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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.



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

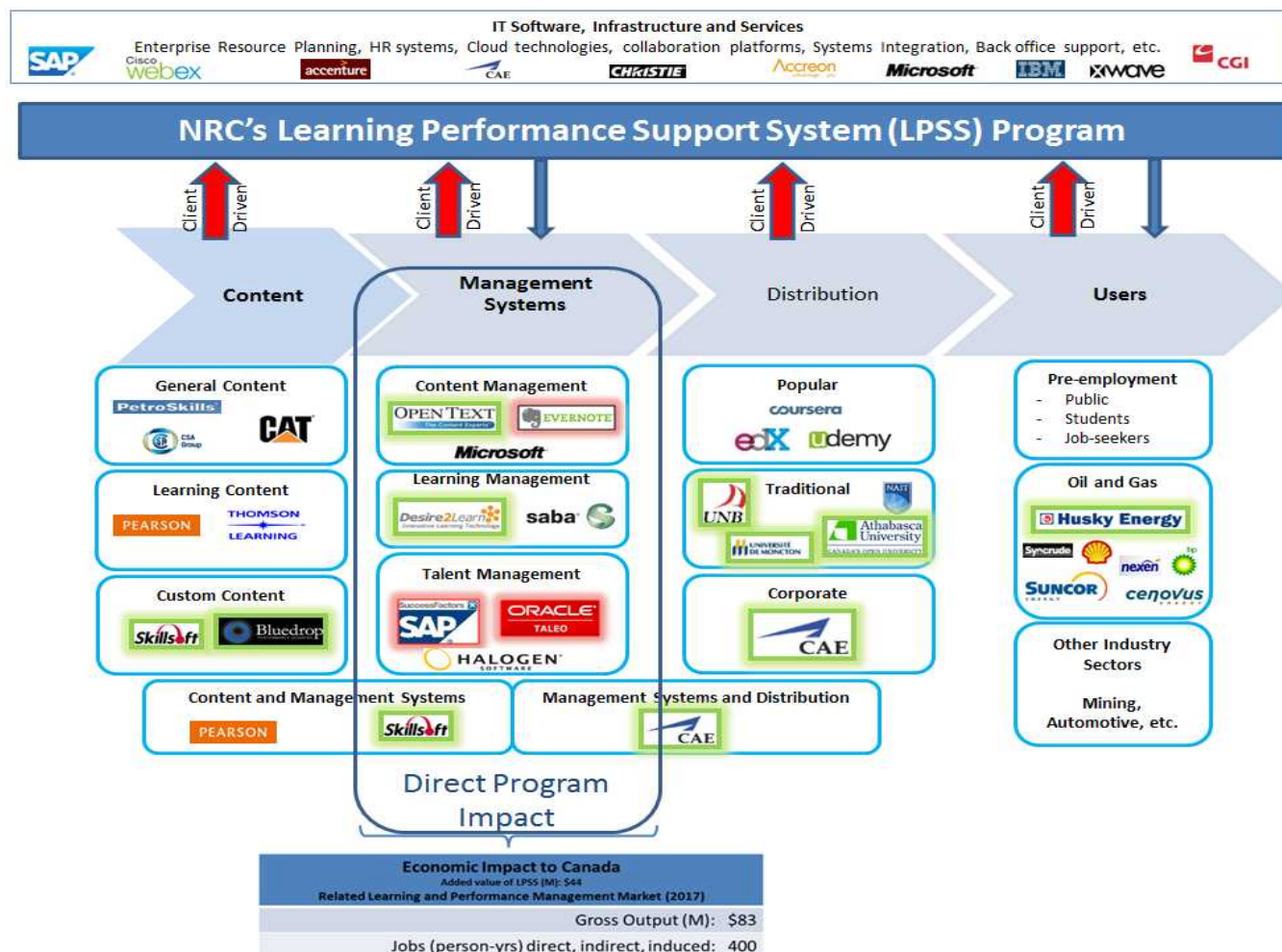


NRC – Previous Work in eLearning

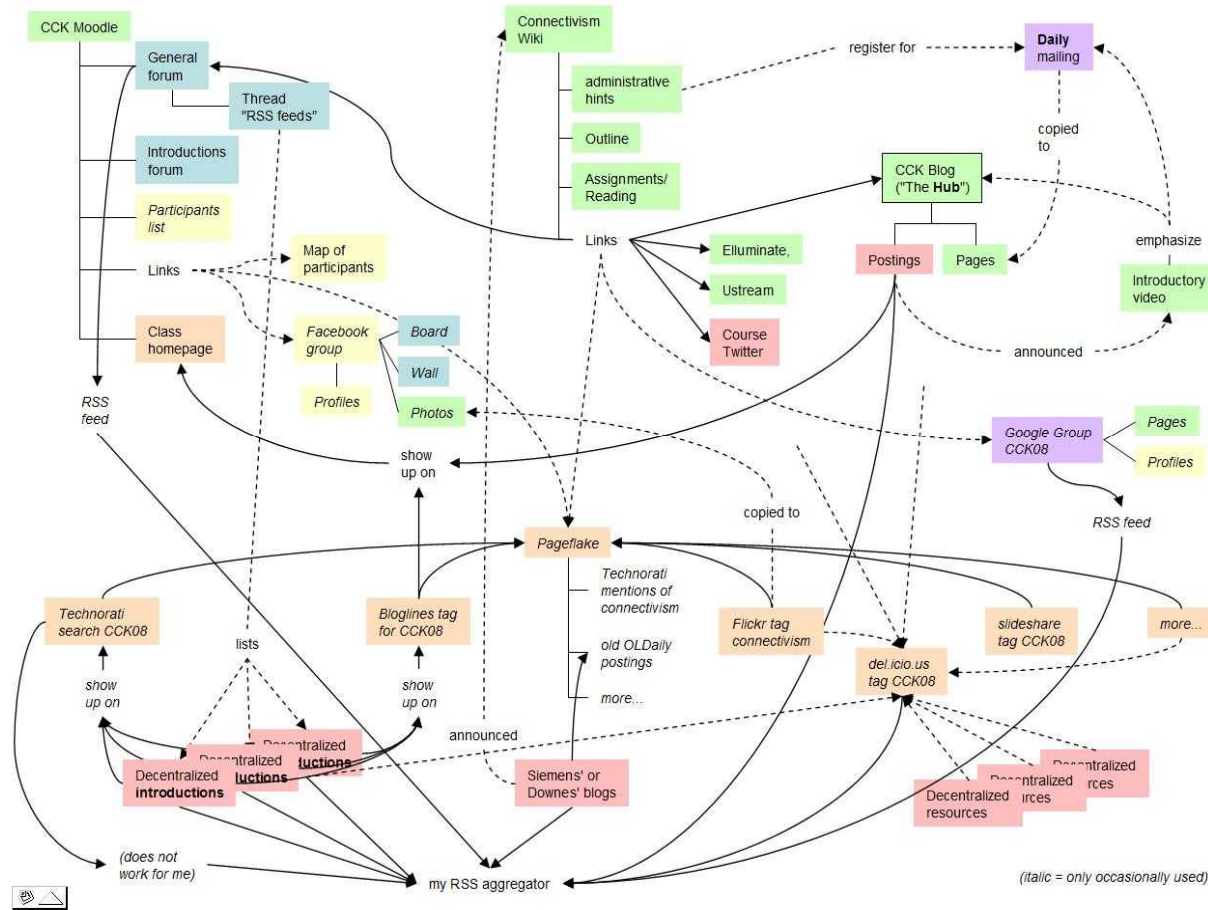


- eduSource Resource Repository Network (Canadian CANARIE Network)
- Sifter/Filter Content Recommender (commercialized as RACOFI)
- SHARE Sentiment Analysis
- Synergic3 Collaborative Workflow (commercialized with Desire2Learn)
- gRSShopper / MOOC / Connectivism
- 2Sim Haptic Simulations

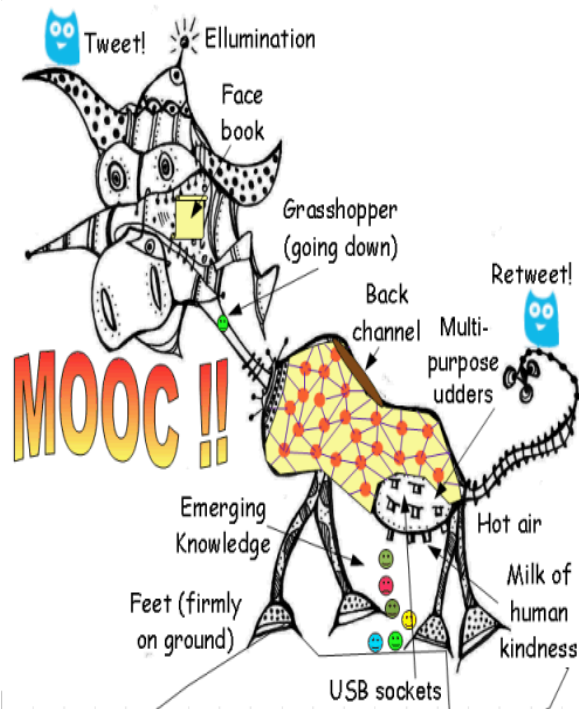
LPSS in Canada's Learning Technology Marketplace



