

Design Elements in a Personal Learning Environment

Stephen Downes
March 5, 2015

Fourth International Conference e-Learning and Distance Education

2 - 5 March 2015

Innovative Learning ... Promising Future
THE RITZ-CARLTON, RIYADH



المؤتمر الدولي الرابع للتعليم الإلكتروني و التعليم عن بعد

14 - 11 جمادى الأولى 1436 هـ | 2 - 5 مارس 2015 م

تعليم مبتكر .. لمستقبل واعد
الريتز كارلتون - الرياض



National Research
Council Canada

Conseil national
de recherches Canada

Canada 

The Problem: The Skills Shortage in Canadian Industry

Canadian Oil and Gas (O&G) sector loses \$4 billion per year due to skills shortages.

Skilled and professional unemployment rate less than 1%.

Training current and prospective employees time-consuming and expensive.



August 26, 2013

OTTAWA CITIZEN

Home News Opinion Business Sports Arts Life Technology Travel Health Jobs

LABOUR AND SKILLS SHORTAGE ADDRESSING CURRENT AND FUTURE CHALLENGES

Report of the Standing Committee on Human Resources, Skills and Social Development and the Status of Persons with Disabilities

Ed Komarnicki, M.P.
Chair

DECEMBER 2012
41st PARLIAMENT, FIRST SESSION

An answer to Canada's mining skills shortage

BY DANIEL BLAND, OTTAWA CITIZEN AUGUST 26, 2013

While economists and labour market researchers agree one of Canada's greatest challenges is the shortage of skilled workers, that shortage is not the same as the unemployment rate. That's the message of a new report from The Conference Board of Canada.

Skills Shortages Cost Ontario Economy Billions of Dollars Annually

NEWS RELEASE 14-09



Report on Business

Economy Lab

Delving into the forces that shape our living standards
Best Business Blog, EPPY awards, 2011 and 2012

Home » Report on Business » Economy » Economy Lab



Canada's labour pain: 1.3 million jobless, but not enough skills

TAVIA GRANT · ECONOMICS REPORTER
The Globe and Mail
Published Sunday, Mar. 31 2013, 6:41 PM EDT
Last updated Tuesday, Apr. 02 2013, 9:00 AM EDT



money that could provide substantial and social benefits to Ontarians. The skills gap could help the province reduce public debt or invest in much needed infrastructure improvements," said Michael S. Smith, President, Organizational Development and Learning. "Consider, for example, that a proposed expansion of public transit in the Greater Toronto-Hamilton Area would require an estimated \$2 billion per year, or more, to complete."



itbusiness.ca

Syndicated Education Human Resources

IT skills shortage still a problem in Canada

Published on: July 10th, 2013

CANADIAN BUSINESS JOURNAL

Home | Features | March 09 | Advanced Skills Shortages in Canada – Getting to the Root of the Problem

Advanced Skills Shortages in Canada – Getting to the Root of the Problem

Font size: A A A

In November of last year, the Canadian Chamber of Commerce published a report on skills shortages in Canada, expressing a view felt by many: the skills shortage is a critical economic issue that impacts Canadian productivity, and ultimately, competitiveness in a global market. The Chamber commented in the report that skills shortages are not "just a 'made-in-Canada' problem", saying that the country is in a global fight for talent.



The Solution: Personal Learning and Performance Support

Single point of access to all skills development and training needs

- Individual learning path
- Context-aware support
- Searchable and verifiable
- Tailored to industry needs
- Always available
- Point of need performance support



Why NRC? Our Distinct Leverage

- NRC is a globally recognized leader in emerging learning technologies
 - Not core competencies for target clients
 - LPSS benefits from NRC's research in other fields
- NRC is deeply connected to the e-learning industry
 - University researchers not driven to spend the time with industry
 - NRC by contrast has collaboration and commercialization experience
 - Neutral broker reduces risk to technology development partners

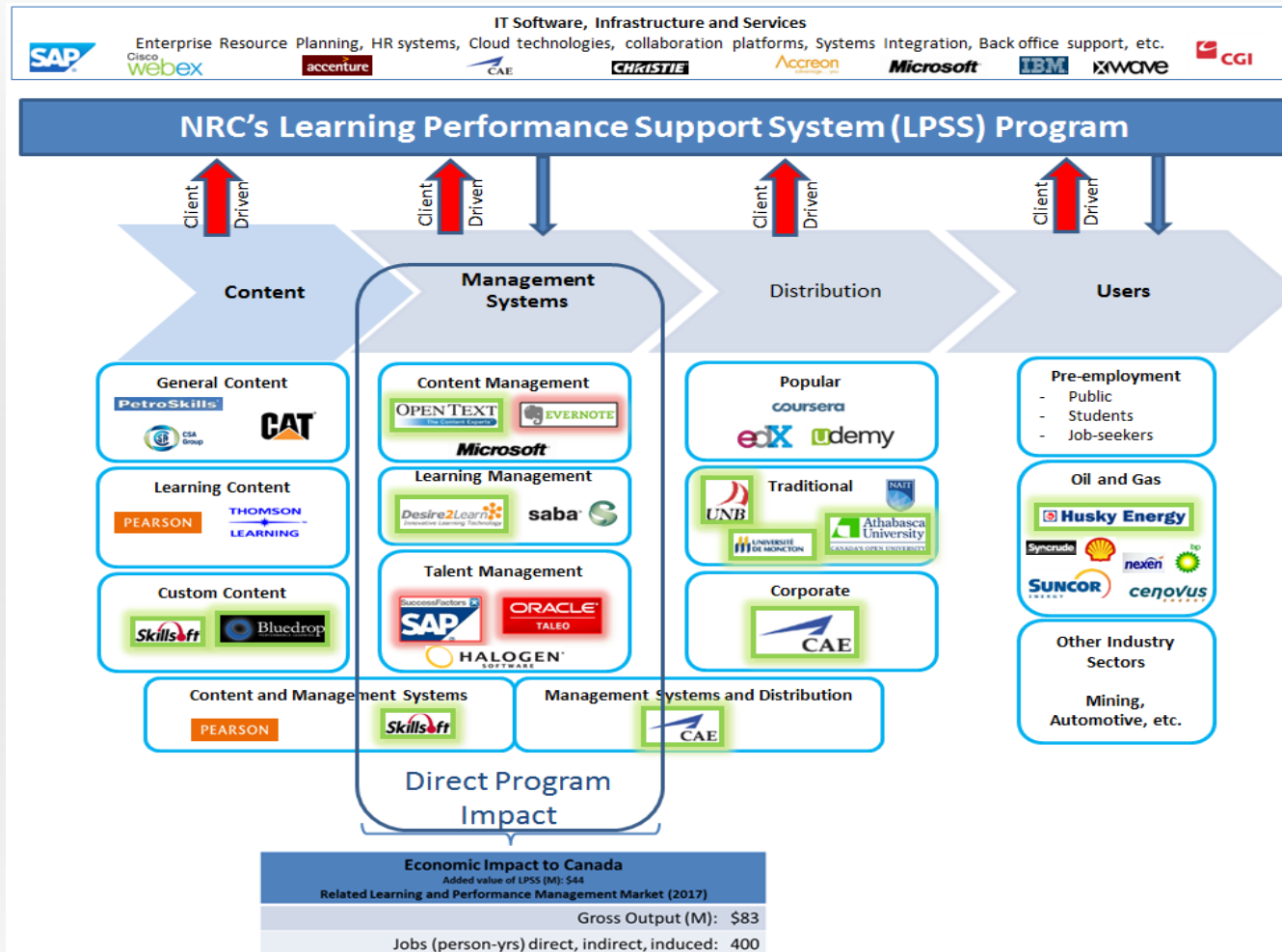


NRC – Previous Work in eLearning

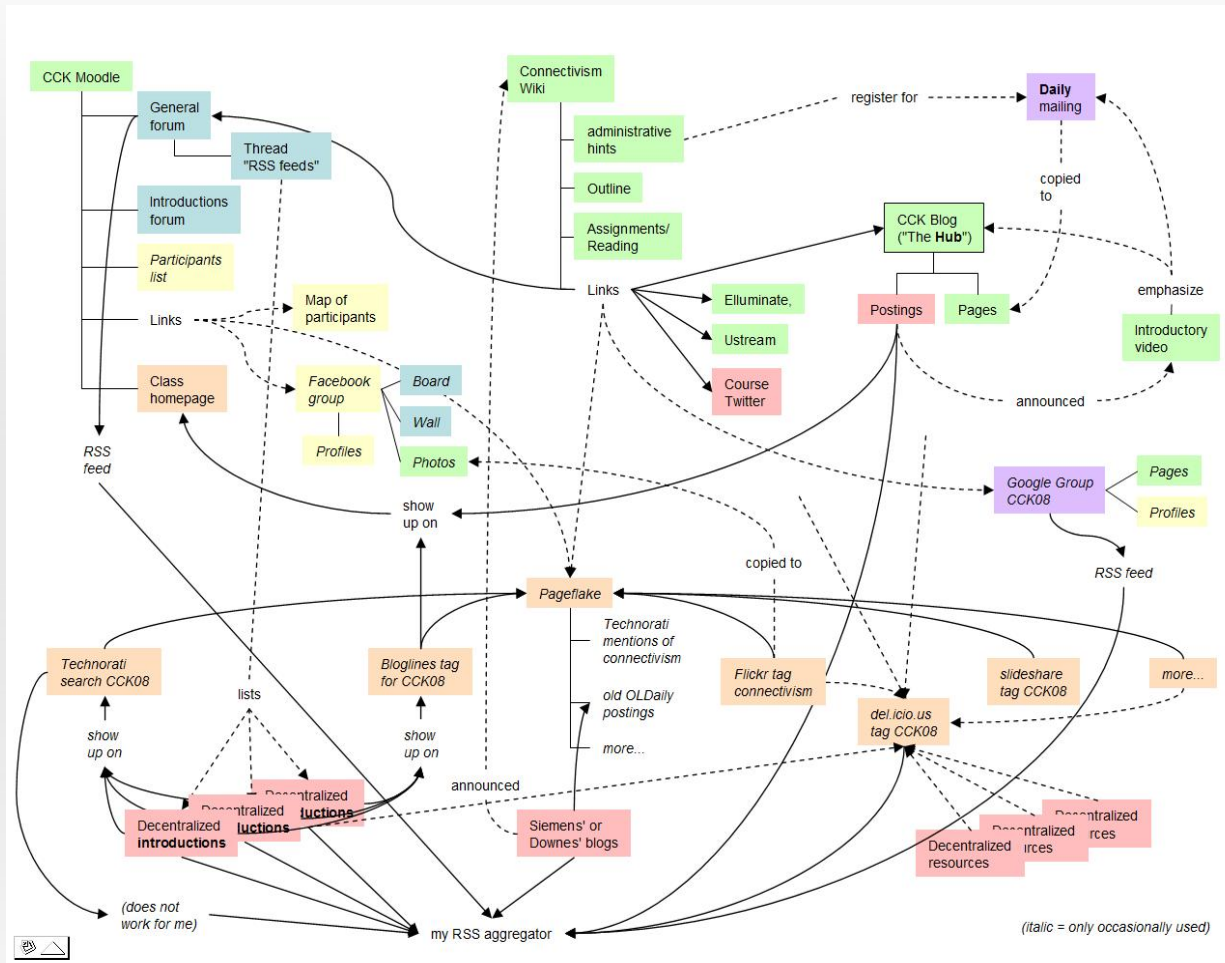


- eduSource Resource Repository Network (Canadian CANARIE Network)
- Sifter/Filter Content Recommender (commercialized as RACOFI)
- SHARE Sentiment Analysis
- Synergic3 Collaborative Workflow (commercialized with Desire2Learn)
- gRSShopper / MOOC / Connectivism
- 2Sim Haptic Simulations

