

New Trends in Online Learning

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Atlantic Universities
and Colleges
Technology
Conference



The Inflexible Law of Learning

It's when we do stuff that we learn, not when stuff does something for us.



Part One. The Future in 2016

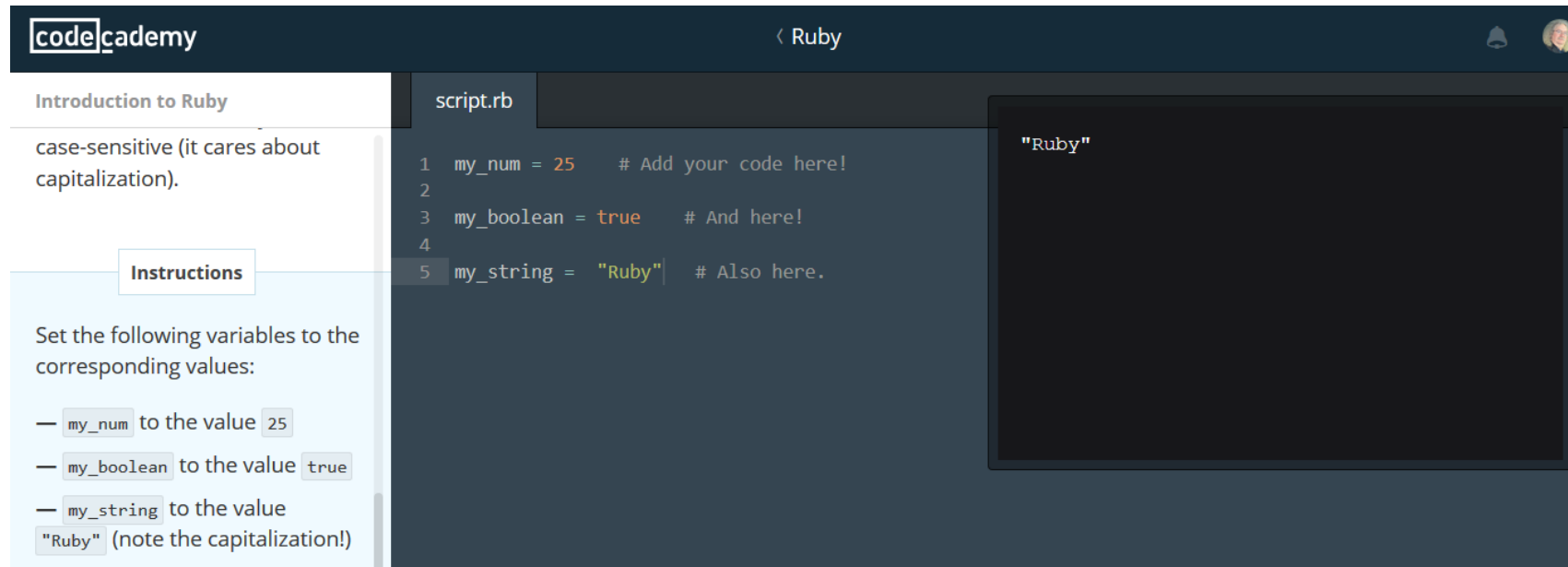
1. Machine learning and artificial intelligence
2. Handheld and Mobile Computing
3. Badges and Blockchain
4. Internet of Things
5. Games, Sims and Virtual Reality
6. Translation and Collaborative Technology

<http://teachonline.ca/tools-trends/exploring-future-education/2016-look-future-online-learning-part-1>

<http://halfanhour.blogspot.com.tr/2016/03/the-2016-look-at-future-of-online.html>

1. Machine learning and AI

- Not simply for adaptive learning
- The idea is to create an *environment*



The screenshot shows the Codecademy interface for a Ruby tutorial. The top navigation bar includes the Codecademy logo, a breadcrumb trail for 'Ruby', and a user profile icon. The main content area is divided into three sections:

- Introduction to Ruby:** A text block stating 'case-sensitive (it cares about capitalization)'.
- Instructions:** A light blue box containing the instruction: 'Set the following variables to the corresponding values:' followed by a list of tasks:
 - `my_num` to the value `25`
 - `my_boolean` to the value `true`
 - `my_string` to the value `"Ruby"` (note the capitalization!)
- Code Editor:** A dark-themed editor window titled 'script.rb' containing the following code:

```
1 my_num = 25 # Add your code here!
2
3 my_boolean = true # And here!
4
5 my_string = "Ruby" # Also here.
```
- Terminal:** A dark terminal window on the right showing the output: `"Ruby"`.