The Connected Application

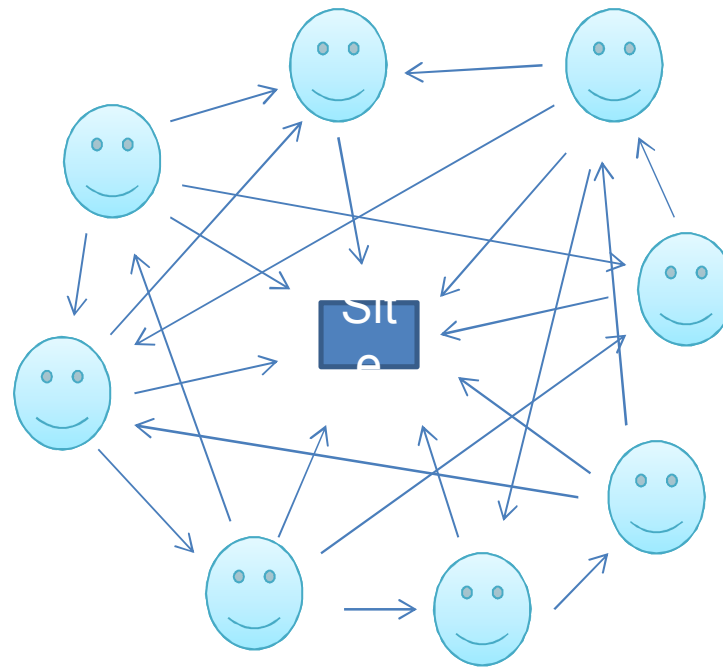


<http://x28newblog.blog.uni-heidelberg.de/2008/09/06/cck08-first-impressions/>



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

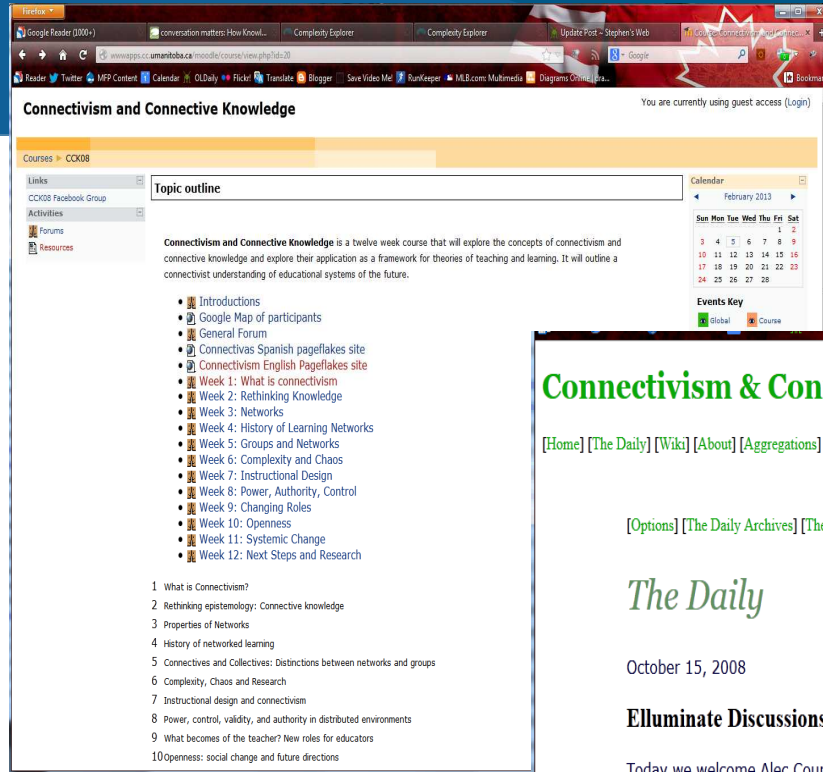
- Open access
- Open content
- Open activities
- Open assessment

Diversity

- Multiple tools
- Individual perspective
- Varied content

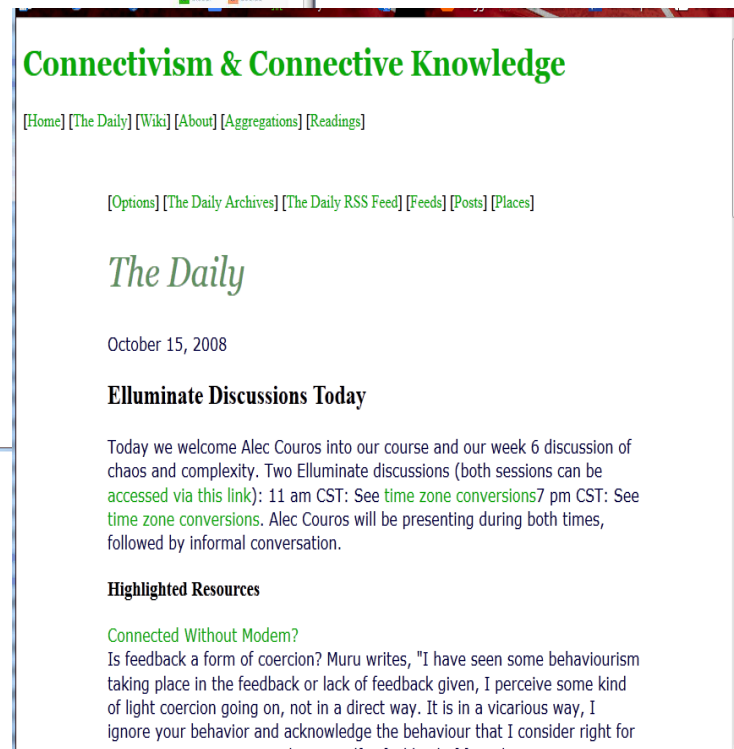
Interactivity

- 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 [NAME] [OPTIONS] [LOGOUT]

SEE I CAN PLENK, YOO!

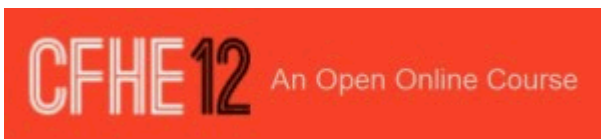
PLENK 2010

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...

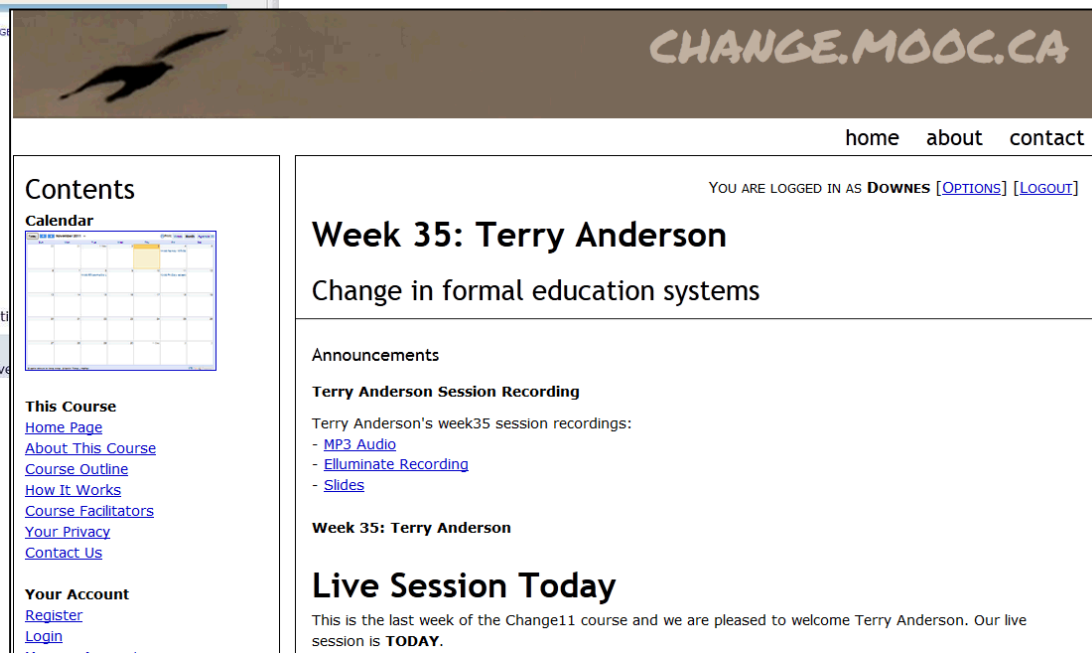
1800 students

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



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](#)
- [Eliminate 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