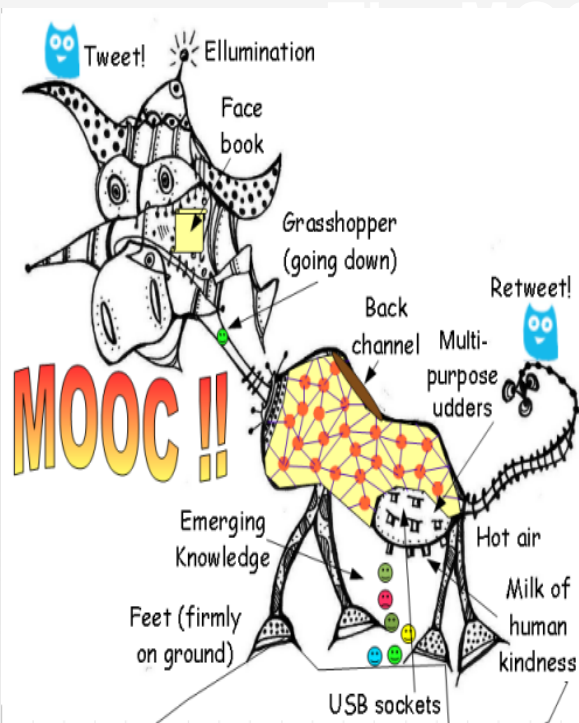
LPSS in Canada's Learning Technology Marketplace



The Connected Application

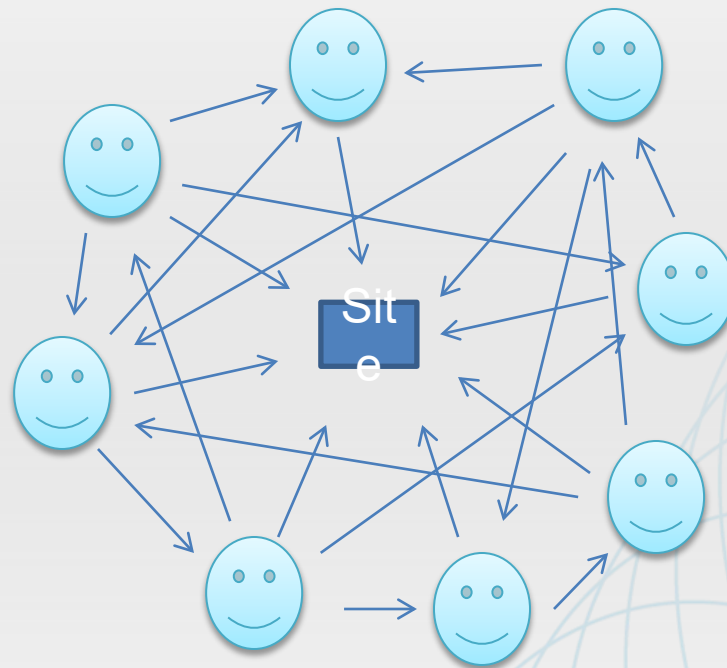


<http://x28newblog.blog.uni-heidelberg.de/2008/09/06/cck08-first-impressions/>



Massive – by design
Open – gratis and libre
Online – not blended, not wrapped
Courses – not communities, websites, video collections, etc

Massive Open Online Course



A MOOC is a Web, not a Website

Design Principles

Autonomy

- Choice of contents
- Personal learning
- No curriculum

Openness

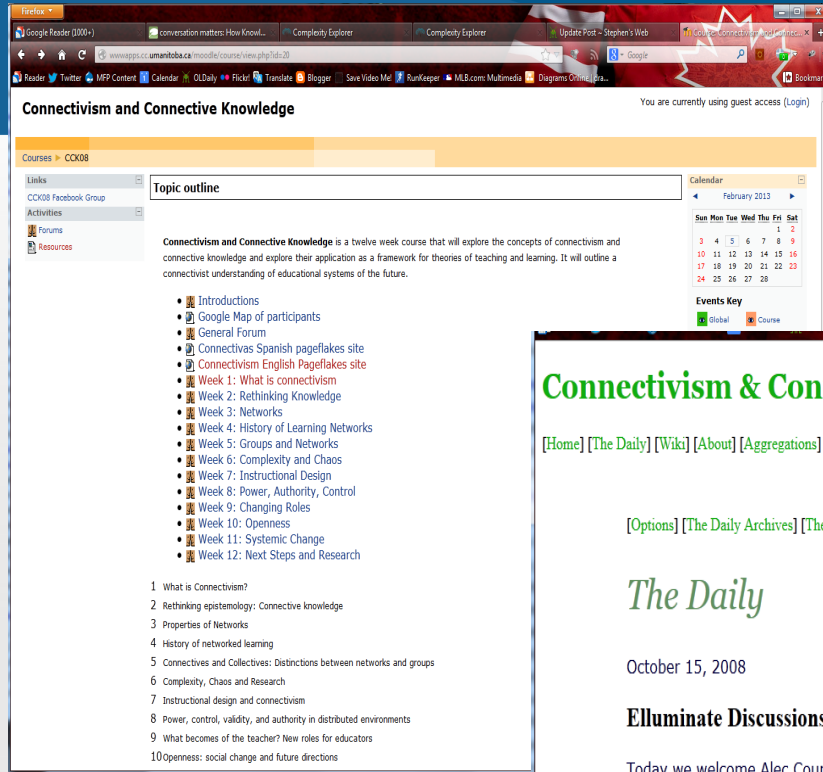
- Open access
- Open content
- Open activities
- Open assessment

Diversity

- Multiple tools
- Individual perspective
- Varied content

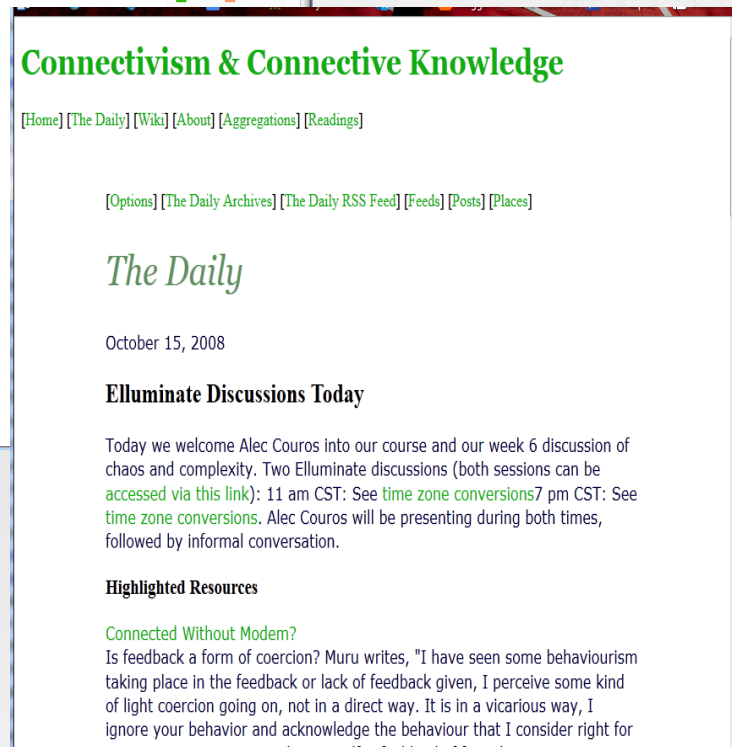
Interactivity

- Encourage communication
- Cooperative learning
- Emergent knowledge



<http://wwwapps.cc.umanitoba.ca/moodle/course/view.php?id=20>

2300 students



<http://connect.downes.ca/cgi-bin/archive.cgi?page=thedaily.htm>

Other Courses

PLENK2010
Personal Learning Environments
Networks and Knowledge 2010

home discussion wiki the daily blog live sessions recordings about

Schedule

WEEK OF...
12TH SEPTEMBER 2010
[A TOUR OF PLEs AND PLNs](#)

19TH SEPTEMBER 2010
[CONTRASTING PLEs WITH LMSS](#)

26TH SEPTEMBER 2010
[THE NEXT/EXTENDED WEB](#)

3RD OCTOBER 2010
[PLE/PLN AND LEARNING THEORIES](#)

10TH OCTOBER 2010
[EVALUATING LEARNING IN PLE/NS](#)

17TH OCTOBER 2010
[USING PLEs SUCCESSFULLY](#)

24TH OCTOBER 2010
[PLE/N TOOLS](#)

31ST OCTOBER 2010
PERSONAL KNOWLEDGE

Welcome to the Course

YOU ARE LOGGED IN AS DOWNES [OPTIONS] [LOGOUT]

SEE I CAN PLENK, TOO!

PLENK 2010

If you would like to register for PLENK2010 there's still time. [Click here to Register](#)

If you have subscribed to The Daily, then you will receive the course materials.

1800 students

<http://connect.downes.ca/>

CFHE 12 An Open Online Course

3000 students

<http://edfuture.net/>

CHANGE.MOOC.CA

home about contact

YOU ARE LOGGED IN AS DOWNES [OPTIONS] [LOGOUT]

Week 35: Terry Anderson
Change in formal education systems

Announcements

Terry Anderson Session Recording

Terry Anderson's week35 session recordings:

- [MP3 Audio](#)
- [Elluminate Recording](#)
- [Slides](#)

Week 35: Terry Anderson

Live Session Today

This is the last week of the Change11 course and we are pleased to welcome Terry Anderson. Our live session is **TODAY**.

Contents

Calendar

This Course

- [Home Page](#)
- [About This Course](#)
- [Course Outline](#)
- [How It Works](#)
- [Course Facilitators](#)
- [Your Privacy](#)
- [Contact Us](#)

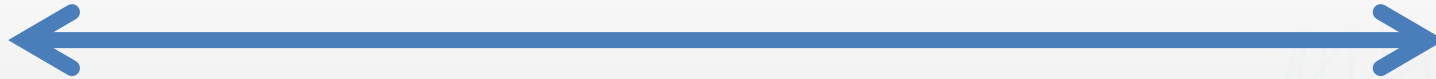
Your Account

- [Register](#)
- [Login](#)
- [Manage Account](#)