<https://www.codecademy.com/>

Three Types of AI

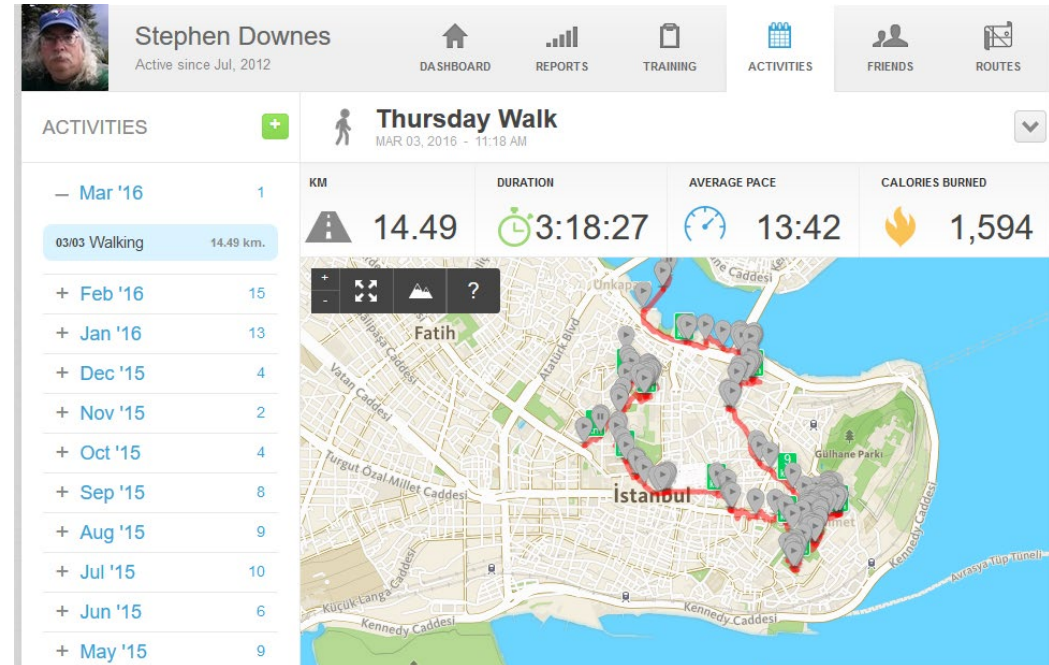
- **decision engines** - these are expert systems that are based on rule-driven strategies
- **pattern recognition** - perceptual systems that identify patterns from partial or disorganized data
- **cluster detection** - detecting nearest neighbours and categories of things

http://www.wtec.org/loyola/kb/c1_s1.htm

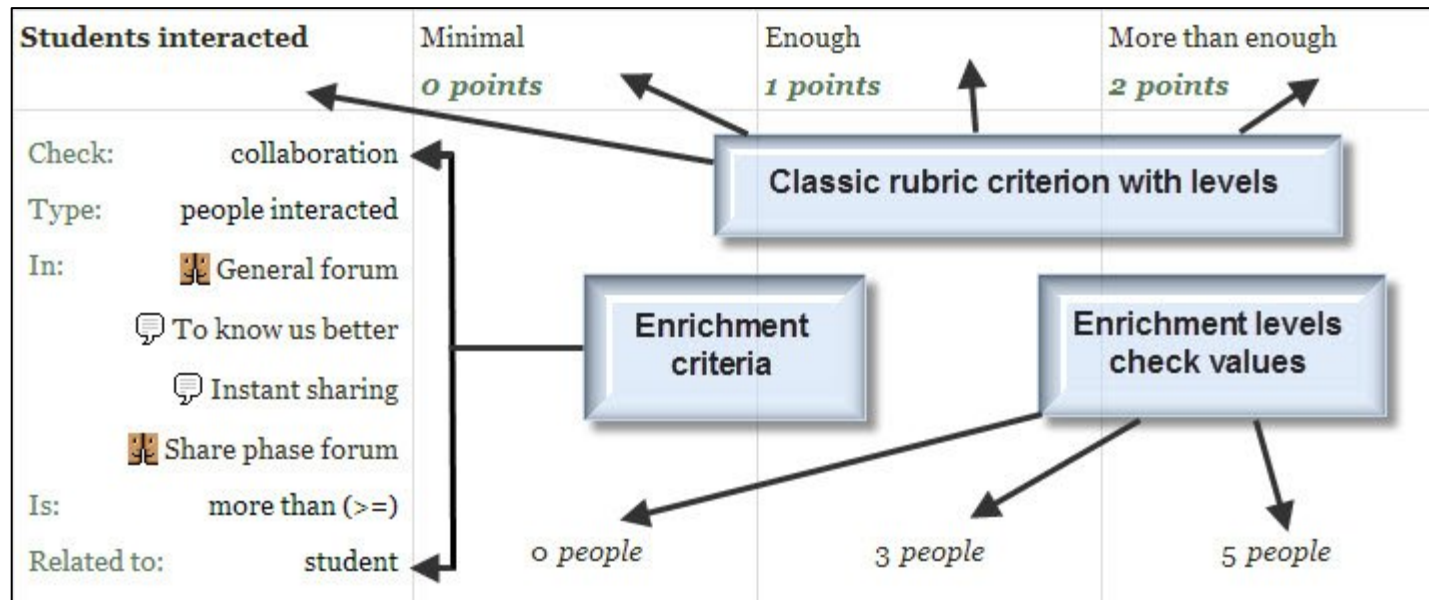
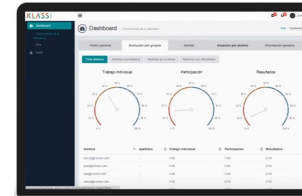
<http://research.microsoft.com/en-us/um/people/cmbishop/prml/>