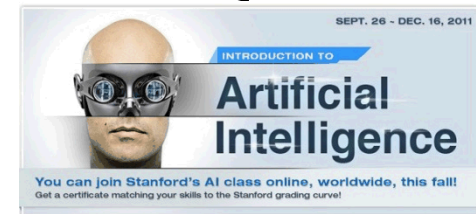
tasks

content

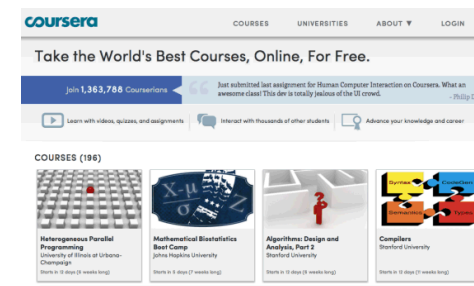
c



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



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



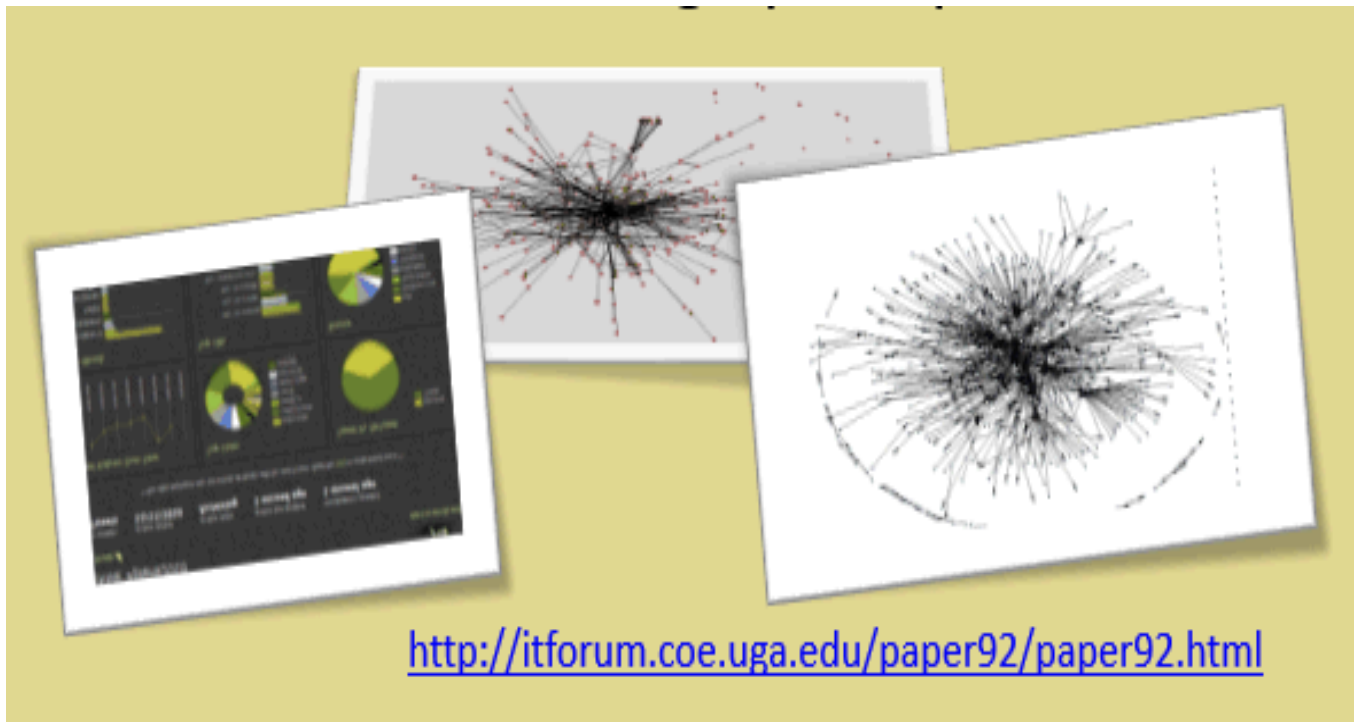
<https://www.coursera.org/>



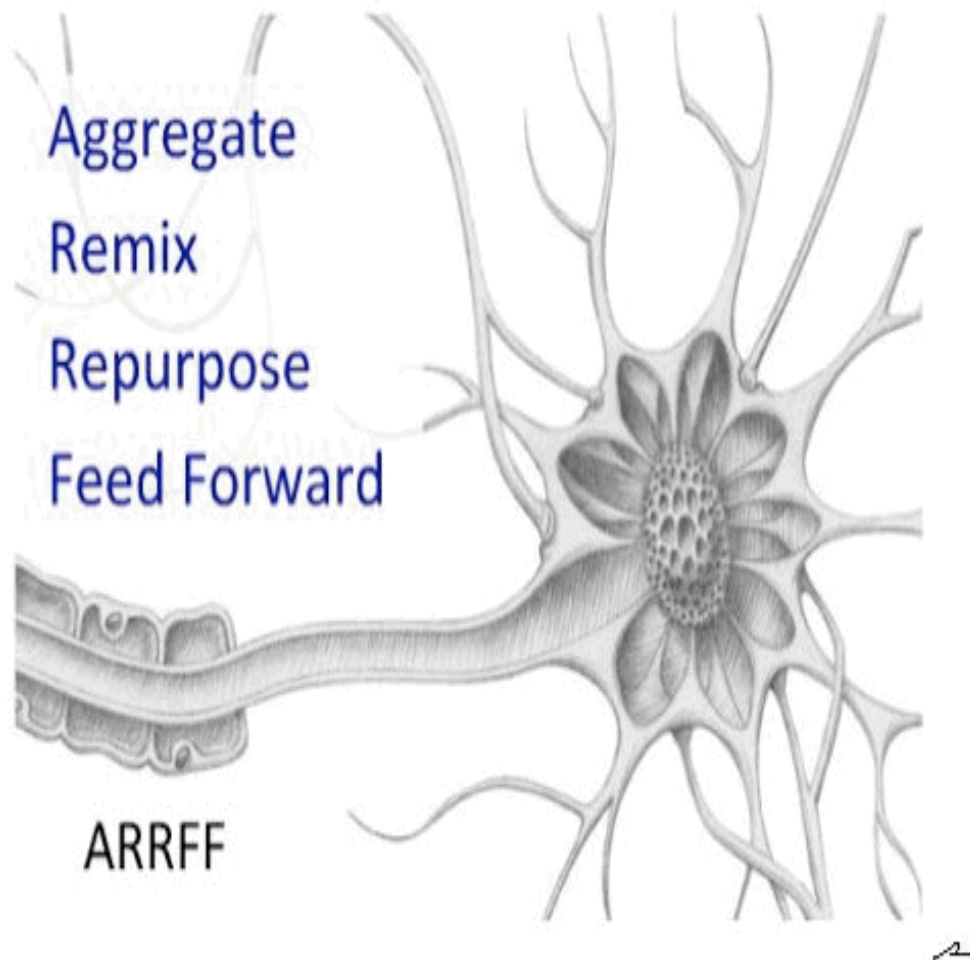
<http://lisahistory.net/wordpress/2012/08/three-kinds-of-moocs/>

Design principles of the cMOOC

Autonomy, diversity, openness, interactivity

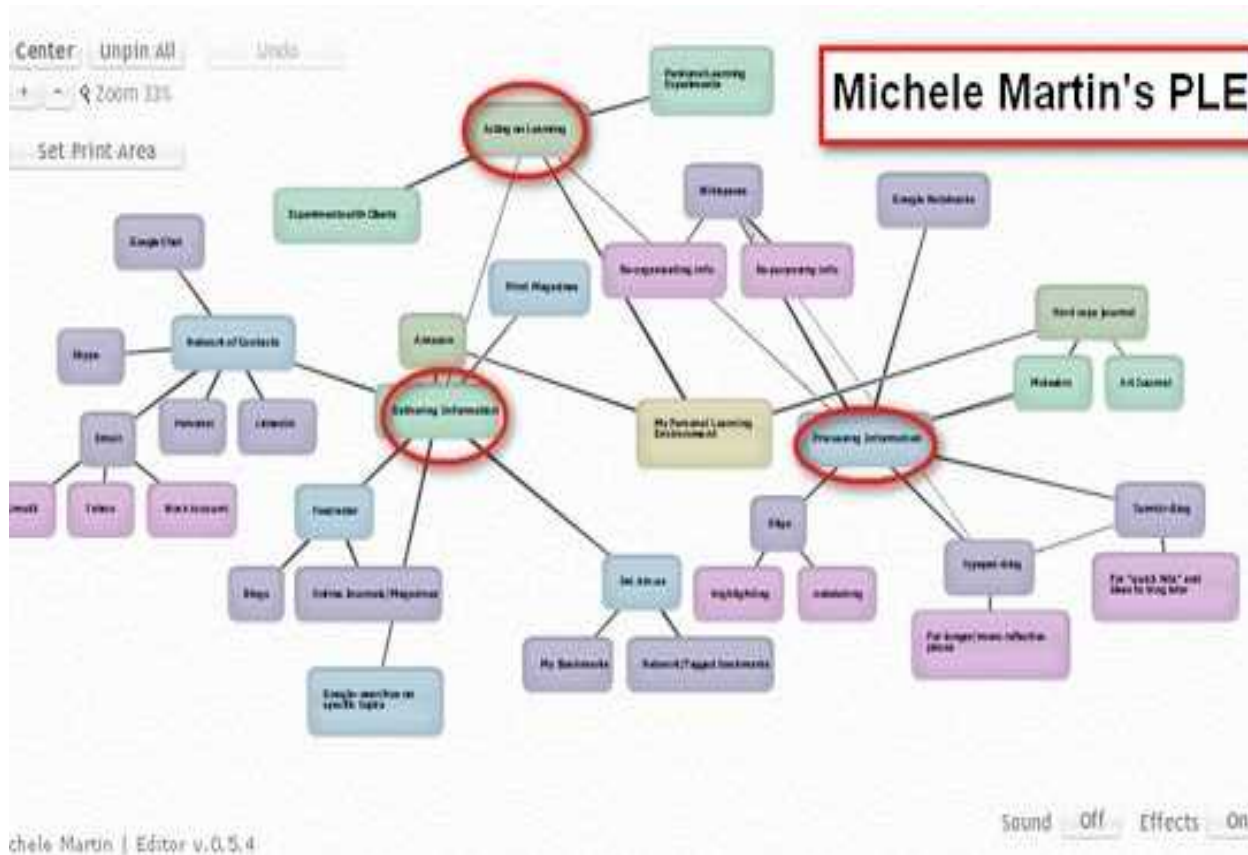


Pedagogy of the cMOOC



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

Personal Learning



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

Underlying MOOC Support

1. First student creates resource and sends info to course

Site

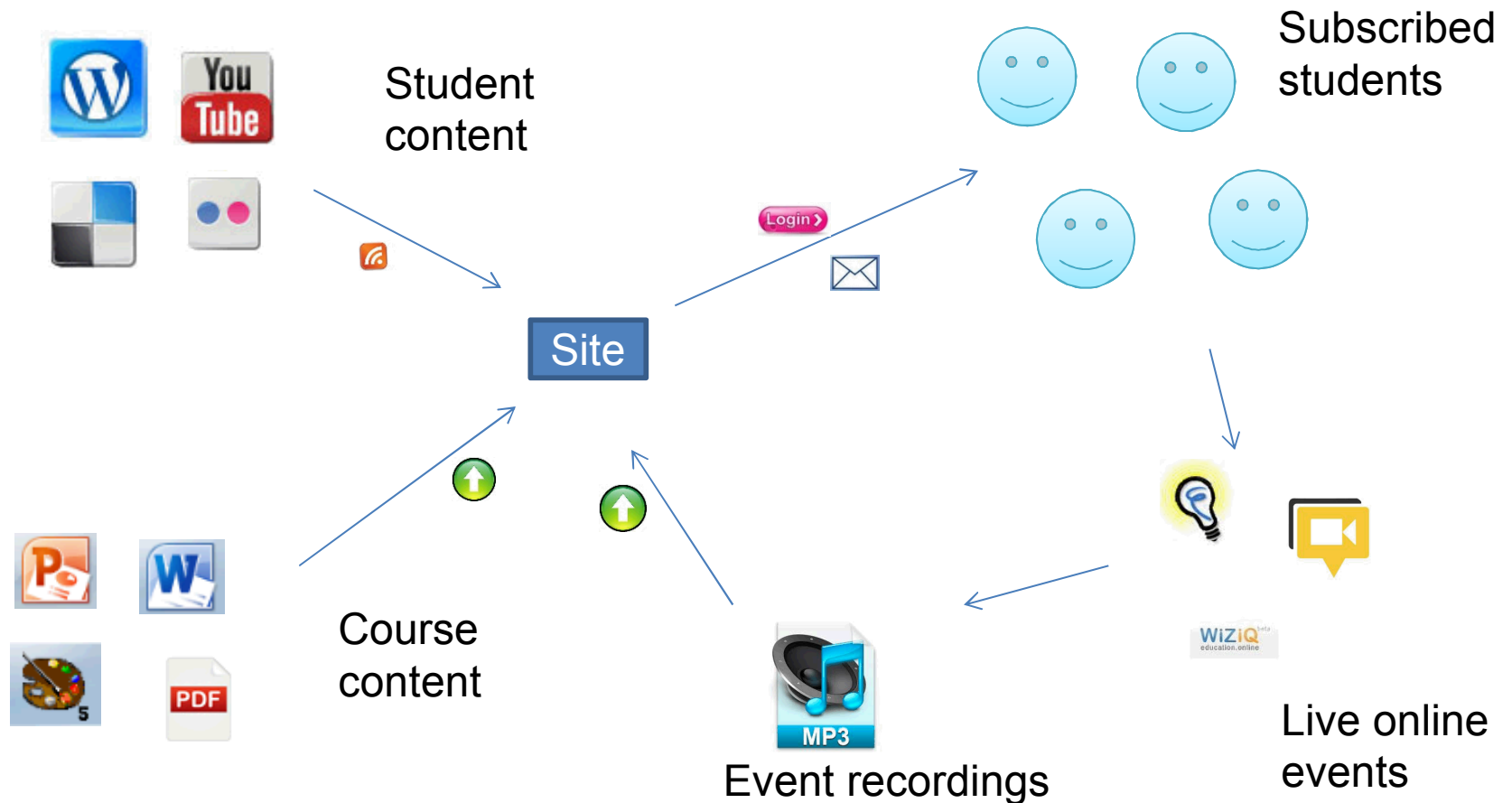
2. Second student sees resource info in newsletter and RSS feed