2800 students

<http://change.mooc.ca/>

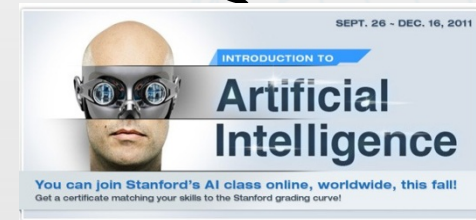
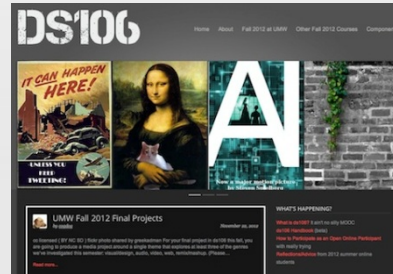
cMOOC vs xMOOC



networks

tasks

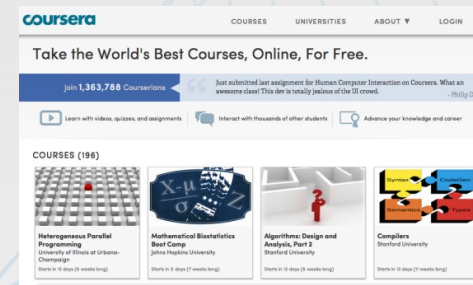
content



<https://www.ai-class.com/>



<http://ds106.us/history/>



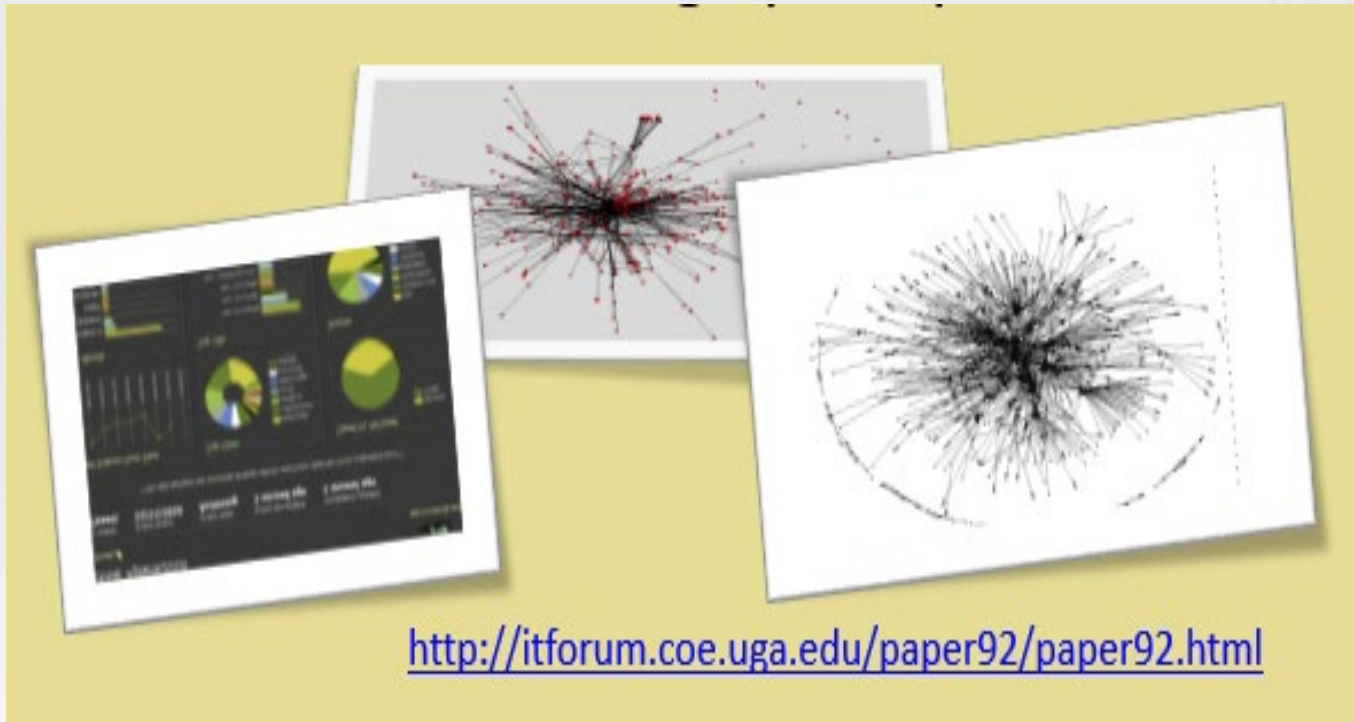
<https://www.coursera.org/>

<http://lisahistory.net/wordpress/2012/08/three-kinds-of-moocs/>

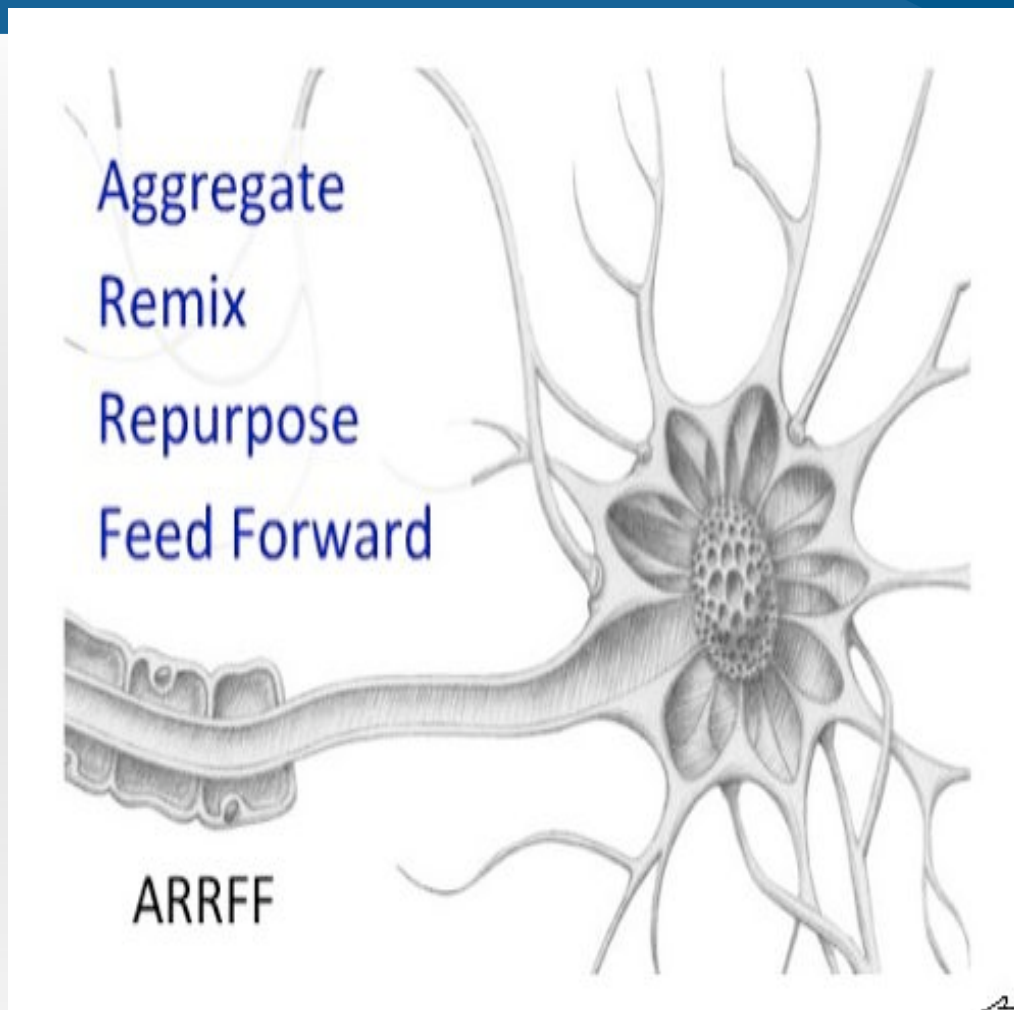


Design principles of the cMOOC

Autonomy, diversity, openness, interactivity

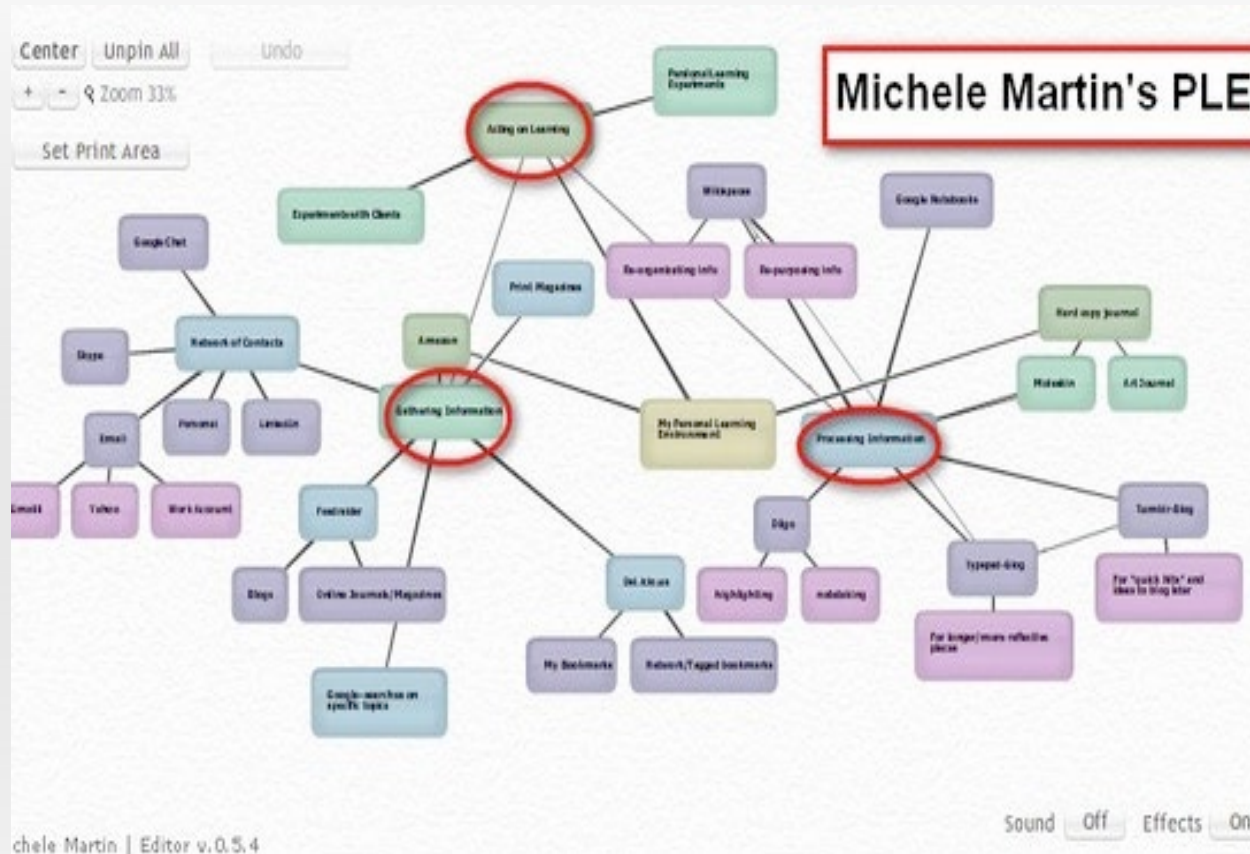


Pedagogy of the cMOOC



<http://cogdogblog.com/2009/06/29/arrff/>

Personal Learning



<http://dmlcentral.net/blog/howard-rheingold/diy-u-interview-anyakamenetz> <http://www.downes.ca/post/58150>