Learning Analytics

- We talk about predictive analytics as though finishing a course is the problem
- The real future is in the quantified self



- Predictive Analytics
- Recognition Tasks



Personalized Learning

- Rules-Based Events (like notifications)
- User Models
- Adaptive Learning

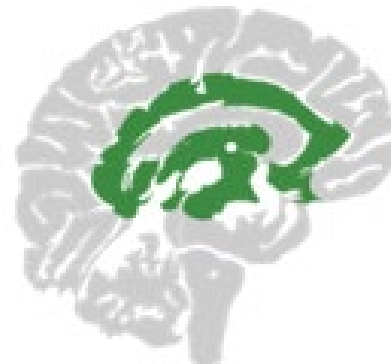
Recognition Networks
The "what" of learning



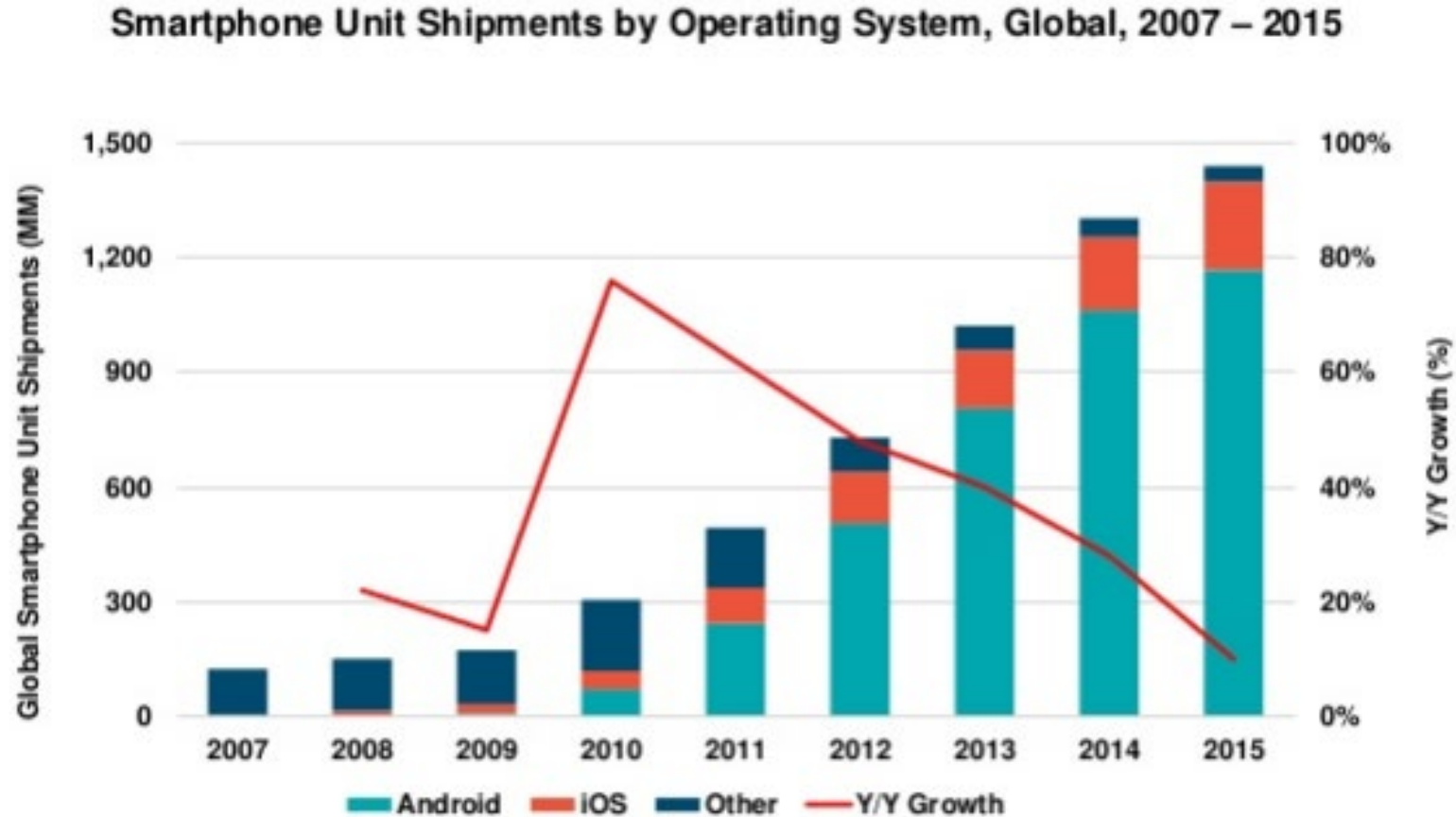
Strategic Networks
The "how" of learning