3. Second student accesses the resource directly

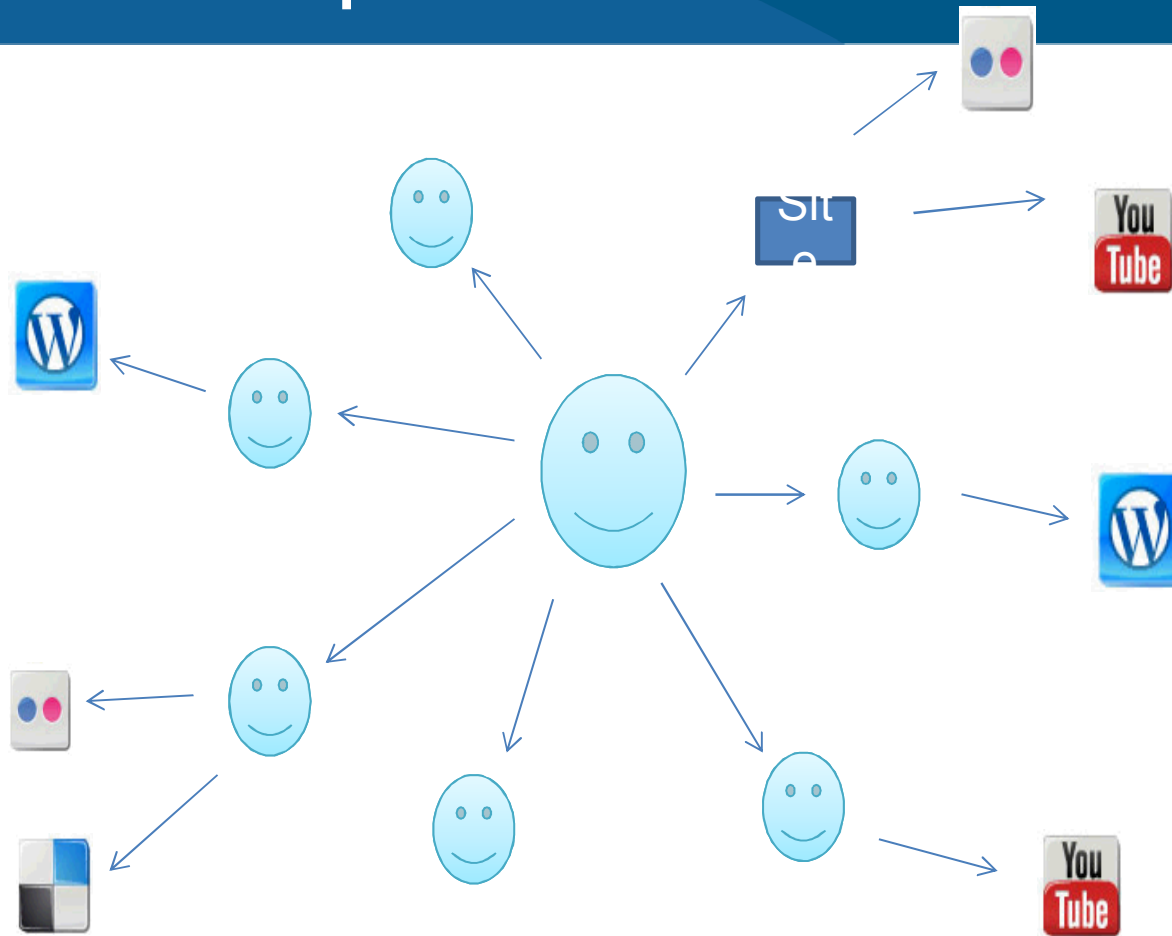
4. Second student finds link to third student's resource



Course Provider Perspective

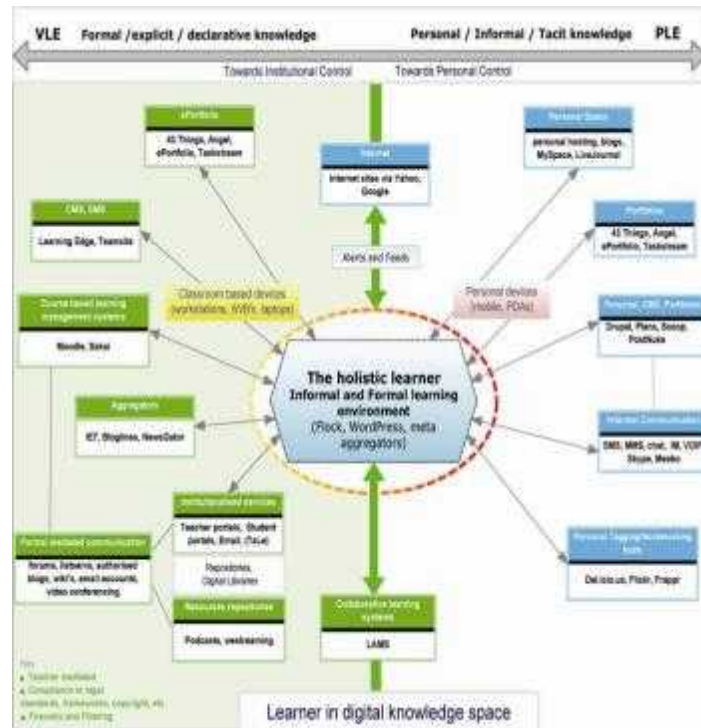
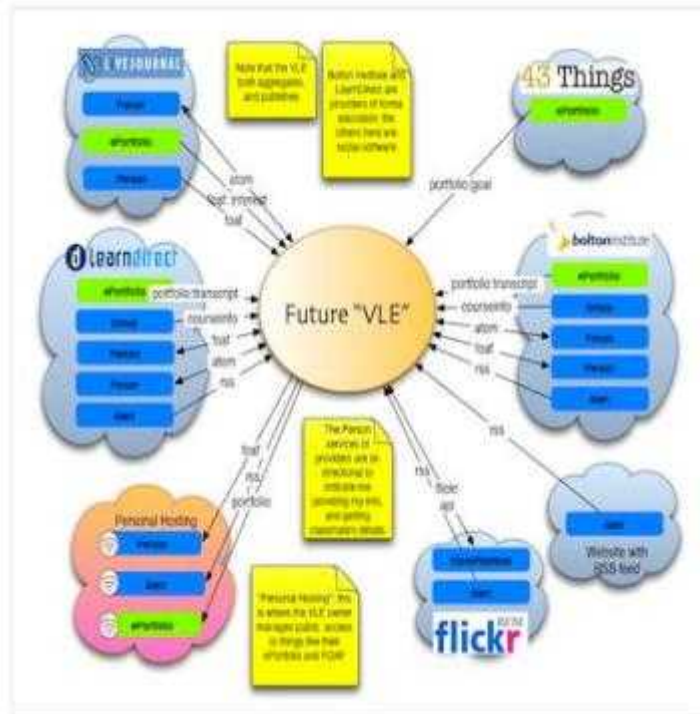


The Student's Perspective



A range of different resources and services

The design is based on putting the learner at the centre

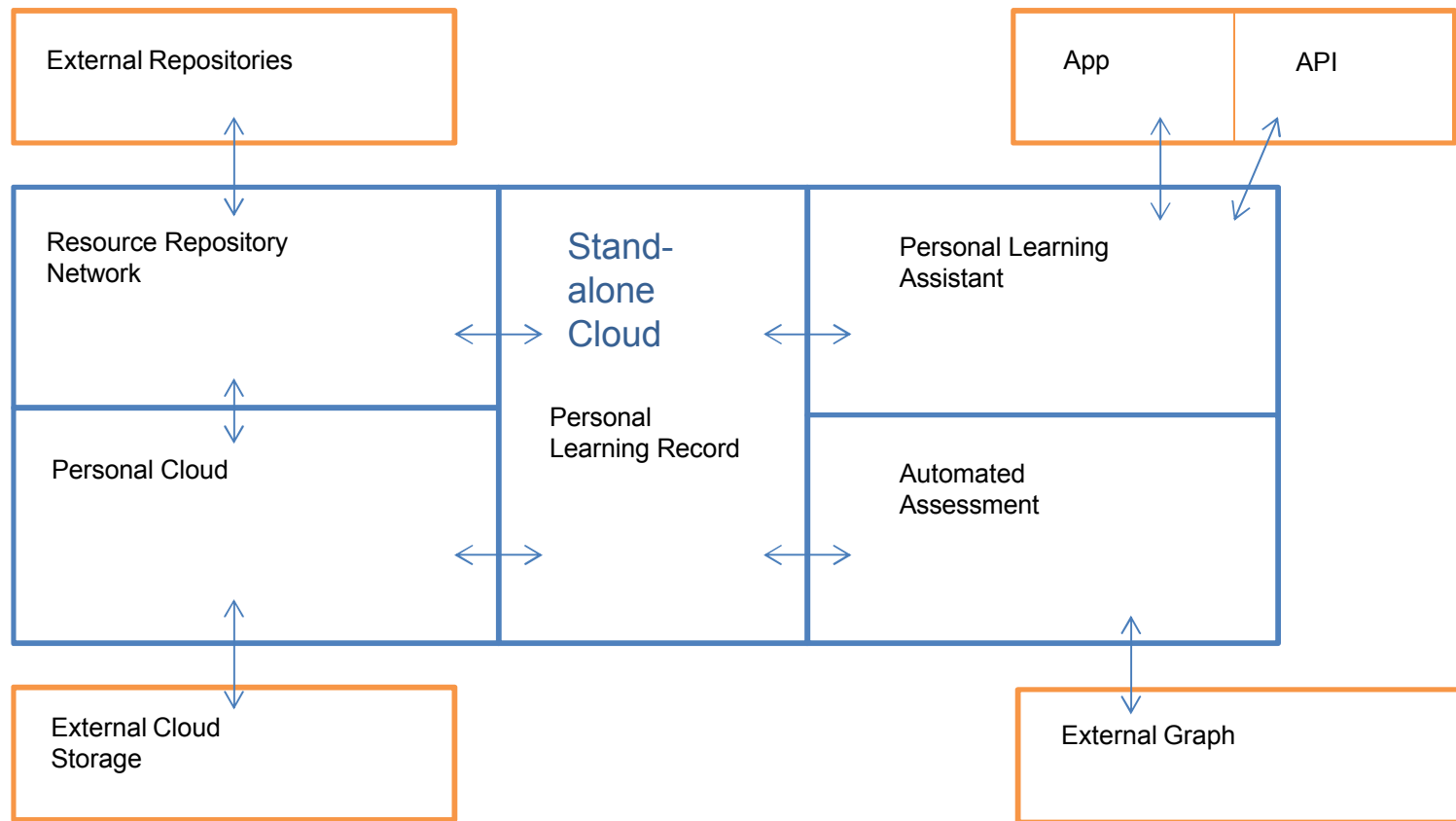


Scott Wilson (left), Tim Hand (right)