Underlying MOOC Support

1. First student creates resource and sends info to course



Site

2. Second student sees resource info in newsletter and RSS feed

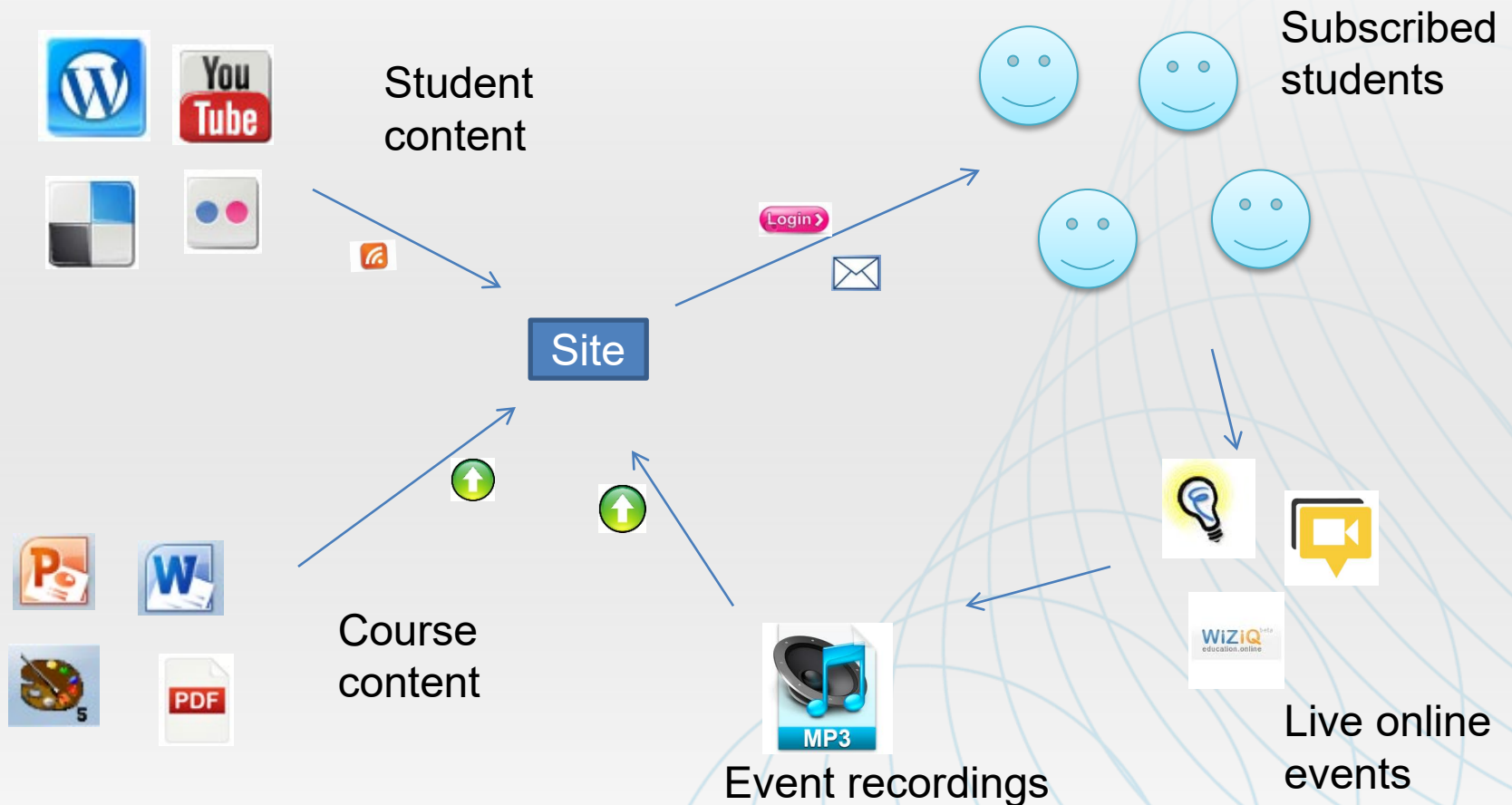


3. Second student accesses the resource directly

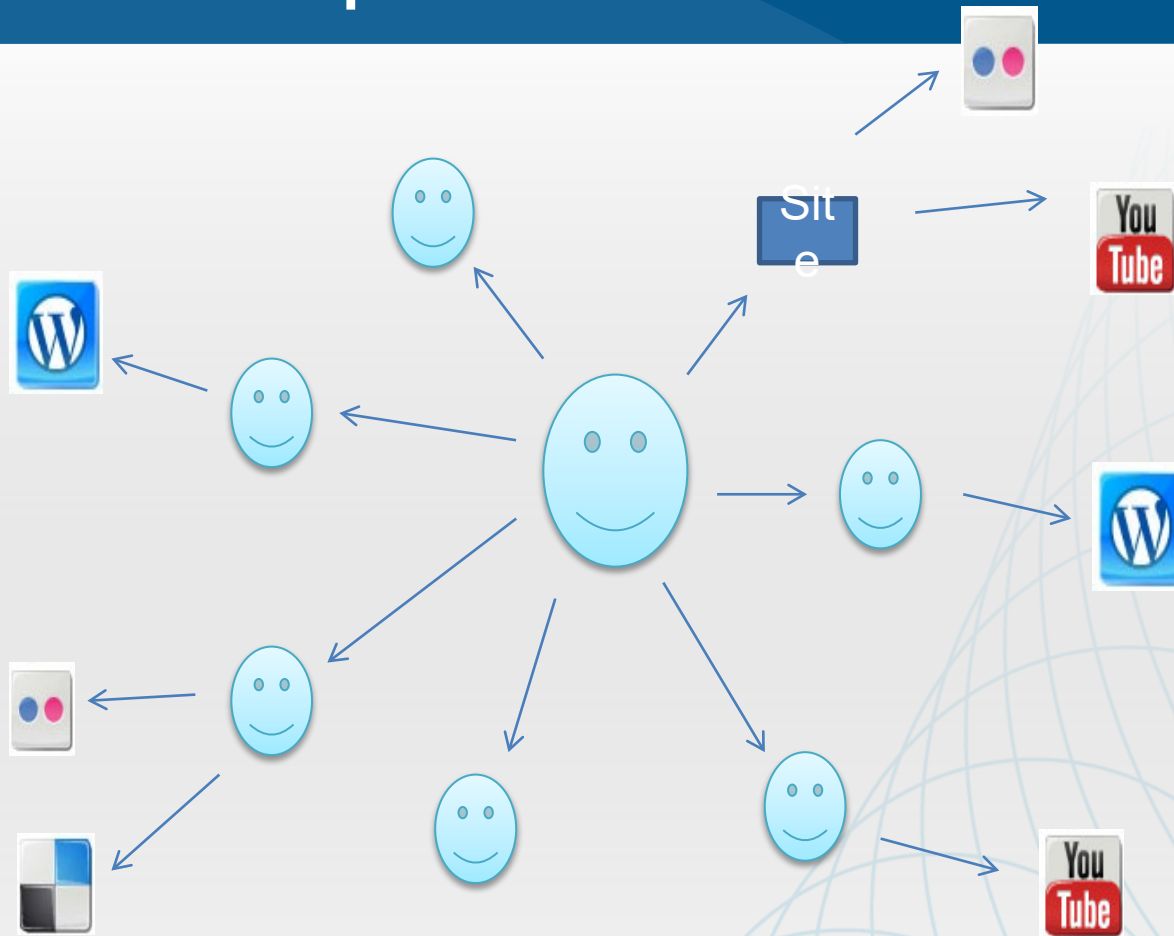


4. Second student finds link to third student's resource

Course Provider Perspective

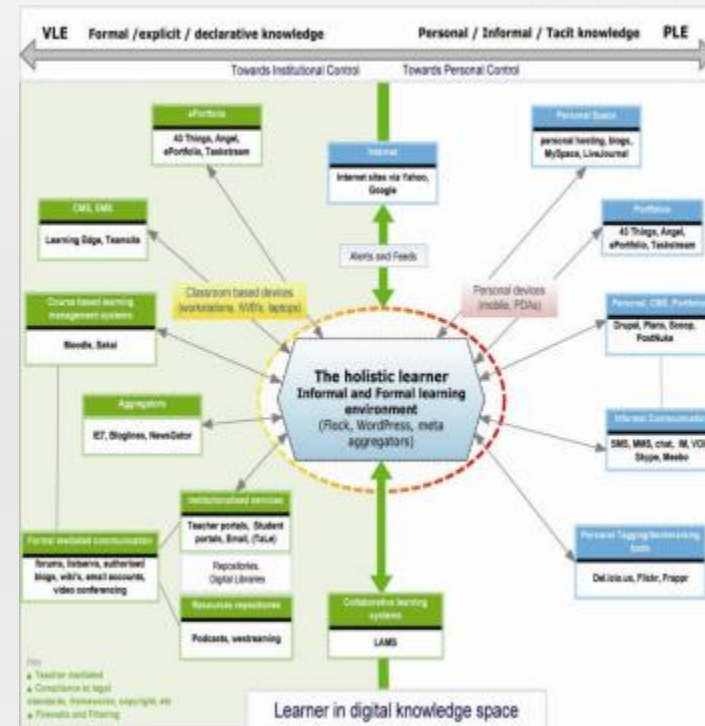
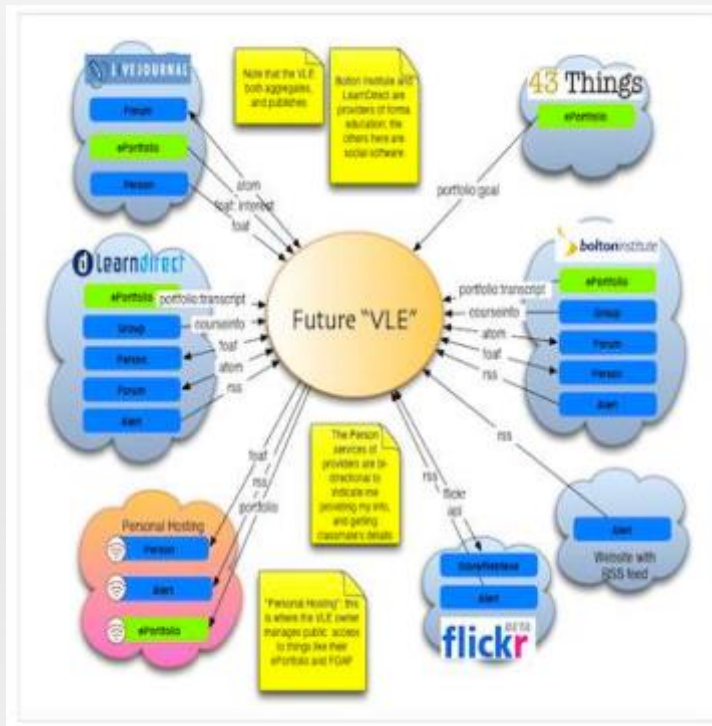