Affective Networks
The "why" of learning



2. Handheld and Mobile Computing



Performance Support

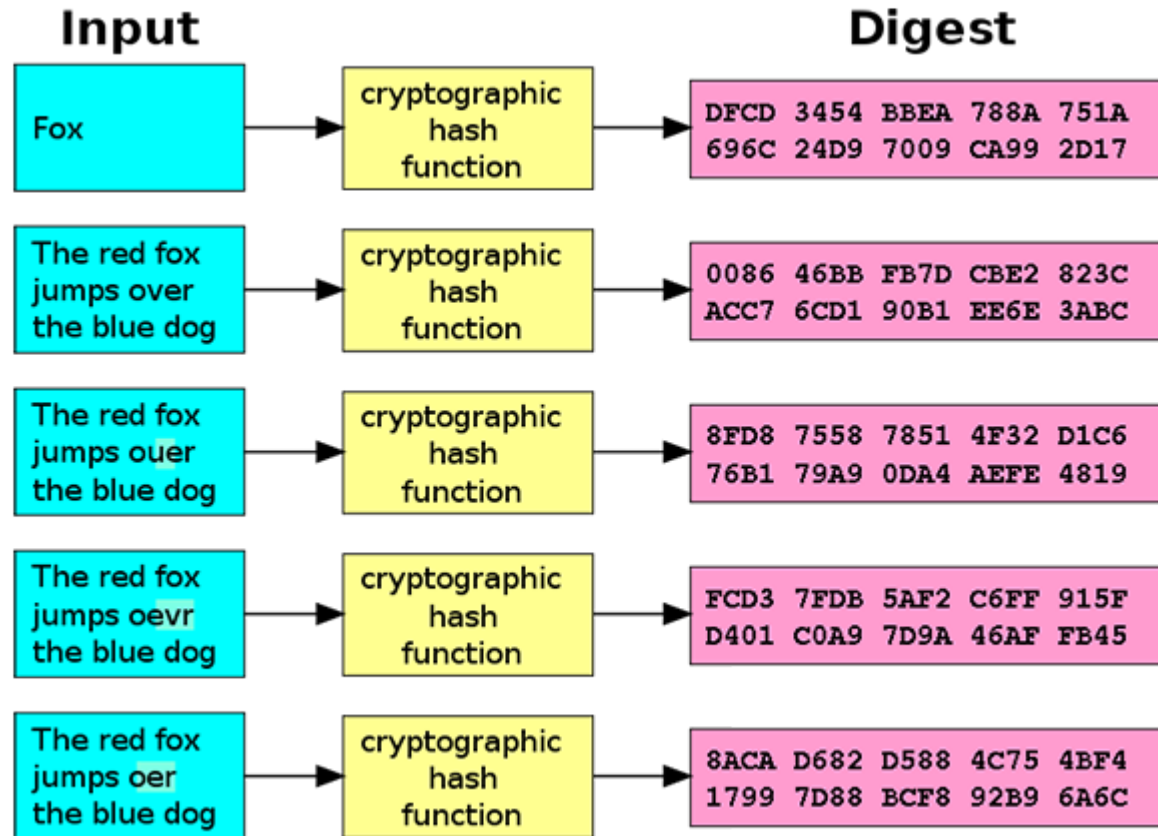
- The future of learning isn't the mobile phone
- It's in the *integrated* performance support system



PHOTO COURTESY B

<http://fortune.com/2014/05/27/a-tennis-racquet-that-isnt-just-strung-but-wired/>

3. Badges and Blockchain



Doug Belshaw:

"If we used the blockchain for Open Badges," he writes, "then we could prove beyond reasonable doubt that the person receiving badge Y is the same person who created evidence X."

