Master Thesis

PLEF: A Conceptual Framework for Personal Learning Environments

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Outline

• Introduction
• State of the Art
• Requirements
• Implementation
• Evaluation
• Conclusion and Future Work
INTRODUCTION
Motivation

- Technology change → skill & knowledge update
- E-Learning as solution ≈ Formal Learning
- Learning in actual world
  - Personalized Learning
  - Informal Learning (IL)
  - Lifelong Learning (LLL)
- E-Portfolio support
- Virtual Learning Environment (VLE)
- Personal Learning Environment (PLE)
## VLE vs. PLE

<table>
<thead>
<tr>
<th>VLE characteristics</th>
<th>PLE characteristics</th>
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<tbody>
<tr>
<td>Asymmetric relationship</td>
<td>Symmetric relationship</td>
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<tr>
<td>Homogeneous context</td>
<td>Individualized context</td>
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<tr>
<td>Top-down approach</td>
<td>Bottom-up approach</td>
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<tr>
<td>Technology- &amp; content-centric</td>
<td>Learner-centric</td>
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<tr>
<td>Institutional scope</td>
<td>Personal &amp; global scope</td>
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<tr>
<td>Knowledge-push</td>
<td>Knowledge-pull</td>
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<tr>
<td>Formal learning support</td>
<td>LLL- &amp; IL-support</td>
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Thesis Work: PLEF

- Endeavour to develop a framework, named Personal Learning Environment Framework (PLEF), which:
  - Supports the creation of PLEs
  - Supports personalization and participation
  - Using Web 2.0 concepts and technologies, e.g.:
    - RSS
    - Widgets
    - Mashups
    - OpenID
    - Social tagging
STATE OF THE ART
Related Work

- Possible way of creating PLEs [Lube06]:
  - (Desktop) Application
  - Webtop
  - Weblog
  - Content Management System
  - Mashup

- Example:
  - Plex
  - Elgg
  - Blog tools (i.e., Blogger)
  - Personalized Start Pages (e.g., iGoogle, MyYahoo, MsLive, NetVibes, Pageflakes)
<table>
<thead>
<tr>
<th>Feature</th>
<th>Plex</th>
<th>Elgg</th>
<th>Blogger</th>
<th>iGoogle</th>
<th>MyYahoo</th>
<th>Ms. Live</th>
<th>NetVibes</th>
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REQUIREMENTS
Framework Requirements

- Learning environment creation
- Authentication (OpenID)
- Pages and elements (Feeds, Widgets & Media)
- Access control (Private & Public)
- Tagging
- Commenting
- Sharing
- Search (Full-text search & tag search)
Interface Requirements

- View
  - Page view
  - Tag view

- Layout (drag-and-drop)
  - Page order
  - Element layout

- Personalized use of colour
  - Page colour
Abstract Architecture
IMPLEMENTATION
Technologies Used

- J2EE
- JSP
- Google Web Toolkit (GWT)
- Google Ajax Feed API
- Ext JS
- GWT-Ext
Evaluation Methodology

- Based on DeLone and McLean Success Model [JOPP98]
  - System Quality: JUnit Test
  - Information Quality: Questionnaires
- 25 questionnaires sent out, 23 returned
Evaluation Result (Overall)

- Overall system evaluation:
  - 20 Questions: subset of Software Usability Measurement Inventory (SUMI) [Univ08]
  - System Usability Scale (SUS) for analysis [Broo08]
  - Score: 46.32 out of 100 points

- User guides, error messages, validation and error prevention
- Unfamiliarity with PLE concept

+ Satisfaction with PLEF performance
Evaluation Result (Features)

+ No problem encountered
Final Remarks

- Aggregation in one environment
- Learner-controlled PLEs
- Visiting other PLEs
- Sharing and tagging

- Lack of guides and tooltips
- Complicated for beginners
CONCLUSION AND FUTURE WORK
Conclusion

- PLEF
  - Provides manageable personal spaces and means to engage with peers
  - Based on Web 2.0 concepts and technologies

- PLEF Characteristics
  - Aggregation of Pages and Elements (Feeds, Widgets & Media)
  - OpenID Authentication
  - Access control (Private & Public)
  - Tagging, commenting, sharing
  - Search (Full-text search & tag search)
Future Work

- Mashup of Services (e.g. JSON, REST)
- Social Application (e.g. OpenSocial)
- Group Access Control
- Recommendation Feature
- File Repository (e.g. Amazon S3)
THANK YOU
Success Model

Figure: DeLone and McLean Success Model [JOPP98]
Respondents Feedback

- Problem while Visiting other PLEs
- Problem while Login

Graphs showing data distribution.
Respondents Feedback

- Page View
- Moving Element within a Page
- Reorder Page Sequence
- Tag View

- Search for Pages
- Search for Elements
- Search for Tags

Yes
No
Not answer
Respondents Feedback

![Bar charts showing respondents feedback on page access and element access, as well as their willingness to use PLEF and satisfaction with PLEF support for collaborative and self-directed learning.]