The Student's Perspective



A range of different resources and services

The design is based on putting the learner at the centre

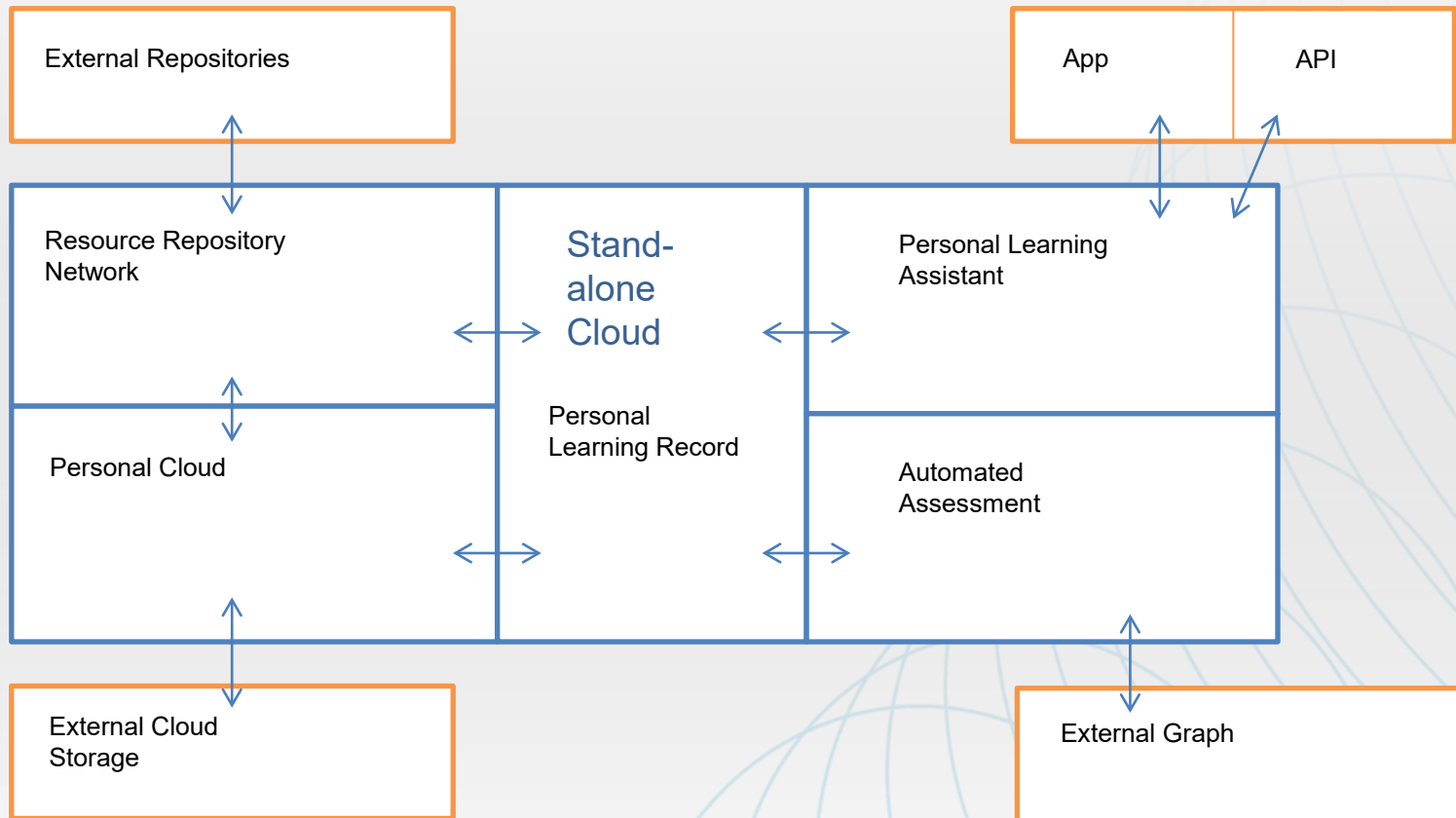


Scott Wilson (left), Tim Hand (right)

<https://www.google.com/search?q=ple+diagrams>

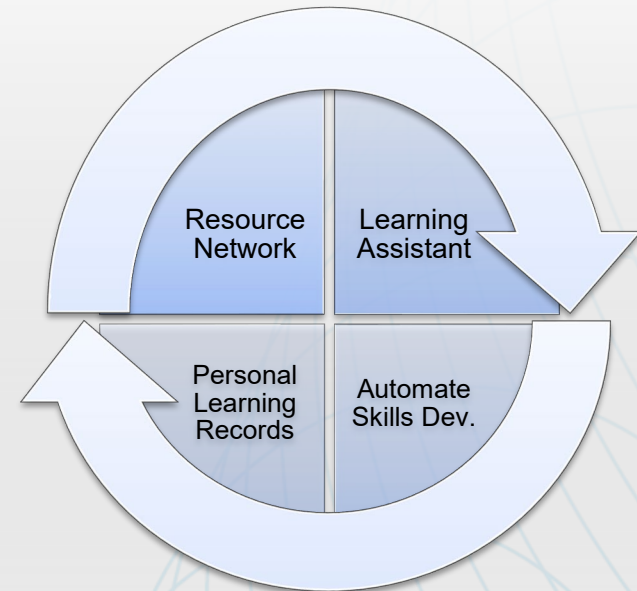
http://www.edtechpost.ca/ple_diagrams/index.php/mind-map-3

Simplified Design



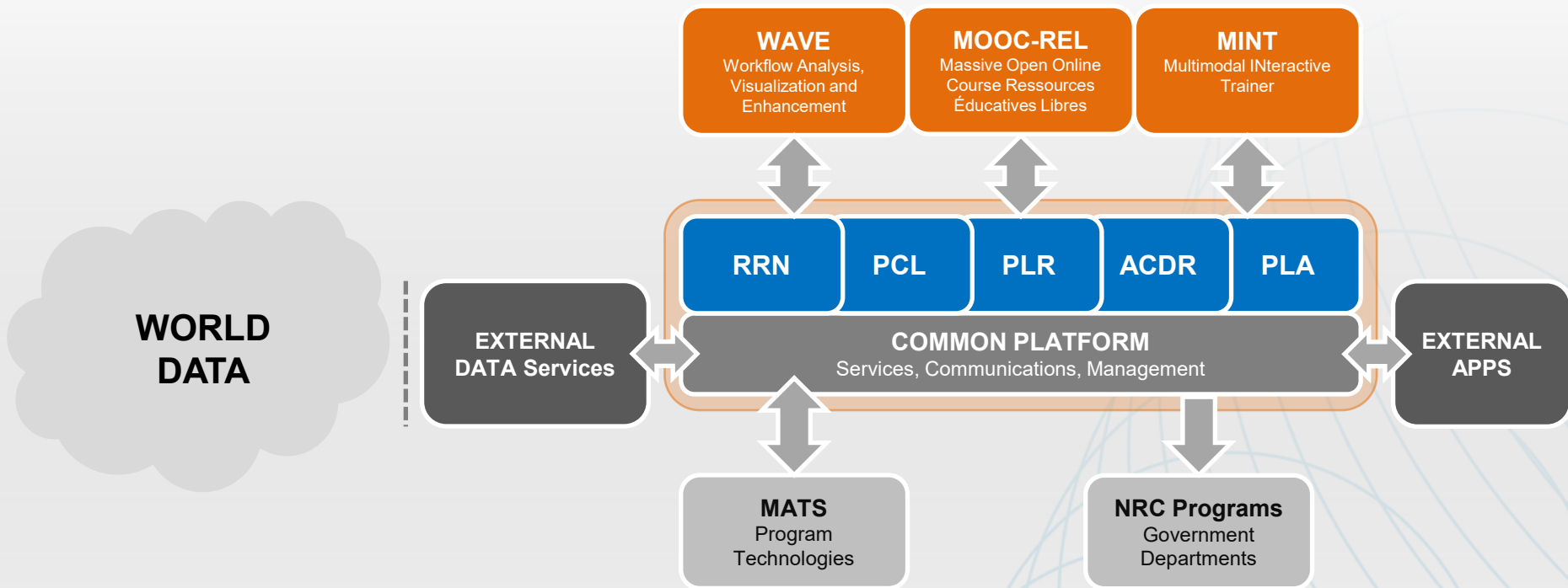
Learning and Performance Support System: Core Technology Development Projects

- Learning services network and marketplace
- Automated skills development and recognition
- Lifetime management of learning and training records and credentials
- Personal learning assistant to view, update and access training