<http://dmlcentral.net/blog/doug-belshaw/peering-deep-future-educational-credentialing>

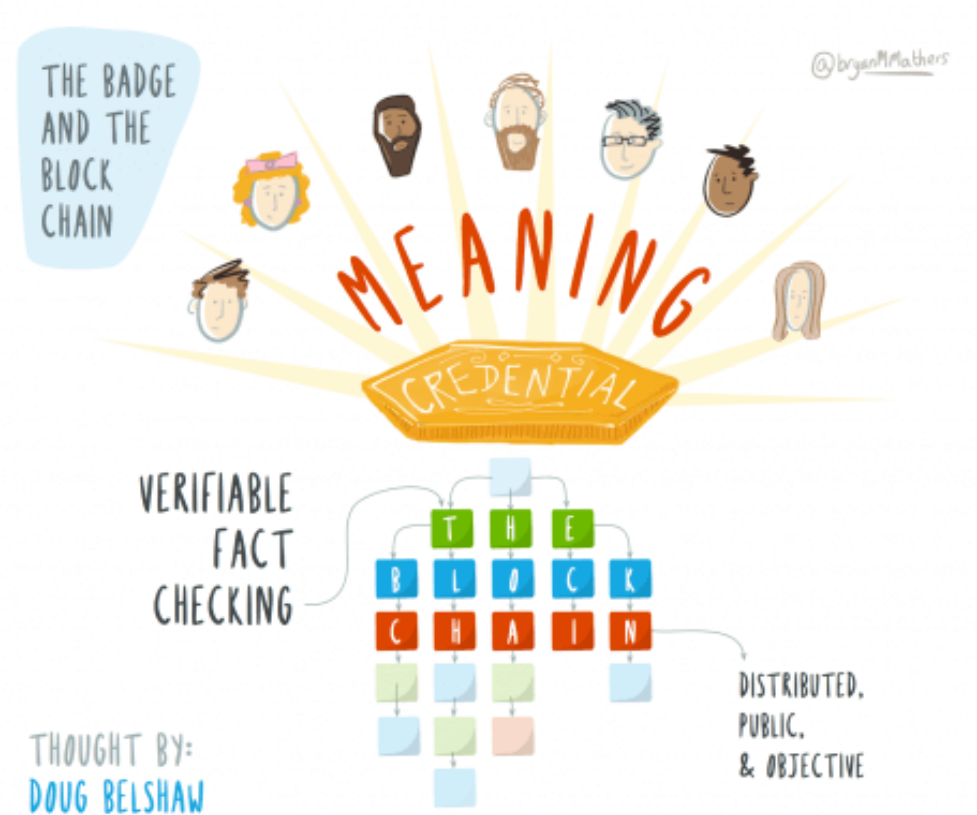
<http://www.downes.ca/search/blockchain>

Credentials

Sony plans to launch a testing platform powered by blockchain and that IBM plans to offer 'blockchain-as-a-service,''''

Audrey Watters

<http://hackeducation.com/2016/02/25/blockchain-edu1>



The Dao

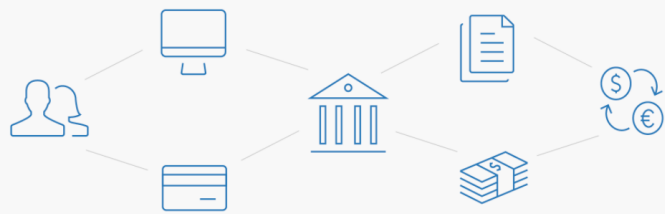
- Ethereum is a decentralized platform that runs smart contracts <https://www.ethereum.org/>
- The Dao is a 'distributed corporation' that receives investments, chooses projects, and pays for their development; some of these projects return revenue to Dao and others don't.
<https://magazine.backfeed.cc/dao-alive-now-let-evolution-begin/>



Hyperledger

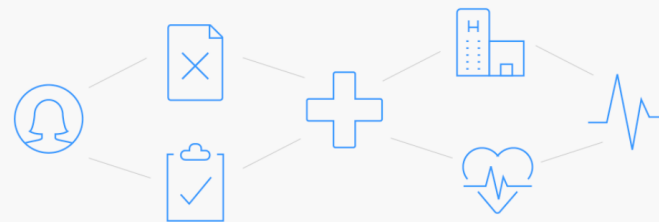
Shared Ledger Database

Blockchain allows multiple different parties to securely interact with the same universal source of truth



Finance

Streamlined settlement, improved liquidity, increased transparency and new products/markets



Healthcare

Unite disparate processes, increase data flow and liquidity, reduce costs and improve patient experience and outcomes



Supply Chain

Track parts and service provenance, ensure authenticity of goods, block counterfeits, reduce conflicts

Hyperledger - <https://www.hyperledger.org/>

MOOC on EdX - <http://www.prnewswire.com/news-releases/hyperledger-launches-first-free-massive-open-online-course-mooc-on-edxorg-300532968.html>

4. Internet of Things



What happens when companies know the state of all your devices?

