Agora Virtual
e-learning federated by design

Jose A. Accino¹    Victoriano Giralt¹    Manuel Cebrian²

¹Central Computing Facility University of Malaga
²Faculty of Educational Sciences University of Malaga

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Why a federated model for e-learning?
The failure of the monolithic application

e-Learning platforms have become ubiquitous applications
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Why a federated model for e-learning?

The failure of the monolithic application

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- Users bring a previous practice (no *tabula rasa anymore*)
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- They have not performed to their expectations about new learning models
- Disjoint from daily user experience on the Net
- Users bring a previous practice (no *tabula rasa* anymore)
- Does it make sense to speak of "constructivist" platforms?
Why a federated model for e-learning?
A user centered approach

New uses of *The Net* require new concepts for the platforms
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- Platform centered design = kitchen sink syndrome
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Federated applications
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- Interoperability is key

*Interoperability is the degree to which a provider and a consumer can successfully interface having never met*

*Coppeto, T.: Introduction To OSID V3 for developers*
We need some basic tools to transform the flat into a loft
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- **Platform**

**Agora Virtual 1.0 → 5.0**

- Test bed for new approaches
- Two years in use for postgraduate courses and international research projects
- Some degree of interoperability since v1: Jabber server, authN OSID, Google Maps API...
- ...but other tools remain in traditional form
Materials for building a new platform
Available technologies for collaborating applications

We need some basic tools to transform the flat into a loft

- **Platform**
- **Interoperability**

### OKI OSIDs

(Open Knowledge Initiative Open Service Interface Definitions)

- Specifications describing communications between components of a software environment
- Service oriented architecture
- Interoperability as main goal (even better in v3)
We need some basic tools to transform the flat into a loft

- Platform
- Interoperability

**Harmoni framework**

- Led by the Curricular Technologies Group at Middlebury College
- PHP implementation of OSID v2 (v3 is on its way)
- Rapid development and easy maintenance of curricular IT projects
We need some basic tools to transform the flat into a loft

- Platform
- Interoperability
- Identity

**phpPoA → PAPI**

- Easy to deploy
- PHP support
- Widely used in our context

The simplest and easiest way to put SSO into PHP applications
We need some basic tools to transform the flat into a loft

- **Platform**
- **Interoperability**
- **Identity**

**SimpleSAMLphp**

<table>
<thead>
<tr>
<th>SAML</th>
<th>→</th>
<th>federations</th>
</tr>
</thead>
<tbody>
<tr>
<td>simple</td>
<td>→</td>
<td>easy to integrate</td>
</tr>
<tr>
<td>php</td>
<td>→</td>
<td><em>our</em> language</td>
</tr>
</tbody>
</table>

In all:
- a clever SAML 2 SP and IdP implementation
- or
- the simplest and easiest way to get PHP applications into SAML 2 federations
Evolving the platform
Starting point: Agora virtual v4

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Indicators</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>The context observation</td>
<td>It don’t gather any characteristics</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>It gathers with details the characteristics of the students group</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>It gathers with details the characteristics of the students group, of the school and of classroom</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td>It gathers with details the characteristics of the students group, of the school and of classroom, and the socio-economics levels of context</td>
<td>10</td>
</tr>
<tr>
<td>Observación contexto escolar</td>
<td>Makes the objectives in terms of competences</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>It does not do it in terms of competences</td>
<td>8.33</td>
</tr>
<tr>
<td></td>
<td>Considering Makes all the objectives in terms of competences</td>
<td>16.67</td>
</tr>
<tr>
<td></td>
<td>Considering the characteristics of the student and their resources available</td>
<td>25</td>
</tr>
<tr>
<td>Categoría unidad didáctica</td>
<td>Justifies the assignment</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>It does not make any justification</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Yes, but briefly</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td>It justifies with the PCC</td>
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</tr>
<tr>
<td></td>
<td>It justifies with the PCC and curricula</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>31.67 / 45</td>
</tr>
</tbody>
</table>
Evolving the platform
The Harmoni framework

HARMONI Framework

Architecture

Services
OSID

Federated applications
Evolving the platform
The Harmoni architecture

Key
- Orange boxes = indicate parts of the Harmoni Project (faded boxes indicate optional modules)
- Green boxes = program-specific code, the code you write
- = program execution flow
- Blue boxes = HTTP data flow

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Federated applications
Evolving the platform
End point: Agora virtual v5 redesigned architecture
Evolving the platform
The new AuthN architecture

APPLICATION  SSO INFRASTRUCTURE

OSID
isUserAuthenticated()

phpPoA
check_Access()

GPoA
( Assertion)

Login
LDAP, Radius

SP  IdP

SAML 2.0

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Evolving the platform
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Federated applications
Our implementation is different from a standard SimpleSAML setup in that
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- One SimpleSAML GPoA is able to manage several applications
Our implementation is different from a standard SimpleSAML setup in that

- One SimpleSAML GPoA is able to manage several applications
- There is no need for having distinct SPs for each application
Possible uses
Choosing the best approach for each case

An institution could opt for . . .
An institution could opt for …

- Developing its own OSID implementation
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- Developing its own OSID implementation
- Use this SimpleSAML GPoA setup with other phpPoA enabled applications
Possible uses
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- Developing its own OSID implementation
- Use this SimpleSAML GPoA setup with other phpPoA enabled applications
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- Use this model against a SimpleSAML IdP just choosing the adequate plugin
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- Use this SimpleSAML GPoA setup with other phpPoA enabled applications
- Get an alternate GPoA for other authentication mechanism (e.g.: basic auth)
- Use this model against a SimpleSAML IdP just choosing the adequate plugin
- Even writing a PAPI plugin for SimpleSAML authentication against PAPI
Real constructivism has a strong need for new building blocks.
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User centered implies being identity centered.
Real constructivism has a strong need for new building blocks
User centered implies being identity centered
Applications need to collaborate themselves in order to help the user
Acknowledgements

Diego López <diego.lopez@rediris.es>
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Andreas Å. Solberg <andreas.solberg@uninett.no>
Pointers

Application : http://agoravirtual.es/
Harmoni framework : http://harmoni.sourceforge.net/
O.K.I. : http://www.okiproject.org/
Technical knowledge : accino@uma.es
Domain knowledge : mcebrian@uma.es
“Marketing” : victoriano@uma.es