- Learning as a cloud service and deep integration with external systems

Program Design and Scope

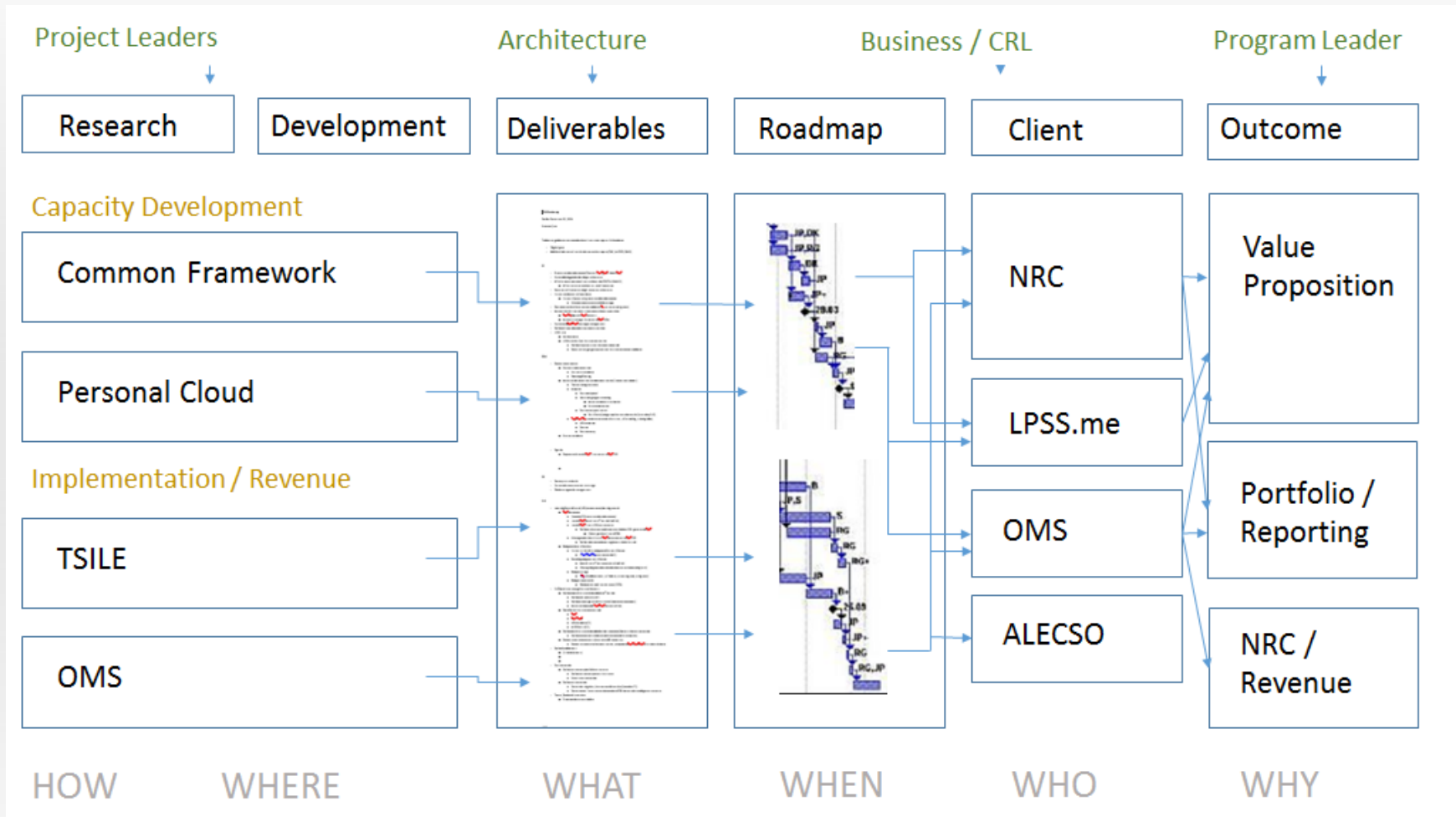


Blue: Core technology projects

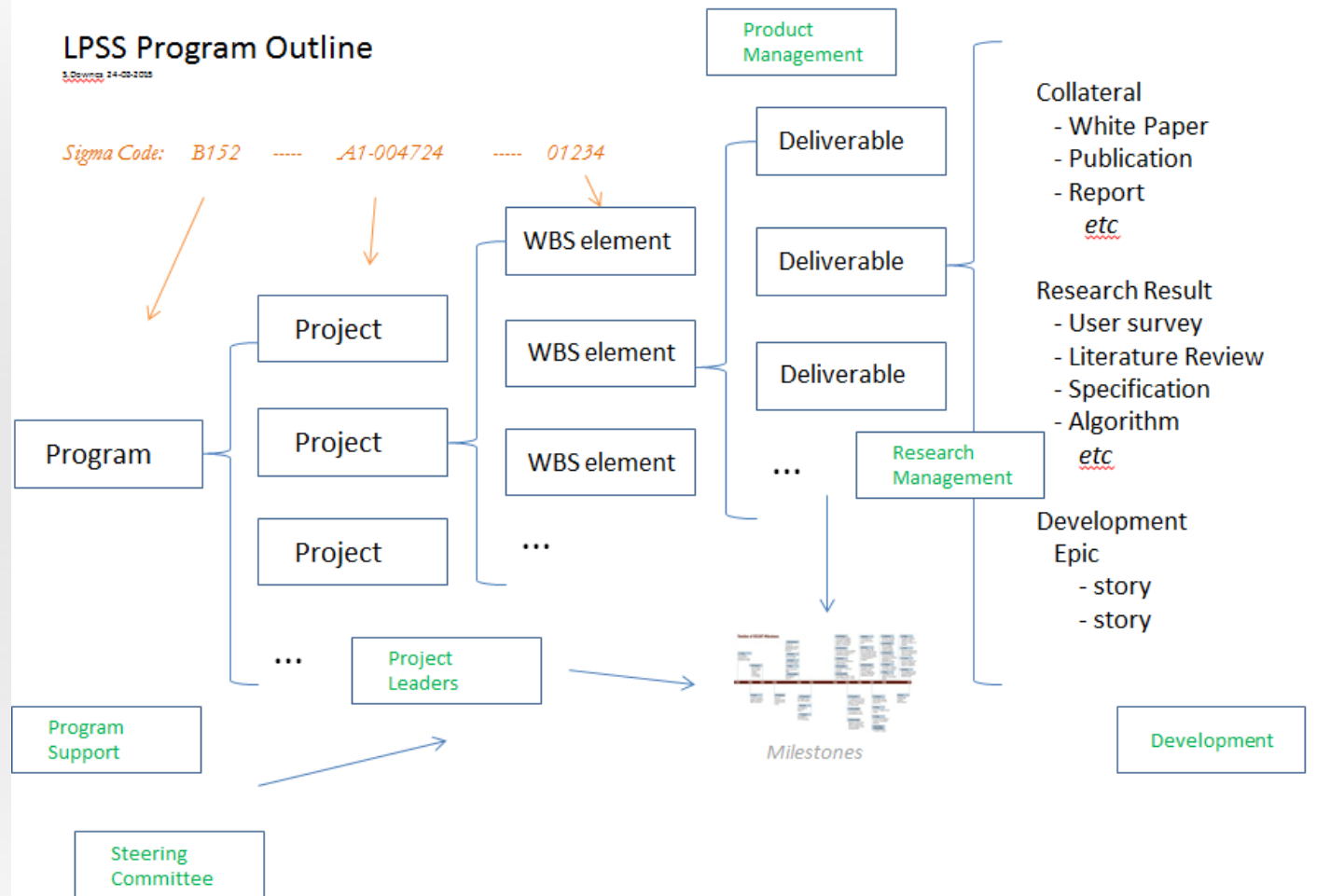
Orange: Implementation projects with commercial clients