<http://www.cbc.ca/news/canada/car-tracking-devices-spark-privacy-concerns-1.1366687>

5. Games, Sims and Virtual Reality

‘Gamification’ – adds game elements to learning

‘Serious Games’ – employs a game to facilitate learning



Oculus Rift

1. Freezers
2. Smilers
3. Grippers
4. Swayers
5. Screamers
6. Freak-outs

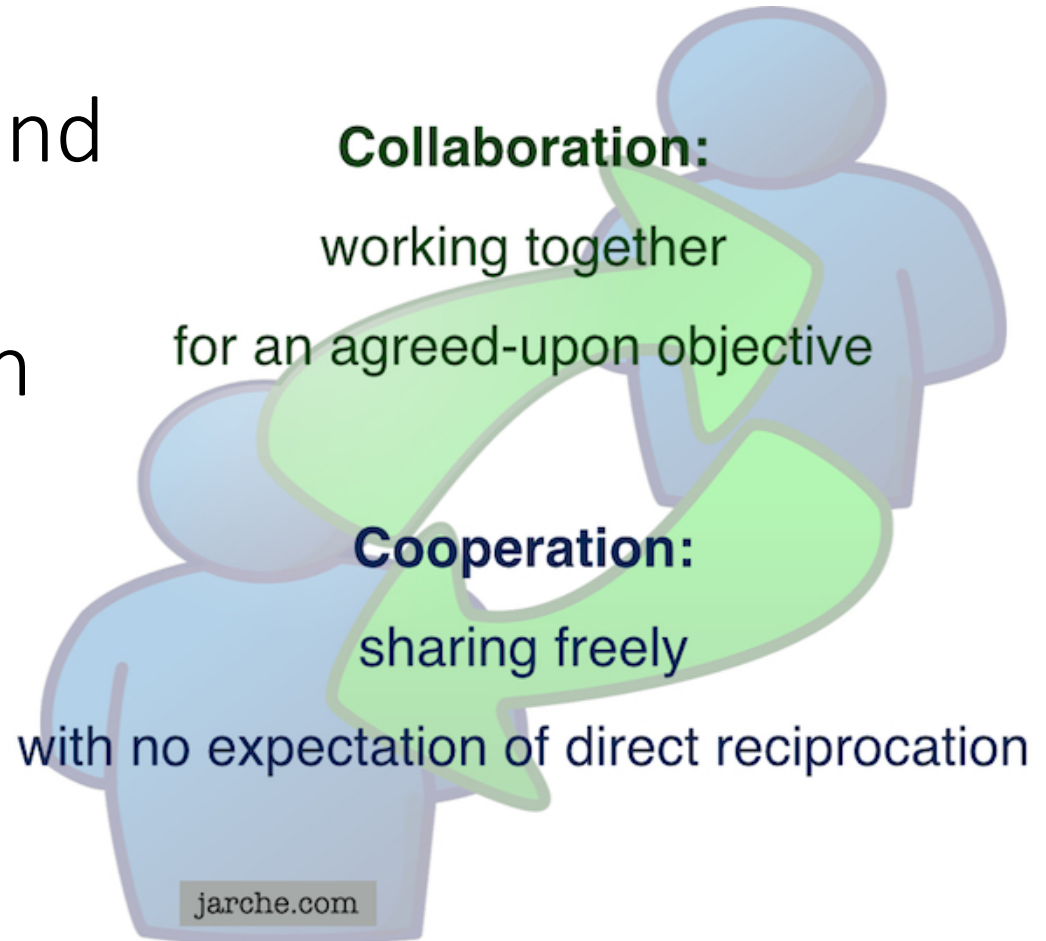


<http://donaldclarkplanb.blogspot.ca/2014/11/oculus-rift-freezers-smilers-grippers.html>

<http://www.downes.ca/search/oculus>

6. Translation and Collaborative Technology

- Communication is and will be everywhere
- But the future lies in cooperation, not collaboration

