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# The status of interoperability in e-portfolios: Case Mahara

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# Motivation

- E-portfolio tools are developing from data repositories towards platforms supporting the portfolio construction process
- While e-portfolios are being discussed, some terms tend to be brought up:
  - development, reflection, representation, ..., and
  - **lifelong learning**
- In digital age this leads to another challenge: **interoperability**
- Interoperability is used to
  - Transfer e-portfolios from system to another
  - Integrate external standalone systems to e-portfolio platforms
- Thus, interoperability standards, their development and their use will play an extremely important role when the first generations of users are graduating

# Significant e-portfolio specifications



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- The technical strategies of integration of e-portfolio systems can be divided in three: data, **API** and tool integration
- IMS LIP (Learner Information Package), IMS ePortfolio and Leap2A are the three most meaningful specifications when talking about e-portfolios
- Leap2A seems to be the one, that will have most importance
  - Some interfaces to e-Portfolio systems, such as Mahara and ePET, have already been implemented

	User-related information	Digital content	Other
IMS LIP	<ul style="list-style-type: none"><li>- Personal data</li><li>- Goals</li><li>- Objects of interests</li><li>- Skills and knowledge</li></ul>		
IMS ePortfolio	<ul style="list-style-type: none"><li>- Skills and knowledge</li><li>- Goals and plans</li><li>- Ownership information</li></ul>	<ul style="list-style-type: none"><li>- Artefacts</li><li>- Evaluations of the works and testing results</li></ul>	
Leap2A	<ul style="list-style-type: none"><li>- Skills and knowledge</li><li>- Objects of interests</li><li>- Working history</li></ul>	<ul style="list-style-type: none"><li>- Audio, video, multimedia, text</li><li>- Metadata about the information</li></ul>	<ul style="list-style-type: none"><li>- Blog entries</li><li>- Descriptions about the completed tasks</li></ul>



# Basis for our evaluation

- *Mahara* is the most famous open-source platform for constructing e-portfolios and has a *Leap2A* interface for import and export portfolios.

*“Full Leap2A import and export support is included in Mahara 1.2.*

*You can fully export and import portfolios between Mahara installations.” [1]*

- We tested the interoperability between two systems (Mahara, ePET) and their different versions, but the actual question to ask is...

*How well does the interoperability work even with  
**the same platform and the same version?***



# Creating a portfolio

1. Create a profile
2. Produce content
  - Upload artefacts
  - Write blog
  - Fill questionnaires
  - ...
3. Publish view(s)

**Learning Styles**

Style	Percentage
V. Visual type	34%
A. Auditory type	28%
K. Kinesthetic type	38%

Added on: 15 March 2011

**Profile Information**

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- Country: Finland
- Email Address: harri.hamalainen@lut.fi

**Multiple Intelligences**

Added on: 23 June 2011

**Legend**

- A. Verbal-Linguistic intelligence
- B. Logical-Mathematical intelligence
- C. Visual-Spatial intelligence
- D. Bodily-Kinesthetic intelligence
- E. Musical intelligence
- F. Interpersonal intelligence
- G. Intrapersonal intelligence
- H. Naturalistic intelligence

**Julkaisusuunnitelma**

Completion date	Title	Completed
31 March 2011	Chapter 2 julkaisuksi	
14 April 2011	Portfolion määrittäminen	
2 July 2011	e-Learning DL	

3 tasks

**Esitykset**

**Contents:**

Name	Description
Jatko-opi...-07.pptx	Jatko-opintoesitys

**Feedback**

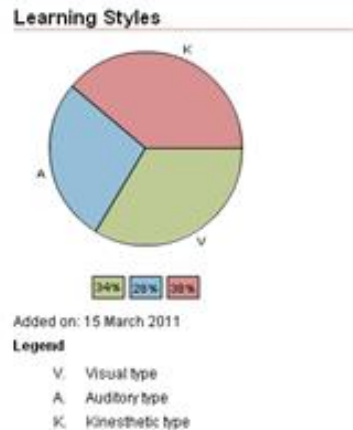
0 comments

Place feedback | Report objectionable material | Print | Add View to watchlist



# Creating an artefact: Learning style

- Mahara includes a module for finding out personal learning style
- By answering to a set of questions the preferences are calculated based on VAK-model



Learning Styles

I understand something more easily when I talk about it with other people.