Grey: Infrastructure, other NRC programs, external services

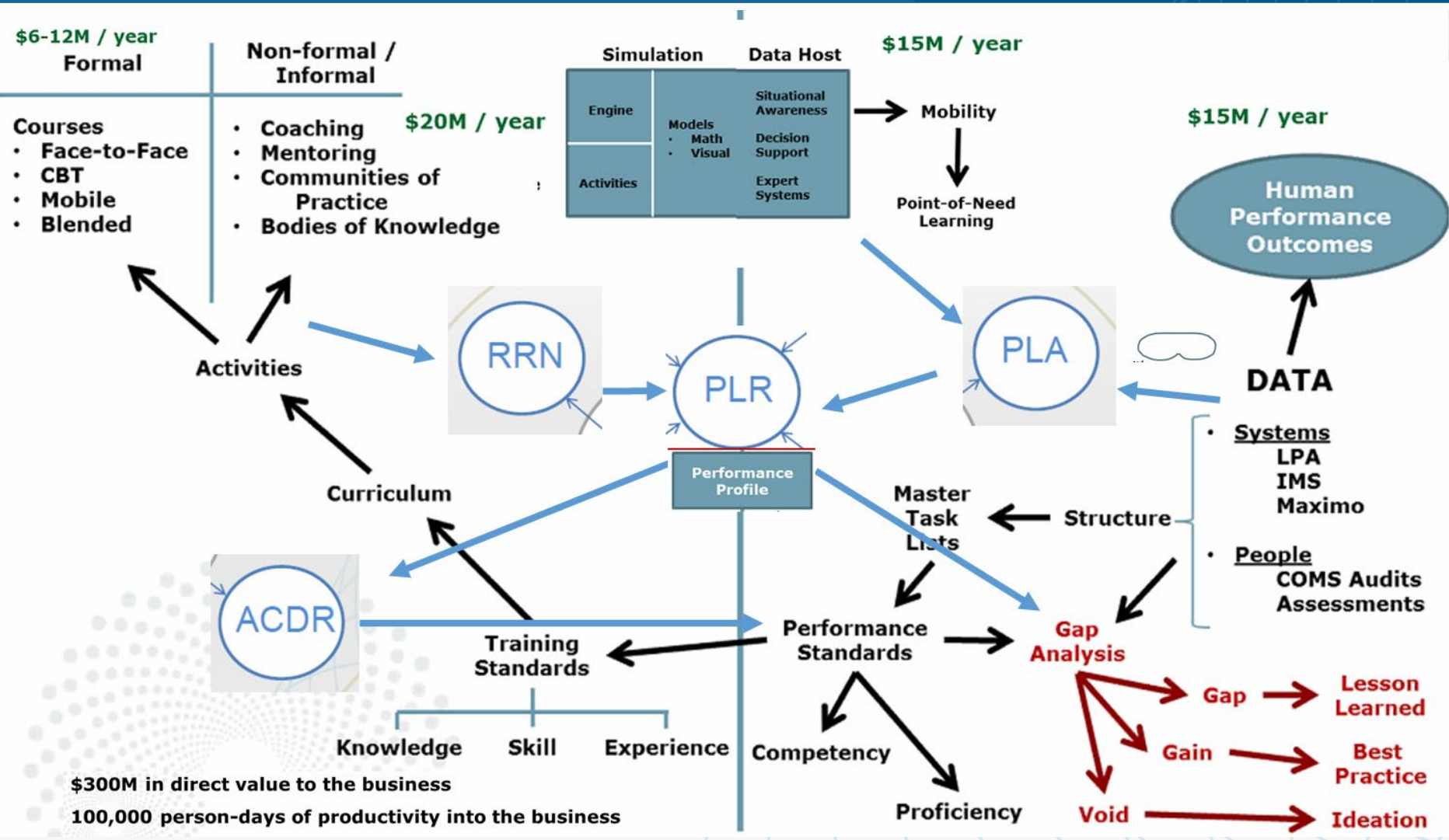
Program Organization



Program Outline

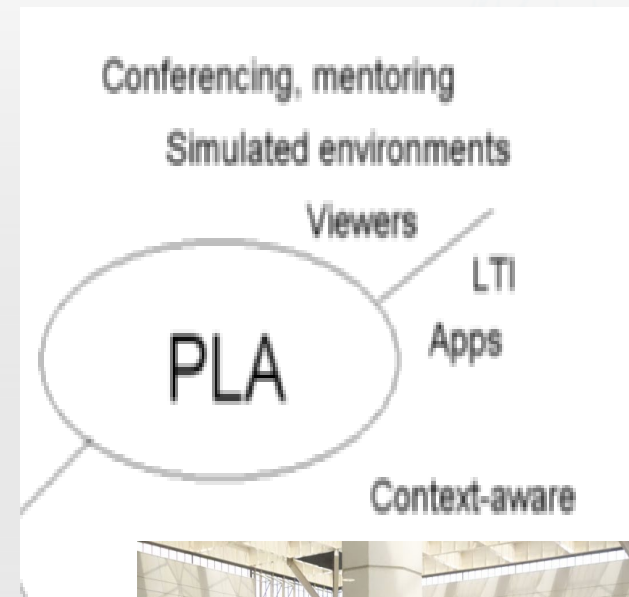


LPSS in Context

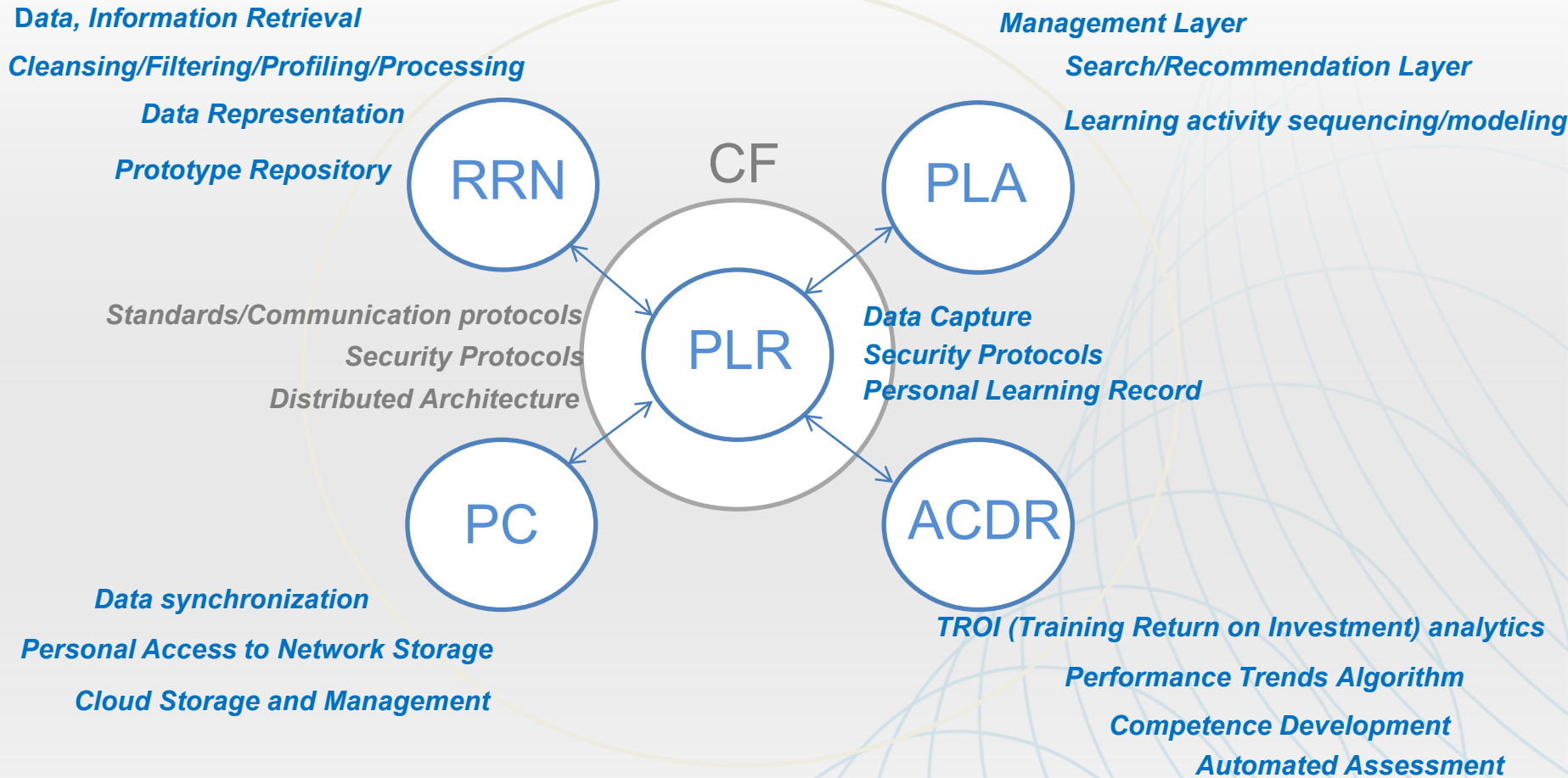


Personal Learning Assistant

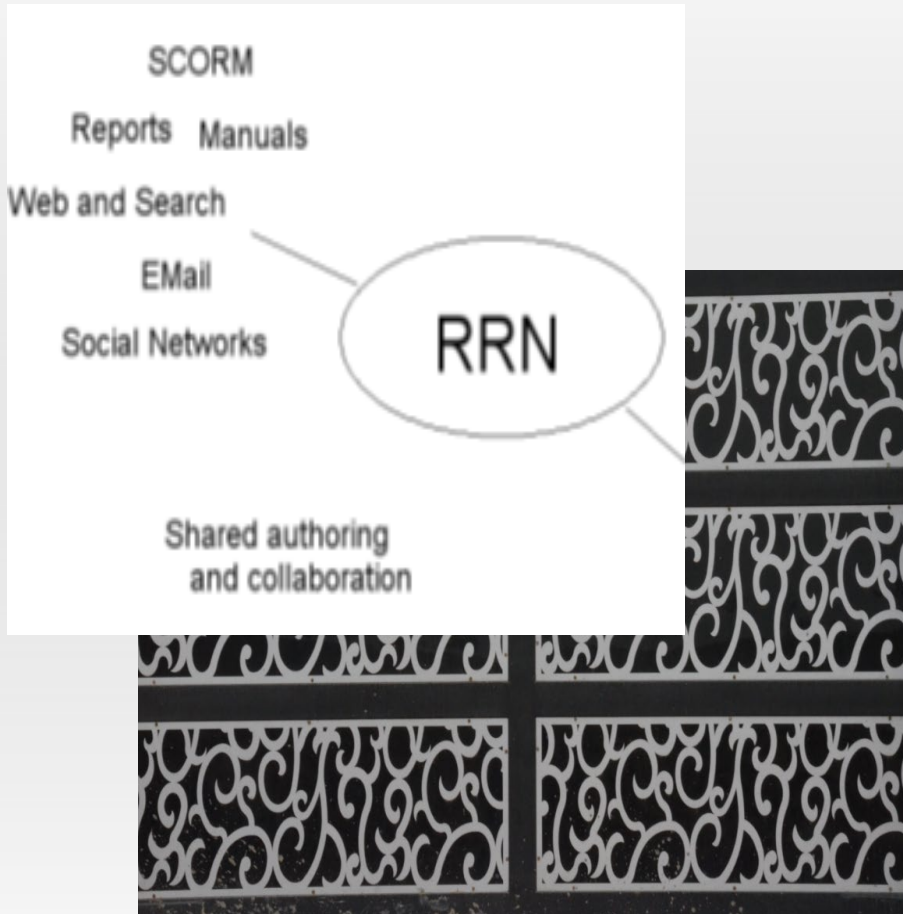
- Collect contextual information for system
- Display resources of various formats, including SCORM, LTI, etc.
- Support (scaffolded) authoring environments
- Project LPSS capacity into external software and devices



Project Details



Resource Repository Network



Manage and discover list of sources and resources

Maintain authentication and credentials

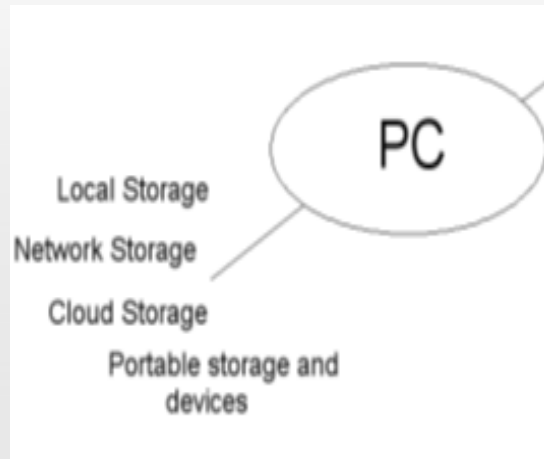
Support APIs and metadata standards

Gather, analyze and sort resources and/or metadata

Synchronized cloud data services (including Owncloud) to support data portability



Personal Cloud

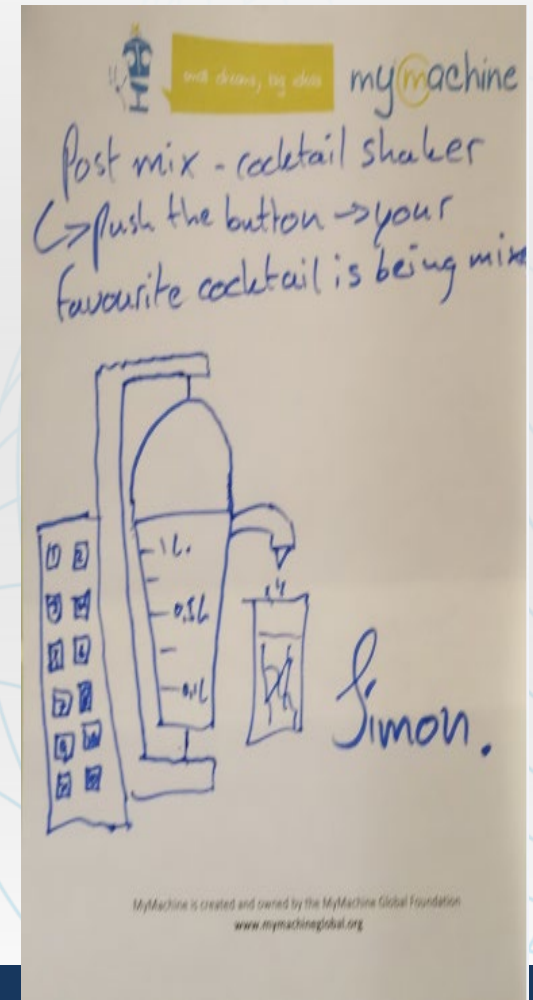


Manage list of local and remote storage systems
Maintain security, encryption, authentication and credentials

Include local or personal device storage

Manage and synchronize resource sets and data

Projection of learning services into multiple platforms



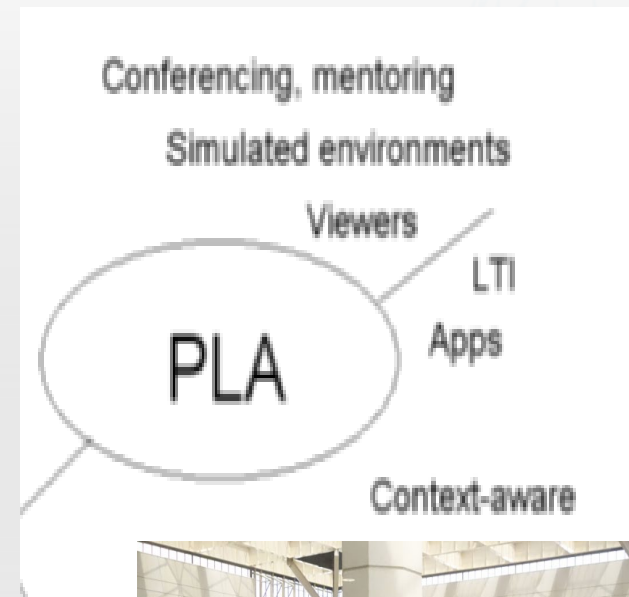
Personal Learning Assistant

Collect contextual information for system

Display resources of various formats, including SCORM, LTI, etc.

Support (scaffolded) authoring environments

Project LPSS capacity into external software and devices





Connecting to real learning and workplace environments

<http://www.nrc-cnrc.gc.ca/eng/rd/medical/>

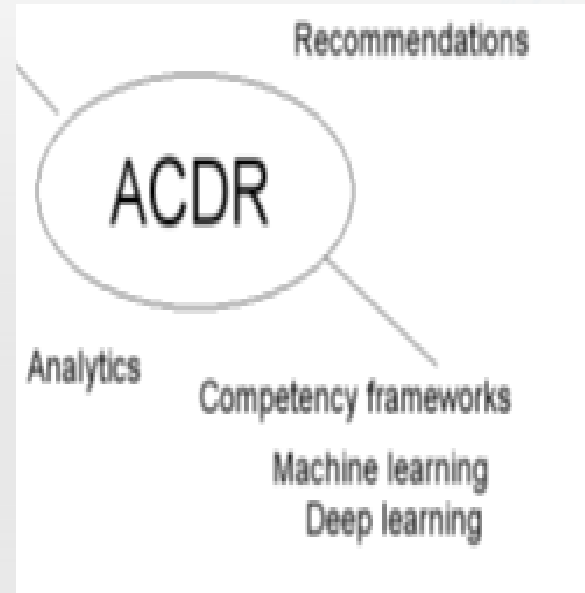
Competency Recognition and Development

Import or create competency definitions

Analyze interactions for skills and learning gaps

Support development of learning plans

Provide resource and service recommendations



Analytics as a service – analogy with web translation

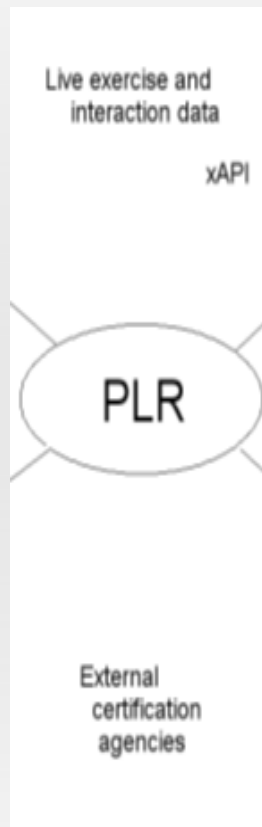




The Personal Learning Record – data owned by the individual, shared only with permissions

<http://halfanhour.blogspot.de/2014/12/eportfolios-and-badges-workshop-oeb14.html>

Personal Learning Record



Collect full record of interactions with all resources, external systems

Support learning activity data exchange formats (eg. xAPI)

Collect and present a person's personal portfolio

Display certifications and credentials (eg. badges)

Maintain 3rd party certification

Relevant PLR Projects

Manchester PLE
Project
Responsive Open
Learning
Environments (ROLE)