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

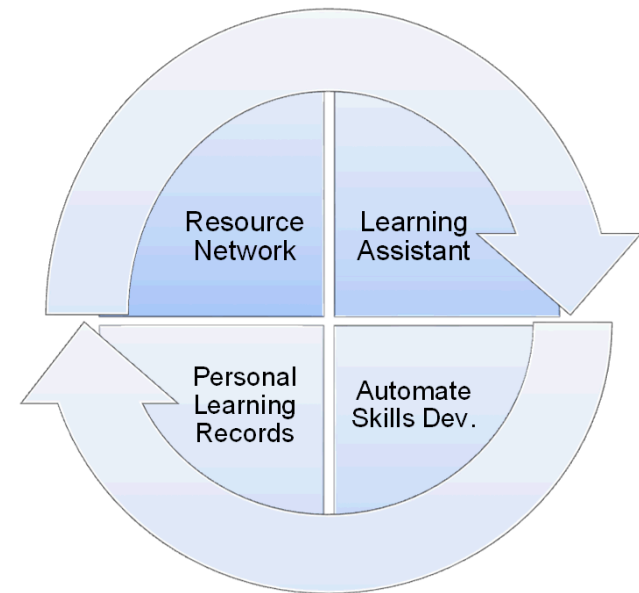
http://www.edtechpost.ca/ple_diagrams/index.php/mind-map-3

Simplified Design



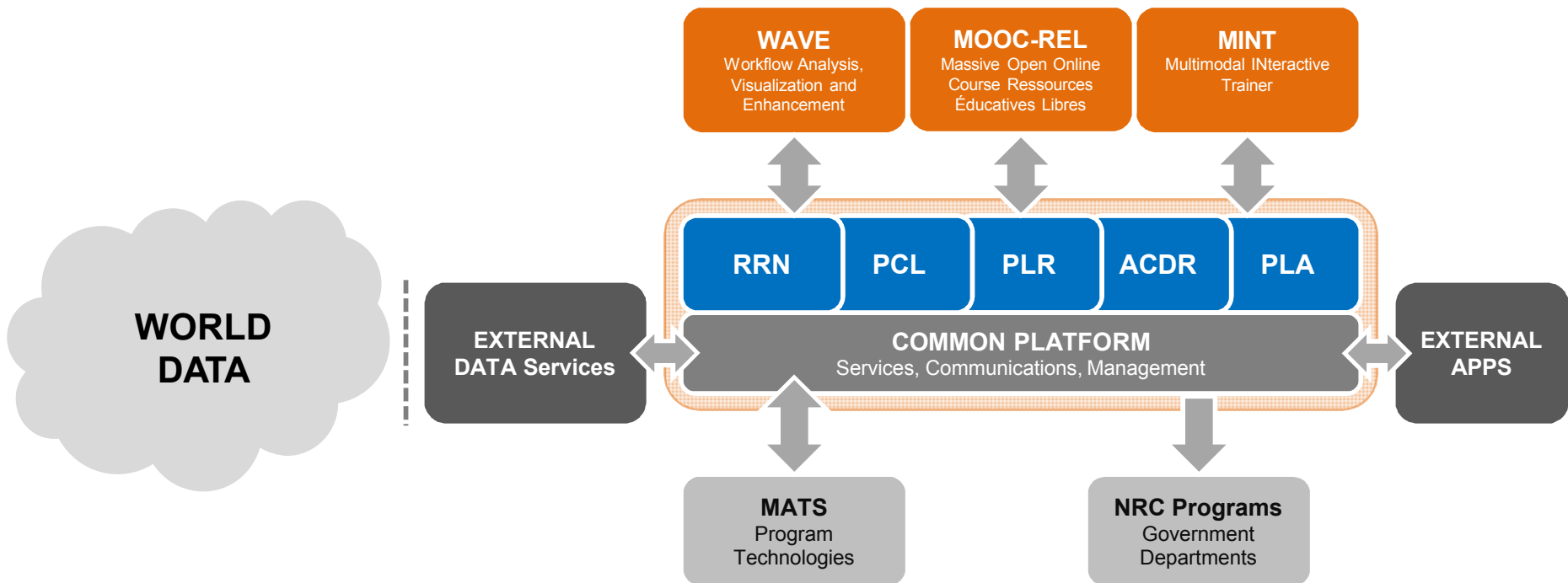
Learning and Performance Support System: Core Technology Development Projects

- 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

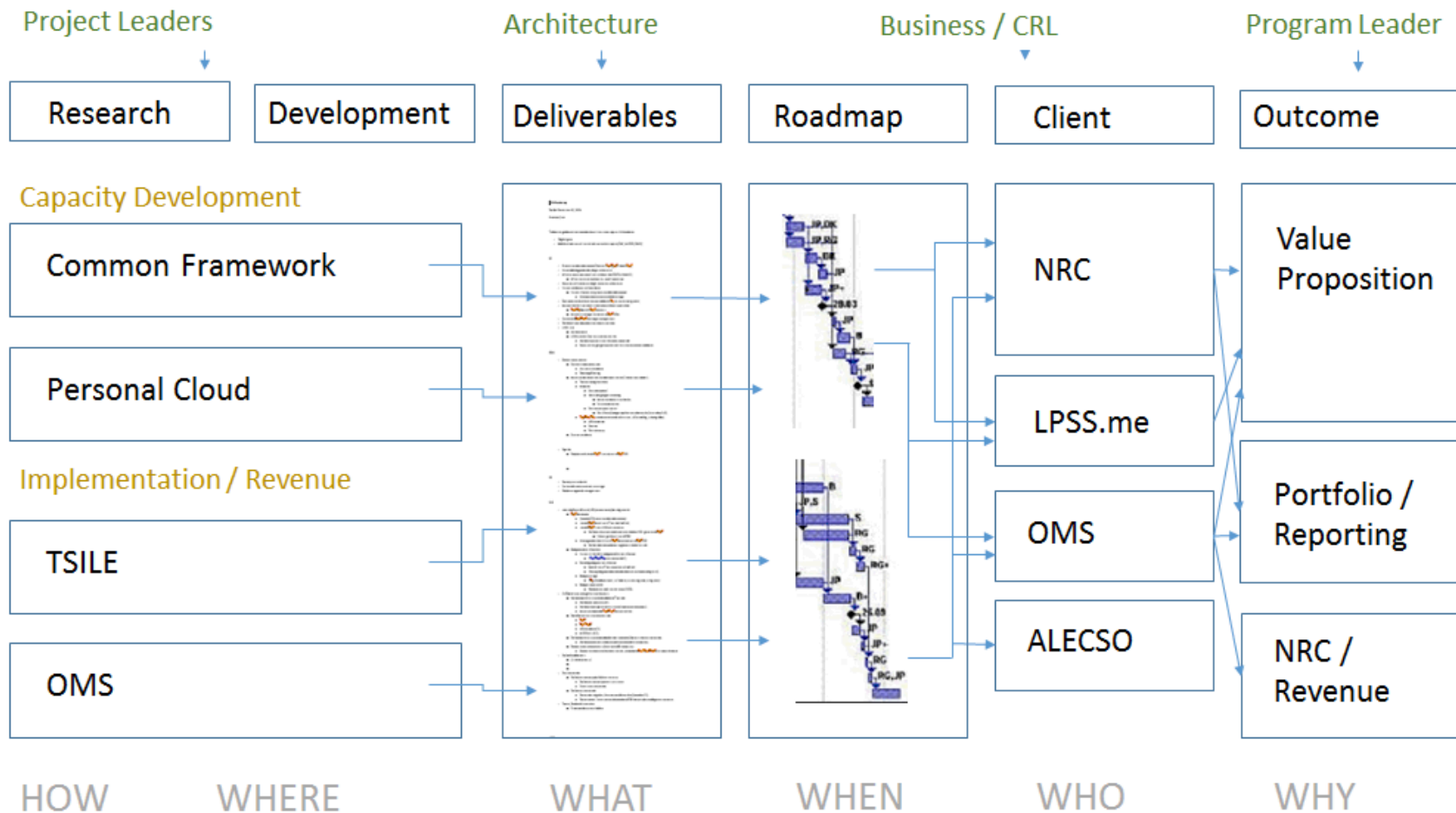


Blue: Core technology projects

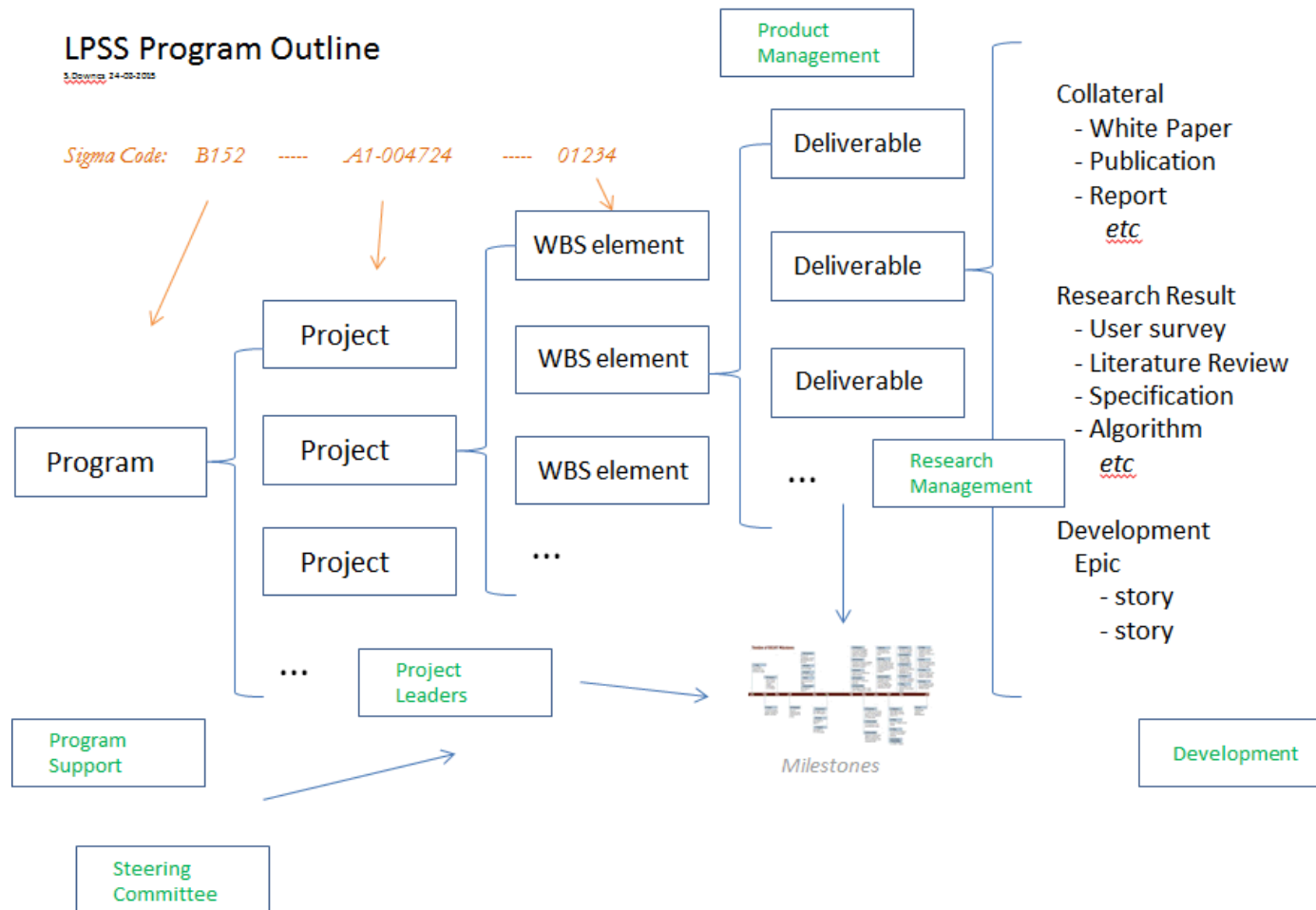
Orange: Implementation projects with commercial clients