In the classroom I maintain good eye contact with the teacher.

I use color (pencils, crayons, etc.) when writing to notebook, or reading the teaching materials.

I get good ideas when I am physically active.

I prefer oral than written instructions.

I prefer listening to the text on tape or Audio CD, rather than reading it myself.

I prefer drawn maps more than the description of the way, that I have to take.

I perform worse at written tests than at oral questioning.

When I learn, I do not want to sit at the table, but prefer to choose different places (e.g. on the floor, in bed ...).

I write notes, but they are somewhat disorganized.

I can easily understand and read maps, charts, graphs, etc.

I cannot sit still for a long time.

I like doing things with my hands.

The switched on radio bothers me, if I am doing something.

I need a lot of breaks, when I am learning.

When I speak, I also use body language (e.g. gestures).

It is difficult for me to imagine unfamiliar objects, events, facilities.

Instead of listening to instructions on how to do a product, I prefer to immediately produce it.

I love telling jokes and I can easily remember them.

I take lots of notes, when reading or listening to an explanation.

While listening to an explanation, I often write doodles on paper or bench.

I can follow an explanation well, although I don't maintain good eye contact with the teacher.

I like to create models from whatever I am learning.

When I take a test, I can easily picture page in the notebook or book, where I learned the answers.

```
mysql> select id, artefacttype, owner, ctime, title, description from artefact where artefacttype='learningstyles' or artefacttype='multipleintelligences';
+----+-----+-----+-----+-----+-----+
| id | artefacttype | owner | ctime | title | description |
+----+-----+-----+-----+-----+-----+
| 108 | learningstyles | 5 | 2011-03-15 22:57:40 | Learning Styles | a:35:{s:3:"A01";s:1:"4";s:3:"V01";s:1:"4";s:3:"V02";s:1:"2";s:3:"K01";s:1:"2";s:3:"A02";s:1:"2";s:3:"
```

# Exporting e-portfolio



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- The structure and content of exported e-portfolio is stored into and **xml-file** and zipped together with the digital artefacts (.doc, .ppt,...) into a single file
- The results *are* exported, *but* the **information** and its meaning is completely lost
  - Exporting the results only as a part of view (#1)
  - Including hard links to the module of the "original" system (#2)
  - Rejecting completely the description of data that would have been supported by the specification (#3)

```

<entry>
<title>Jatko-opintoportfolio</title>
<id>portfolio:view17</id>
<updated>2011-03-15T23:04:29+02:00</updated>
<published>2011-03-14T23:57:08+02:00</published>
<content type="xhtml"> #1
<div xmlns="http://www.w3.org/1999/xhtml">
<div>
<div class="column columns3" style="width:31%;">
<div class="column-content">
<div class="blockinstance cb bt-learningstyles">
<div class="blockinstance-header">
<h4>Learning Styles</h4>
</div>
<div class="blockinstance-content">
<div class="learningstyles">
<object classid="clsid:d27cdeb6-ae6d-11cf-96b8-444553540000" width="220" height="230" #2
data="http://mahara.lut.fi//artefact/learning/swf/learningstyles.swf" type="application/x-shockwave
flash">
<param name="allowScriptAccess" value="never" />
<param name="allowNetworking" value="internal" />
<param name="movie" value="http://mahara.lut.fi//artefact/learning/swf/learningstyles.swf" #2
<param name="wmode" value="window" />
</object>
<embed src="http://mahara.lut.fi//artefact/learning/swf/learningstyles.swf" #2
    
```