<http://www.role-project.eu/>

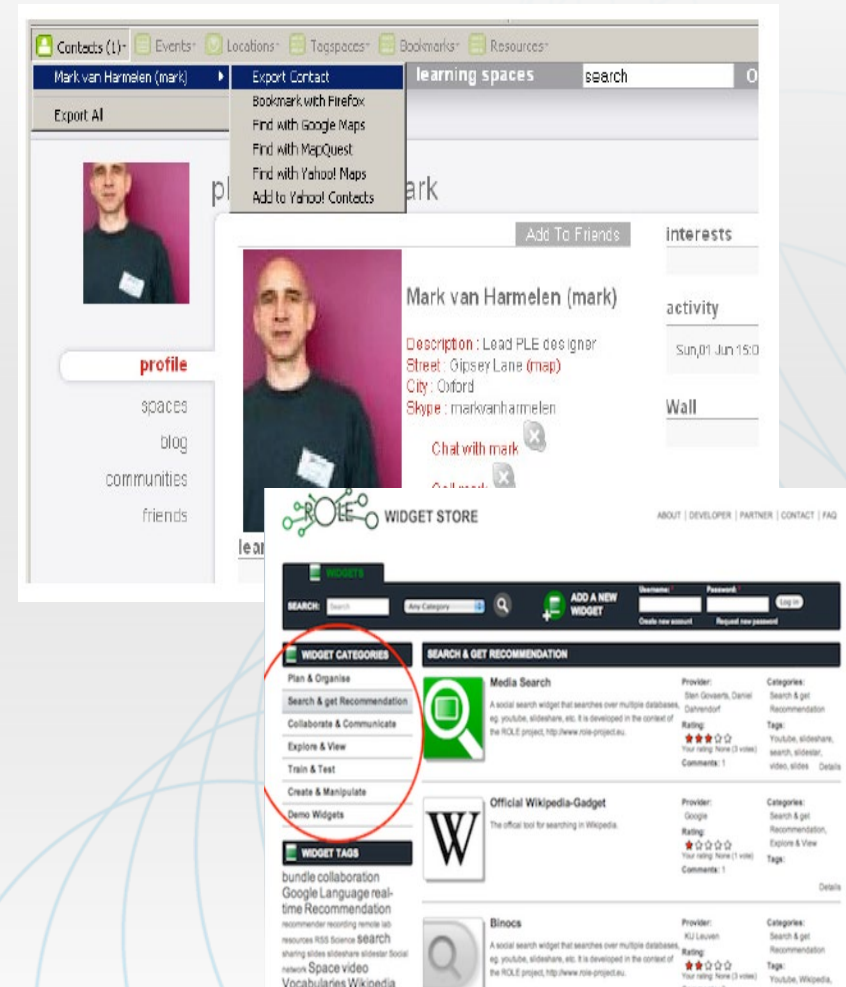
Known <http://withknown.com/>

Learning Locker

<http://learninglocker.net/>

Mahara <https://mahara.org/>

<http://personalis.wikispaces.com/PLE+Projects>



Implementation – from MOOC to Personal Learning

MOOC-REL (OIF)

ALECSO

MINT

PCO Badges

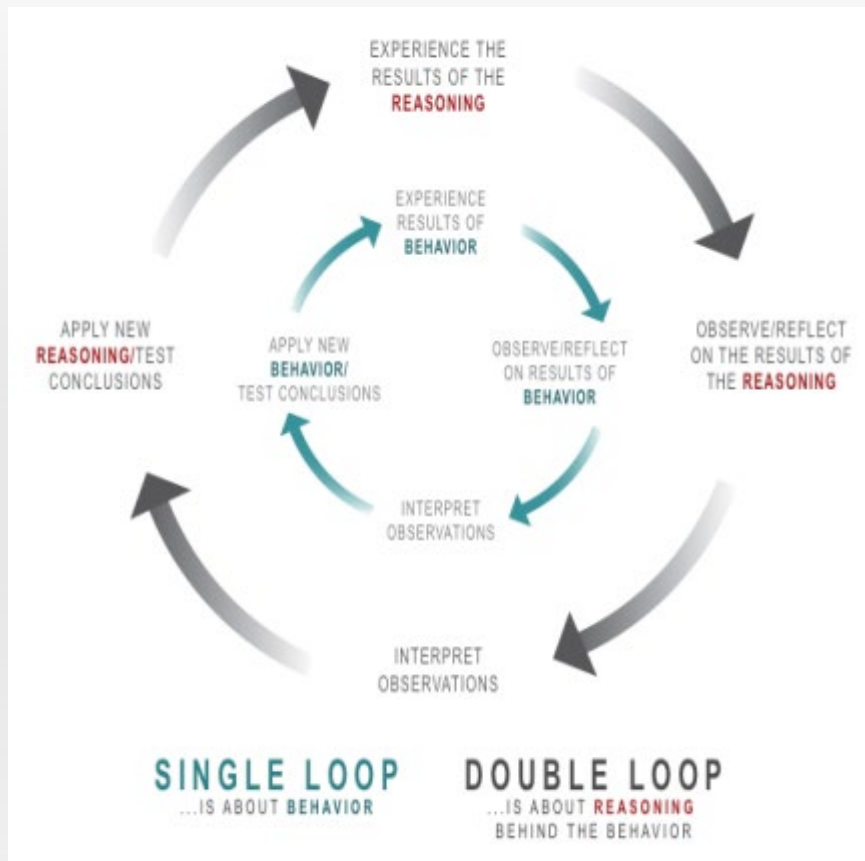
TSILE xAPI

2Sim Simulator xAPI

Workplace T&D



Implementation Projects



Ultimately, the objective is to support individual learning in a network

<http://integralleadershipmanifesto.com/manifesto/making-subject-object/>

Why is this Difficult?

It's not one big thing...

... but a set of many small things

Tasks that are simple in an enterprise system...

- Like data storage
- Like content distribution
- Like authentication
- Like analytics

... become that much more difficult

Launch Day



About

Log in

Forgot password

Welcome to LPSS! - Bienvenue à SAAR!

The NRC Learning and Performance Support Systems (LPSS) will enable you to develop your own learning program from the ground up. Working with a range of industry, technology and academic partners, we are researching and developing a dynamic personal learning environment with enhanced access to resources, activities and credentials from multiple providers around the world.

Your learning, your time, your way.

Thank you for your interest in the pre-release of LPSS.

Les systèmes d'aide à l'apprentissage et au rendement du CNRC (SAAR) vous permettra de développer votre propre programme d'apprentissage. En travaillant avec l'industrie et des partenaires académiques, nous étudions et somme entrein de développer un environnement d'apprentissage personnel dynamique avec un meilleur accès aux ressources, aux activités, et aux attestations d'études à partir de plusieurs fournisseurs à travers le monde.

Votre apprentissage, votre temps, votre chemin.

Merci de votre intérêt pour la version prédiffusion de SAAR.

[Sign-up for the pre-release! »](#)

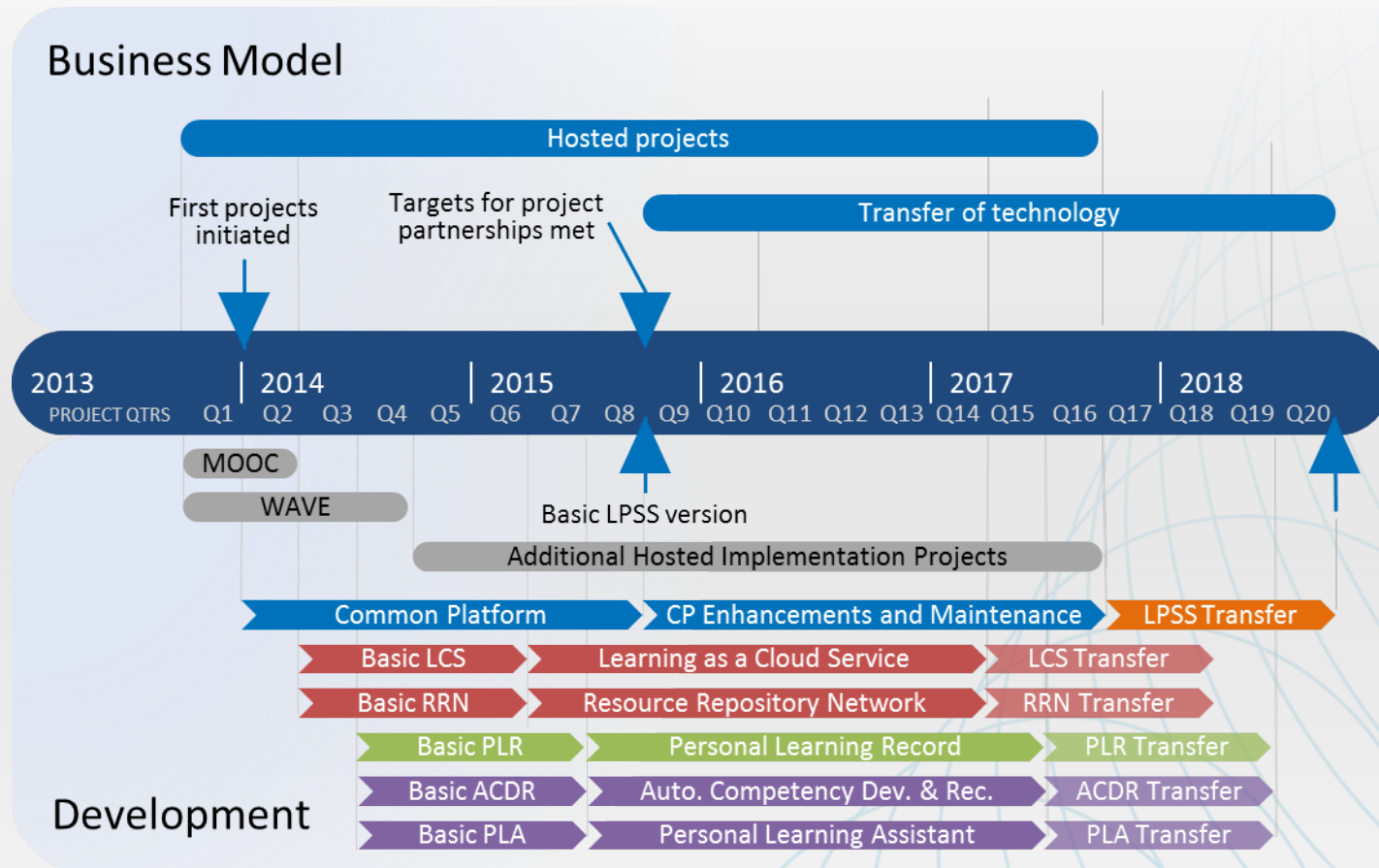
[Inscription à la prédiffusion »](#)

http://lpss.me – prototype PLE

The screenshot displays the LPSS (Learning Progression System) interface. At the top, there is a navigation bar with the LPSS logo and menu items: Resources, Competencies, Learning record, About, Help, Settings, and Logout. The main heading is 'Browse competencies' with a help link. Below this is a search bar with the placeholder text 'Search for what interests you' and a 'Search' button. To the right of the search bar is a pagination control showing page numbers 1, 2, 3, 7, and navigation arrows. Below the search bar are two buttons: 'Competency' (highlighted in green) and 'Import'. There are also two filter checkboxes: 'Competency hierarchies' (checked) and 'Only my competencies' (unchecked). Below the filters is a grid of competency cards. Each card contains a description of a competency, an 'Add to my profile' checkbox, and a resource count in a dark circle. The cards are arranged in a grid that is partially visible, showing several rows and columns of competencies.

Competency Description	Resources
Acknowledges the practical limits of a system for problem solving [1]	69
Analyze a situation in a systematic manner. [2]	19
Applies different software development methodologies [1]	59
Be familiar with adult learning techniques such as mentoring, coaching, and the sharing of expertise and best practices. [2]	72
Communicate to clients those activities that can and cannot be done. [2]	15
Acts with fairness, courtesy and good faith towards clients, colleagues and others [1]	
Analyze issues to separate the cause from the symptoms. [2]	16
Applies the correct statistical methods to analyze and investigate data [1]	
Build mutual trust by being reliable, consistent and credible. [2]	
Communication [2]	10

Program Implementation Timeline



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