Grey: Infrastructure, other NRC programs, external services

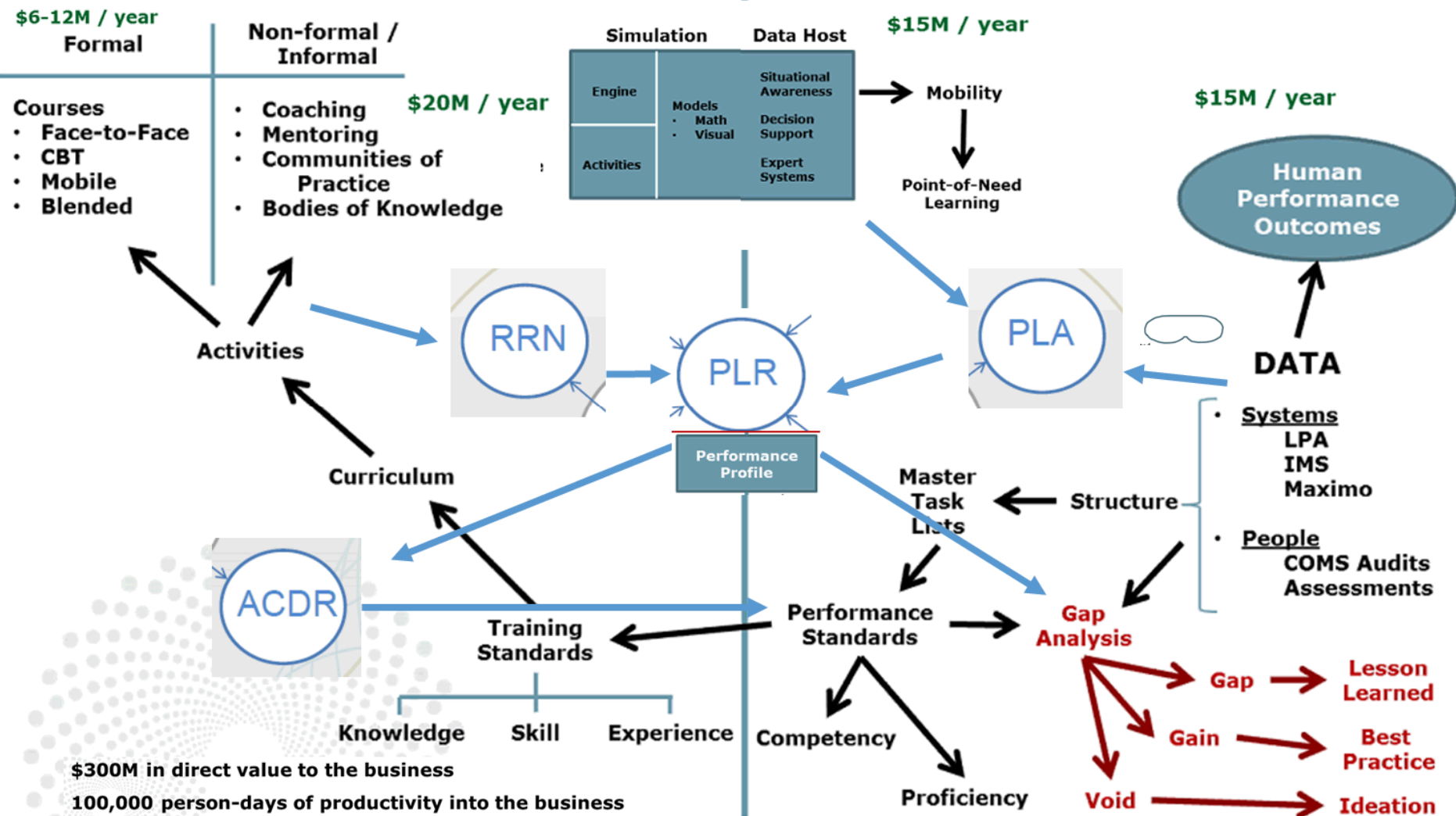
Program Organization



Program Outline

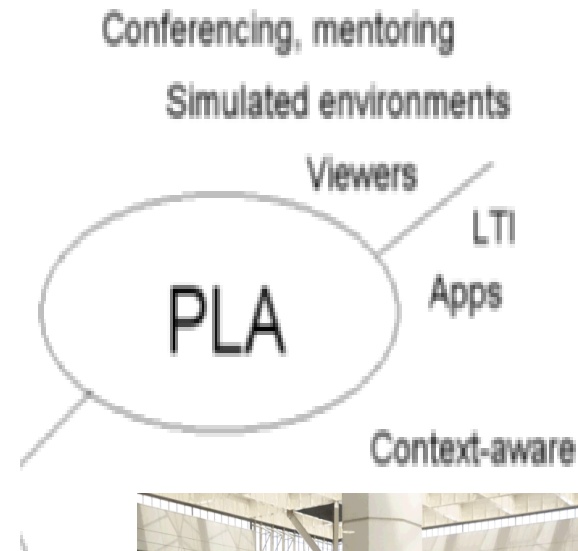


LPSS in Context

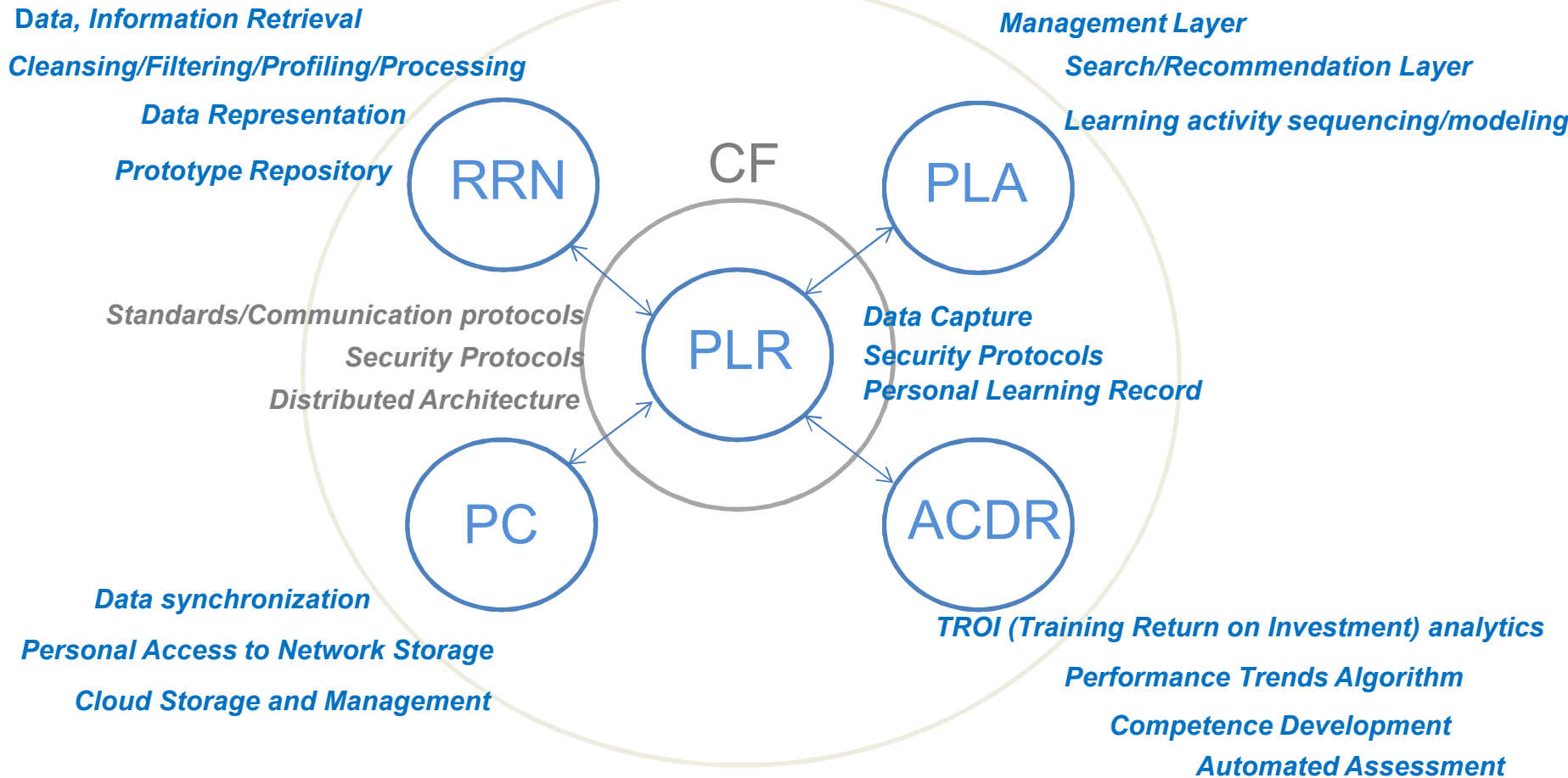


Personal Learning Assistant

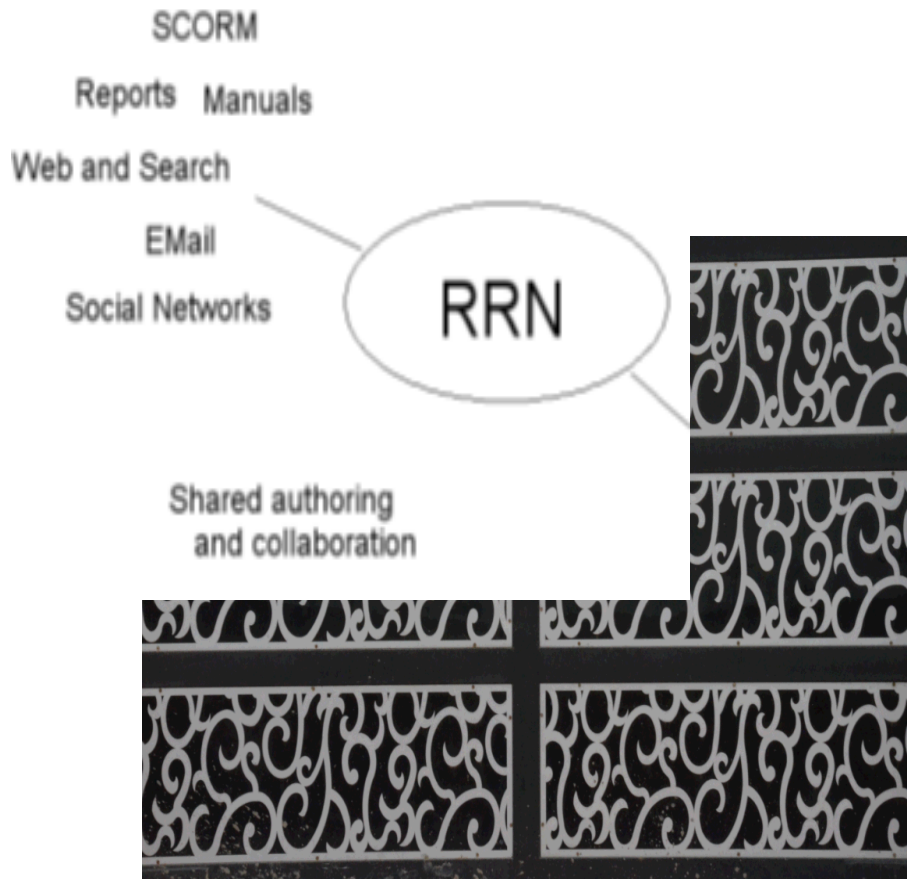
- Collect contextual information for system
- Display resources of various formats, including SCORM, LTI, etc.
- Support (scaffolded) authoring environments
- Project LPSS capacity into external software and devices



Project Details



Resource Repository Network



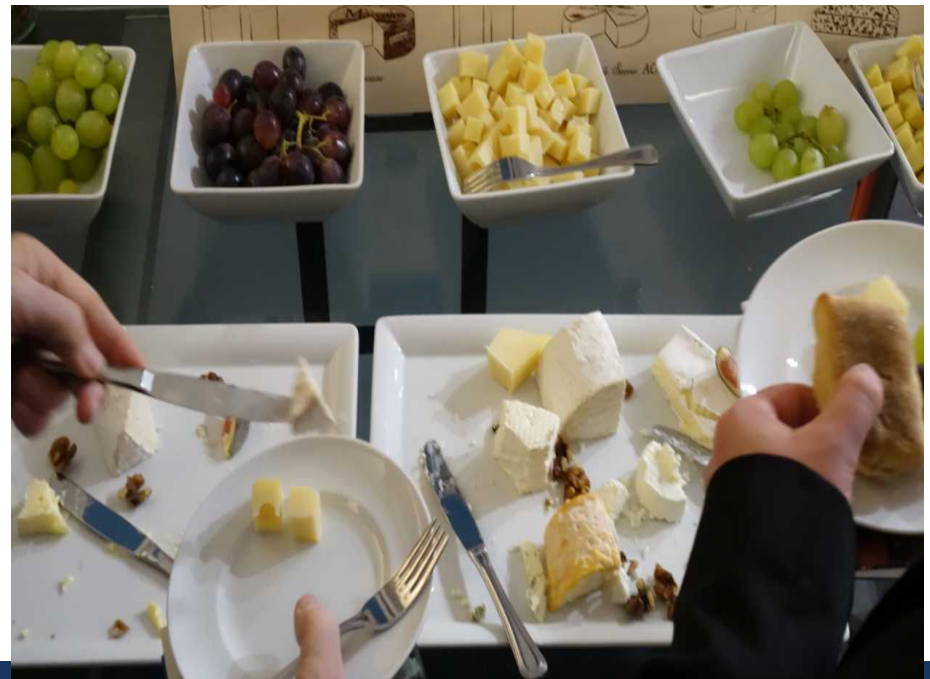
Manage and discover
list of sources and
resources