## Ability

One of the Leap2A item types

```

<rdf:type rdf:resource="leap2:ability" /> or
<rdf:type rdf:resource="http://terms.leapspecs.org/ability" />
    
```

#3

Definition:	EITHER: a general and impersonal definition of some area of knowledge, skill, competence or similar personal attribute, able to be used by anyone as a reference for a claim to possess the ability, or for a goal to achieve the ability, or as an intermediary for exploring pathways in education, employment or life  OR: information about a self-defined and self-claimed ability
Examples:	
Literals used:	
Relationships used:	<ul style="list-style-type: none"> <li>• has part → ability</li> <li>• is part of → ability</li> <li>• has evidence → evidential items</li> <li>• reflected on by → entry</li> </ul>
Categories:	
Can degrade to: / inherits from:	entry
	<p>The main challenge with abilities is that they can be described in different levels of detail. Exactly the same applies to what are normally called "intended learning outcomes" and "competencies", which are essentially similar. The detail and definition of a description of ability can range all the way from the most vague, e.g.</p> <ul style="list-style-type: none"> <li>• car driving</li> <li>• listening</li> </ul> <p>through something more detailed, like</p>



# And the result?




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**mahara** ▶ Edit Title Edit Content Edit Access

## Jatko-opintoportfolio by Harri Hämäläinen

### Jatko-opintoportfolio

#### Learning Styles



#### Profile Information

- **First Name:** Harri
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#### Multiple Intelligences



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#### Feedback

0 comments

[Place feedback](#) | [Report objectionable material](#) | [Print](#) | [Add View to watchlist](#) | 



# And the result?

Learning Styles

I understand something more easily when I talk about it with other people.	Never
In the classroom I maintain good eye contact with the teacher.	Never
I use color (pencils, crayons, etc.) when writing to notebook, or reading the teaching materials.	Never
I get good ideas when I am physically active.	Never
I prefer oral than written instructions.	Never
I prefer listening to the text on tape or Audio CD, rather than reading it myself.	Never
I prefer drawn maps more than the description of the way, that I have to take.	Never
I perform worse at written tests than at oral questioning.	Never
When I learn, I do not want to sit at the table, but prefer to choose different places (e.g. on the floor, in bed ...).	Never
I write notes, but they are somewhat disorganized.	Never
I can easily understand and read maps, charts, graphs, etc.	Never
I cannot sit still for a long time.	Never
I like doing things with my hands.	Never
The switched on radio bothers me, if I am doing something.	Never
I need a lot of breaks, when I am learning.	Never
When I speak, I also use body language (e.g. gestures).	Never
It is difficult for me to imagine unfamiliar objects, events, facilities.	Never
Instead of listening to instructions on how to do a product, I prefer to immediately produce it.	Never
I love telling jokes and I can easily remember them.	Never
I take lots of notes, when reading or listening to an explanation.	Never
While listening to an explanation, I often write doodles on paper or bench.	Never
I can follow an explanation well, although I don't maintain good eye contact with the teacher.	Never
I like to create models from whatever I am learning.	Never
When I take a test, I can easily picture page in the notebook or book, where I learned the answers.	Never
I prefer doing project work, instead of writing essays and summaries.	Never
I like talking and I write.	Never

```
mysql> select * from learningstyles where  
artefacttype= 'learningstyles'  
Empty set (0.00 sec)  
mysql>
```



# Conclusions

- Representational needs of portfolios often comes up in the end of the studies or after graduation
  - Does academia still provide an access to its alumnis to its systems?
    - No? Then how do I get the benefits out of my effort?
- Exporting all the valuable information of a portfolio and especially its meaning has not been achieved and will remain challenging
- When more modules appear, the interoperability and integration will be even more challenging and requires good design principles and obeying them
- The problem is not only the one's who is creating the specifications or implementing the interfaces

Thank you.

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