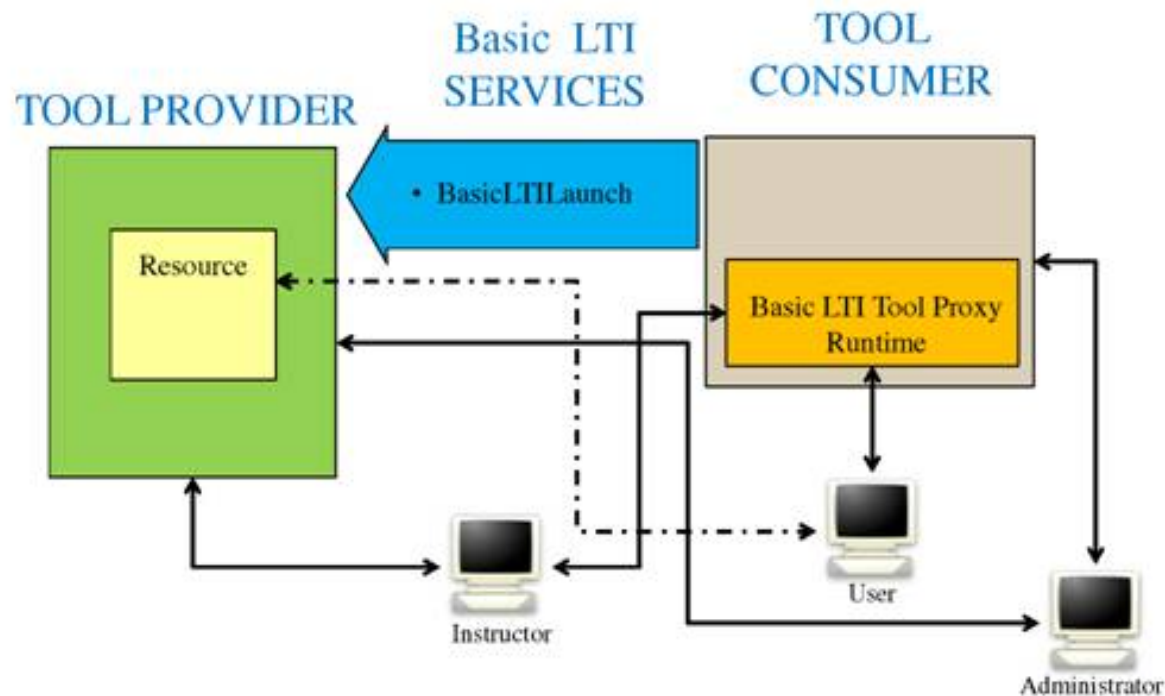


<https://cyber.law.harvard.edu/research/cooperation>

Image: <http://Jarche.com>

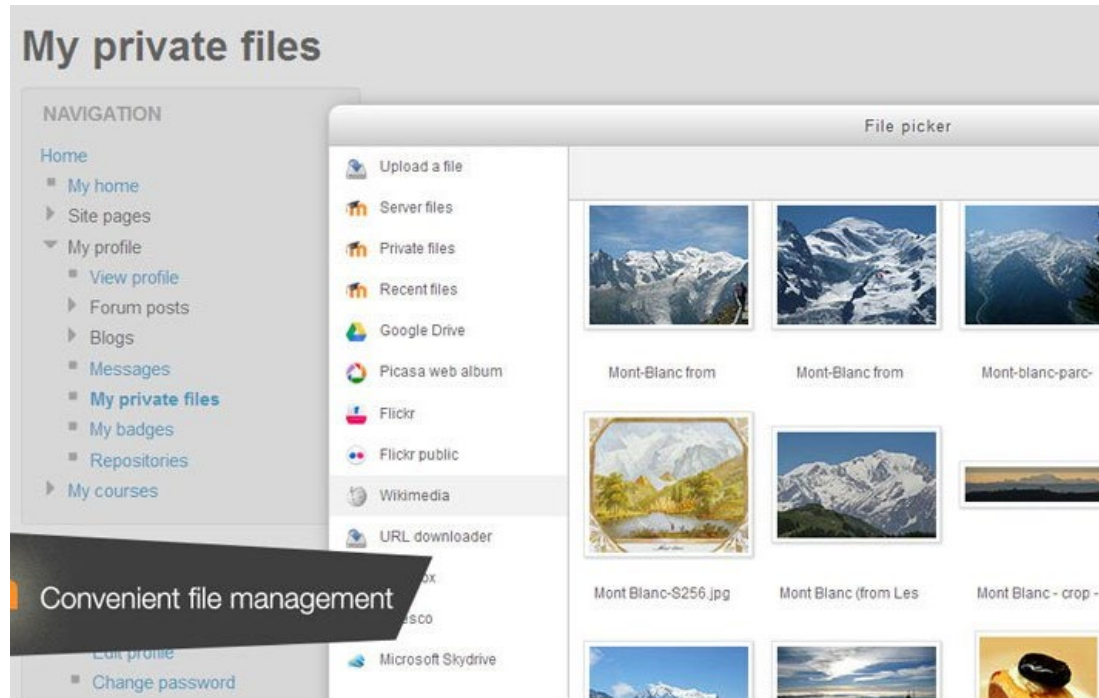
Learning Tools

- LTI Producer – provides features
- LTI Consumer – connects to features



Cloud Storage

- Cloud hosting of Moodle
- File management



Outcomes and Competencies

The screenshot shows a web interface for managing Learning Plans. On the left is a navigation sidebar with links for Home, Users, Fox McCloud, and Learning plans. The main content area is titled 'Learning Plans' and includes filters for Active, Draft, and Completed. Below the filters is a table of learning plans with columns for Plan and Actions. An 'Add learning plan' button is located below the table. Underneath is the 'Evidence of Prior Learning' section, which contains a table with columns for Name, Summary, Linked competencies, and Actions. An 'Add evidence' button is positioned below this table. At the bottom, there are two buttons: 'Request learning plan approval' and 'Status of review'. Two callout boxes on the right side of the interface list actions: one for the 'Actions' column of the Learning Plans table (Edit, Delete, Competencies, Request approval, Review request) and another for the 'Actions' column of the Evidence of Prior Learning table (Edit, Delete, Competencies). Lines connect these callouts to their respective target elements in the interface.