Maintain
authentication and
credentials

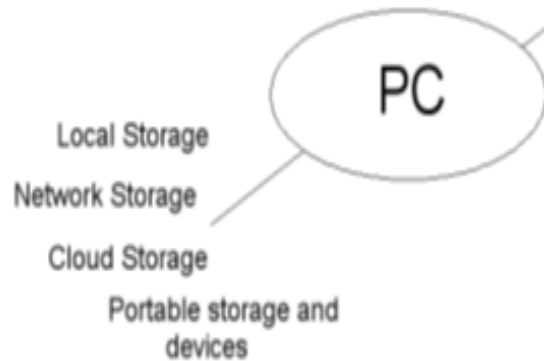
Support APIs and
metadata standards

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

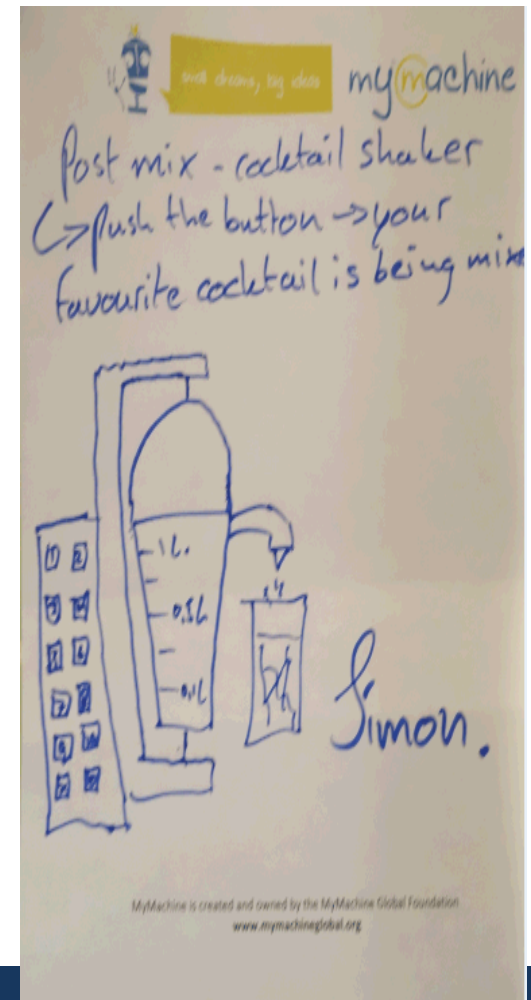
Maintain security, encryption, authentication and credentials

Include local or personal device storage

Manage and synchronize resource sets and data



Projection of learning services into multiple platforms



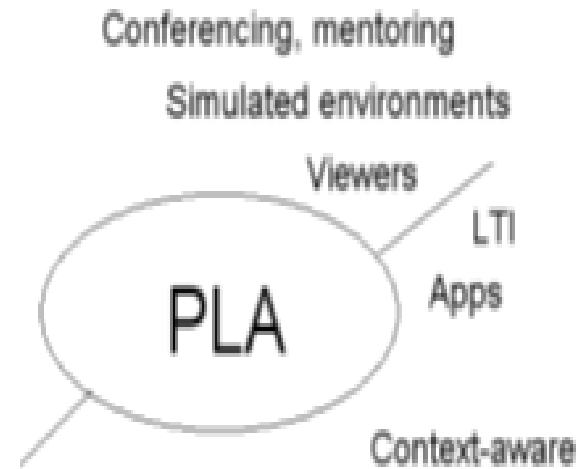
Personal Learning Assistant

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

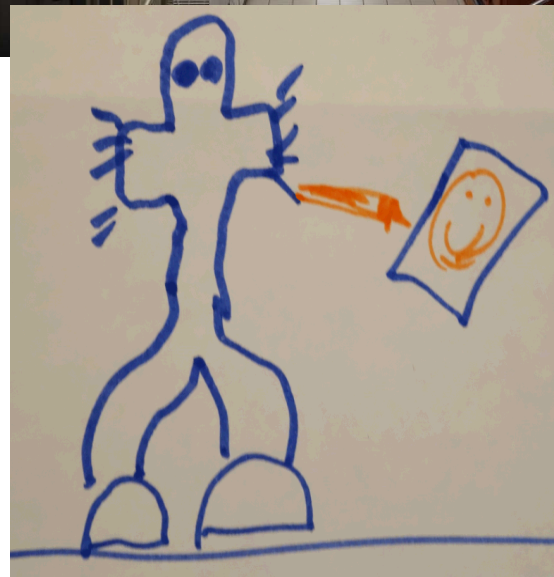
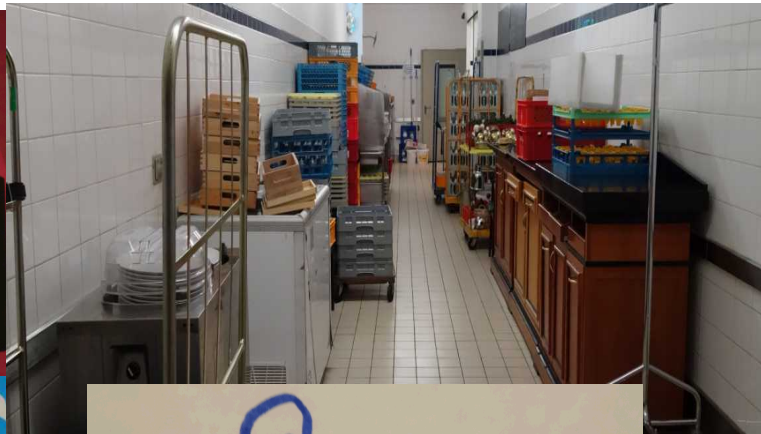
Analyze interactions
for skills and learning
gaps

