A disciplinary competence



2nd Part

Methodology

Model's key points

CRM Model

CRM Formalism

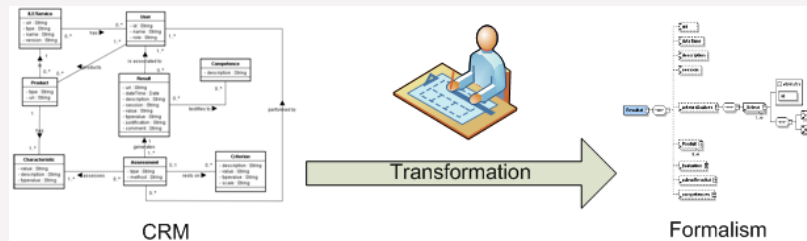
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2nd Part

Methodology
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CRM Formalism

CRM Model to XML formalism.



Example: Assessment of a dictation performed by a learner

<Result>

....

```
<Assessment assessmentType="Summative">
  <method>Looking for spelling mistakes</method>
  <assesses>
    <theCharacteristic>Dictation_spelling</theCharacteristic>
  </assesses>
  <madeBy>
    <Actor id="gdura">
      <role>teacher</role>
      <name>Guillaume Durand</name>
    </Actor>
  </madeBy>
```

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CRM Formalism



```

<restsOn>
  <Criterion id="1123">
    <description>withdraw one point by spelling mistake</description>
    <scale type="integer" max="20" min="0">-1</scale>
  </Criterion>
</ restsOn >
</Assessment>
....
<resultValue>
  <value type="integer" max="20" min="0" step="1">18</value>
  <justifiedBy>
    <Error charactref="11" criteriaref="1123">
      <description>exemple instead of example</description>
    </Error>
    <Error charactref="11" criteriaref="1123">
      <description>things instead of thing</description>
    </Error>
  </justifiedBy >
  <comment>You are in progress, congratulation !</comment>
</resultValue>
....
</Result>

```

2nd Part

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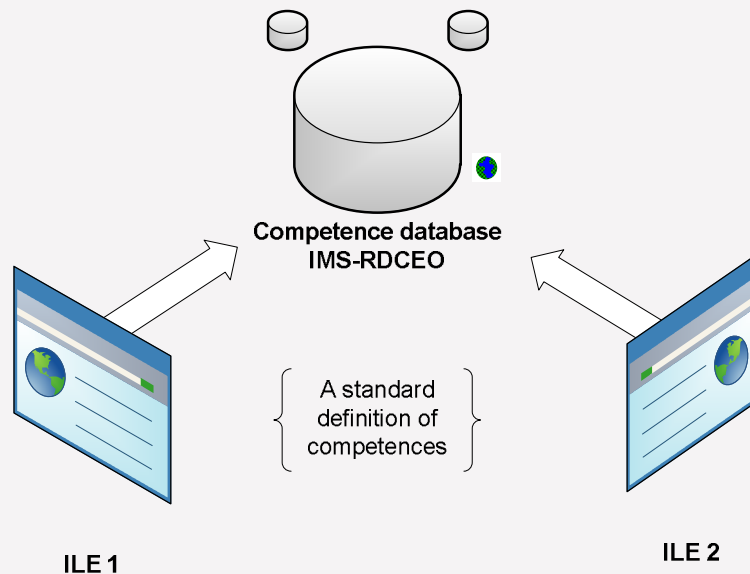
2nd Part

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CRM Formalism

Expression of competences

- Based on IMS-RDCEO.
- IMS-RDCEO is a IMS formalism to express and share competences.



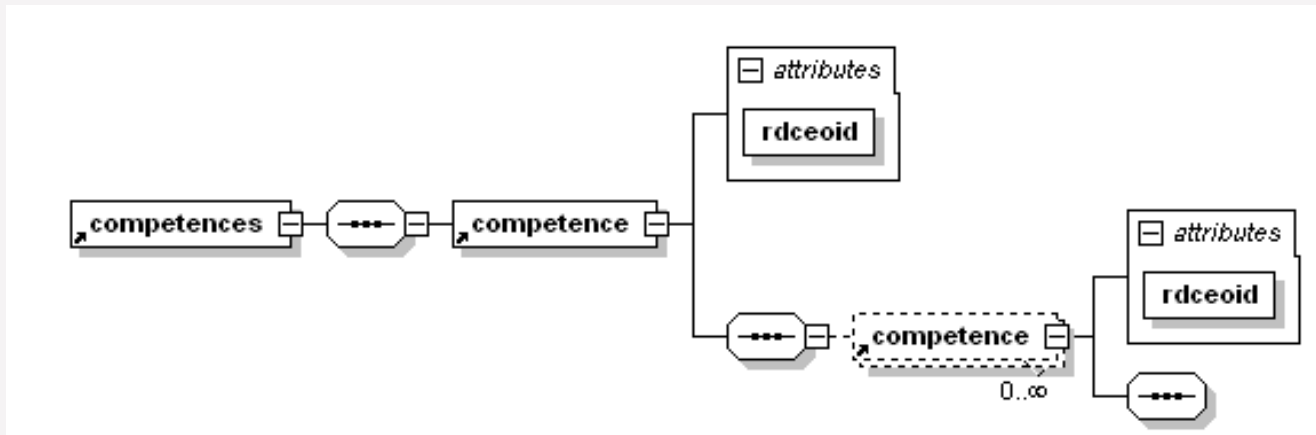


CRM formalism

Link with IMS-RDCEO

2nd Part

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<Result>

....

<competences>

<competence rdceoid="http://ld.pentila.com/rdceo_cat1.xml#cpa_eg">

</competences>

....

</Result>



Conclusion

Synthesis

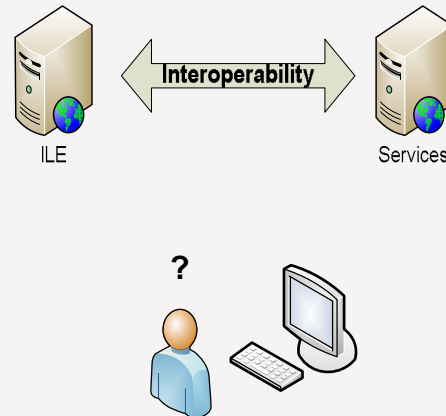
The CRM formalism :

- Allows to express assessment results obtained in ILE,
- Allow to express the meaning of the results.

Initial goals:

1. Interoperability of the results,
2. Results understandable.

Targets completed !



2nd Part

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Conclusion

Future works

- To **work on the Standardization** of a shared results formalism with **standardization groups (IMS)** .
- To **spread the CRM** and to point out the need of a standard.
- To **enhance** the CRM so as it becomes this standard.
- Need a **research lab** (post-doc, etc.) and/or partnership with researchers..

2nd Part

Methodology

Model's key points

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CRM Formalism

Conclusion



Thank you !



Questions ?