Support development
of learning plans

Provide resource and
service
recommendations



Analytics as a service – analogy with web translation

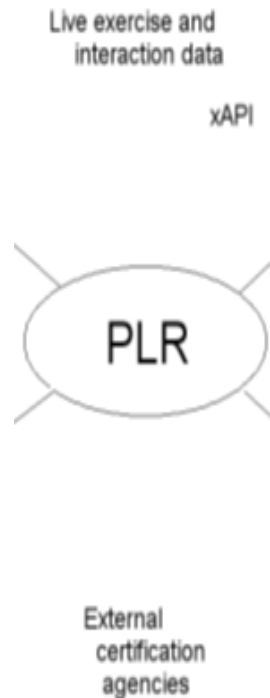




The Personal Learning Record – data owned by the individual, shared only with permissions

<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

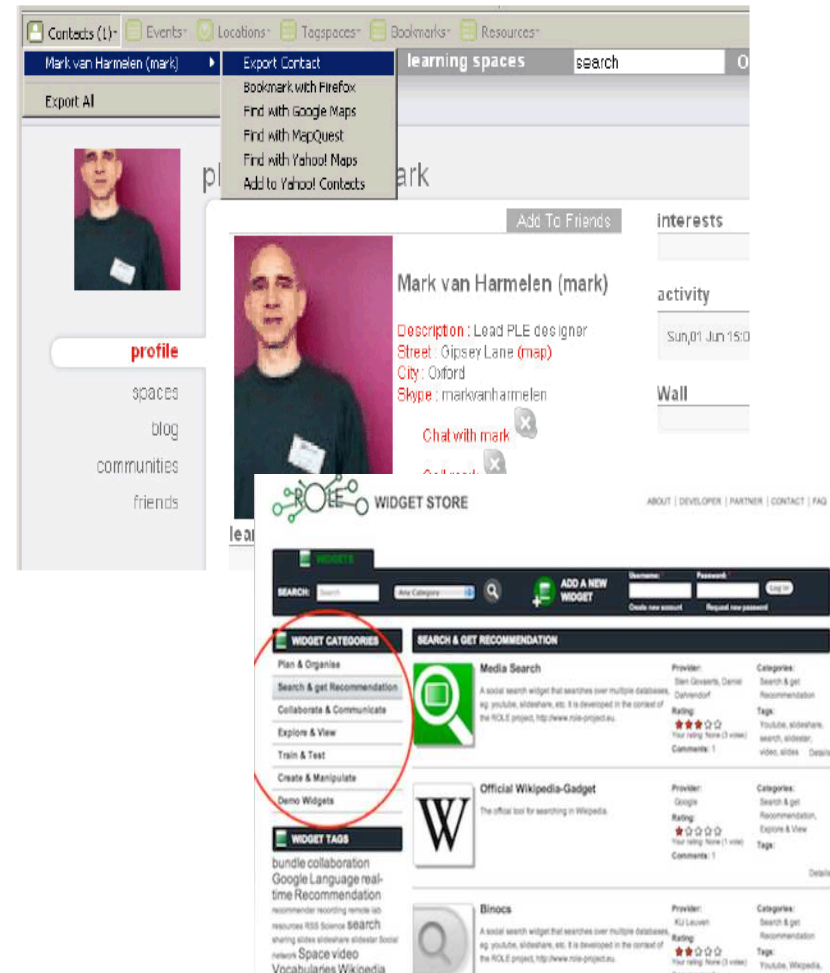
Responsive Open
Learning
Environments (ROLE)

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

Known <http://withknown.com/>

Learning Locker
<http://learninglocker.net/>

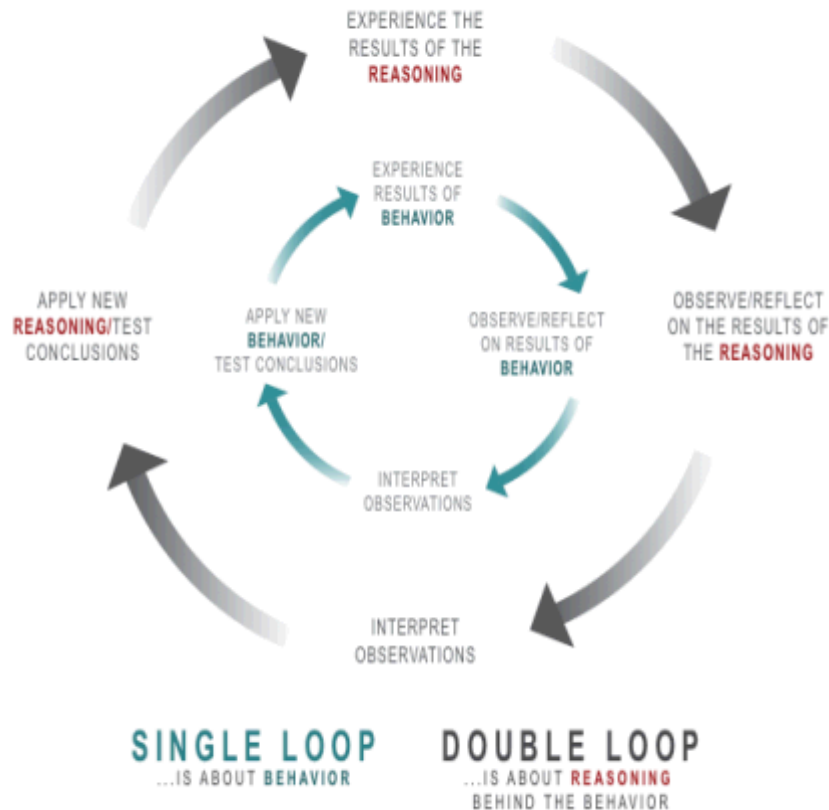
Mahara <https://mahara.org/>
<http://personalis.wikispaces.com/PLE+Projects>



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

E-mail

Password

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

LPSS [Resources](#) [Competencies](#) [Learning record](#) [About](#) [Help](#) [Settings](#) [Logout](#)

Browse competencies [\[help \]](#)

Search for what interests you

1 2 3 ... 7 > >>

☒ Competency hierarchies ☐ Only my competencies

☒ Competencies

Acknowledges the practical limits of a system for problem solving ^[1]

☐ Add to my profile

resources: 69

Analyze a situation in a systematic manner. ^[2]

☐ Add to my profile

resources: 19

Applies different software development methodologies ^[1]

☐ Add to my profile

resources: 59

Be familiar with adult learning techniques such as mentoring, coaching, and the sharing of expertise and best practices. ^[2]

☐ Add to my profile

resources: 72

Communicate to clients those activities that can and cannot be done. ^[2]

☐ Add to my profile

resources: 15

Acts with fairness, courtesy and good faith towards clients, colleagues and others ^[1]

☐ Add to my profile

Analyze issues to separate the cause from the symptoms. ^[2]

☐ Add to my profile

resources: 16

Applies the correct statistical methods to analyze and investigate data ^[1]

☐ Add to my profile

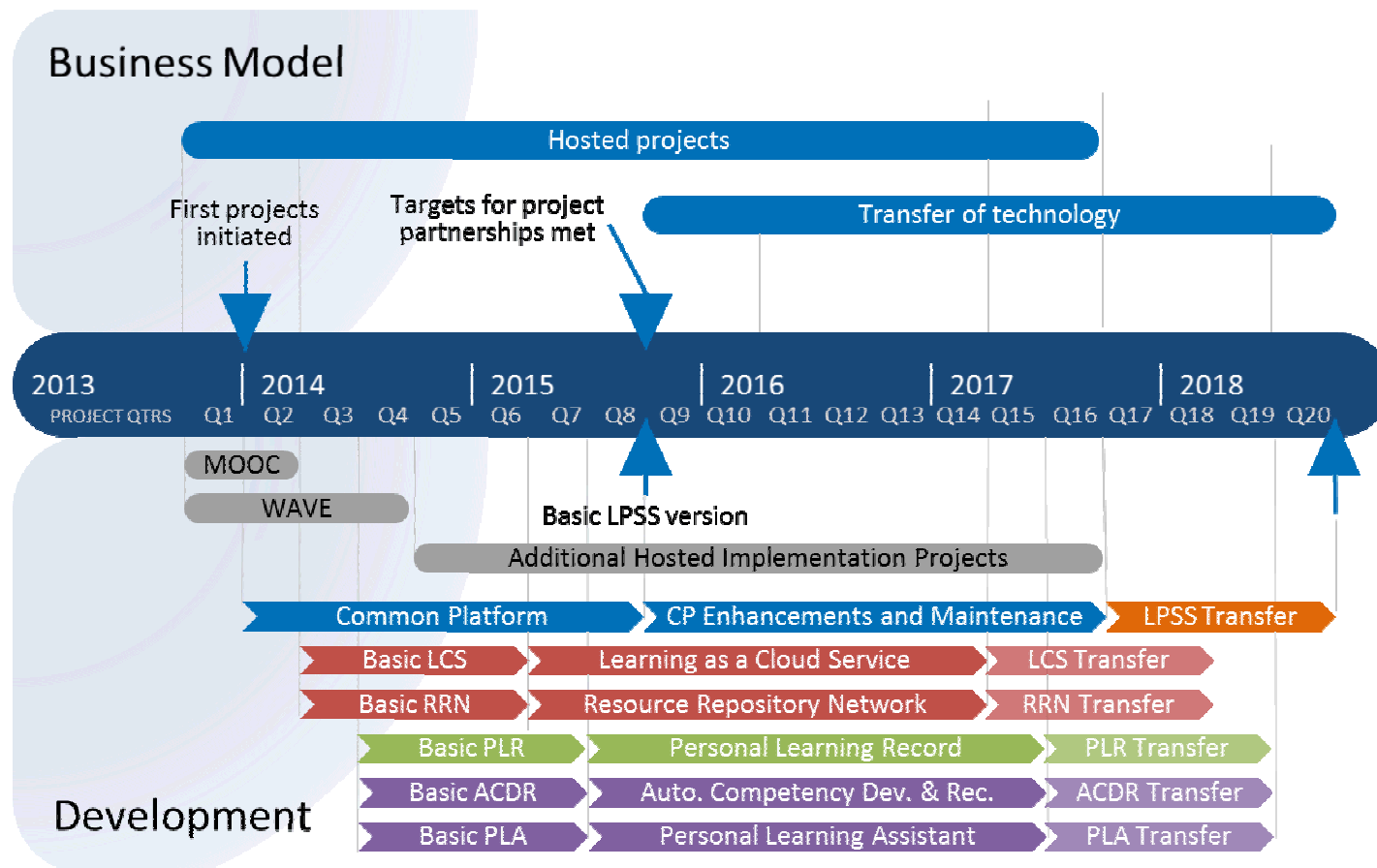
Build mutual trust by being reliable, consistent and credible. ^[2]

Communication ^[2]

☐ Add to my profile

resources: 10

Program Implementation Timeline



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LPSS program Leader

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