Home
Users
Fox McCloud

[Learning plans](#)

Learning Plans

Active Draft Completed

Plan	Actions
First Year Medicine	Edit v
My Personal Plan	Edit v

Add learning plan

Evidence of Prior Learning

Name	Summary	Linked competencies	Actions
RHCE	Redhat Certified Engineer v3 CERTV4_20150404.pdf www.redhat.com/verify/2324-234-2433-432-42	15	Edit v

Add evidence

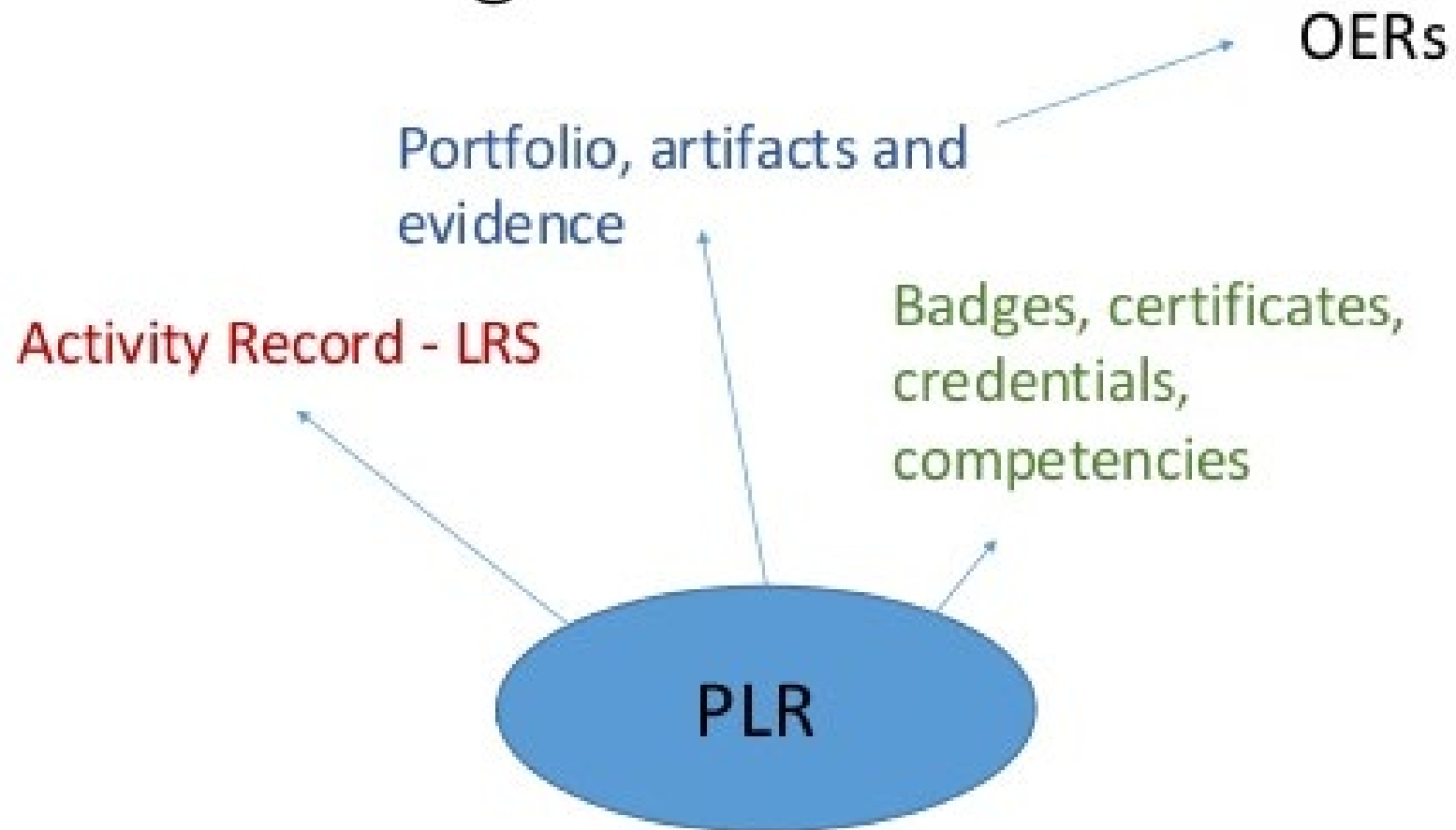
Request learning plan approval

Status of review

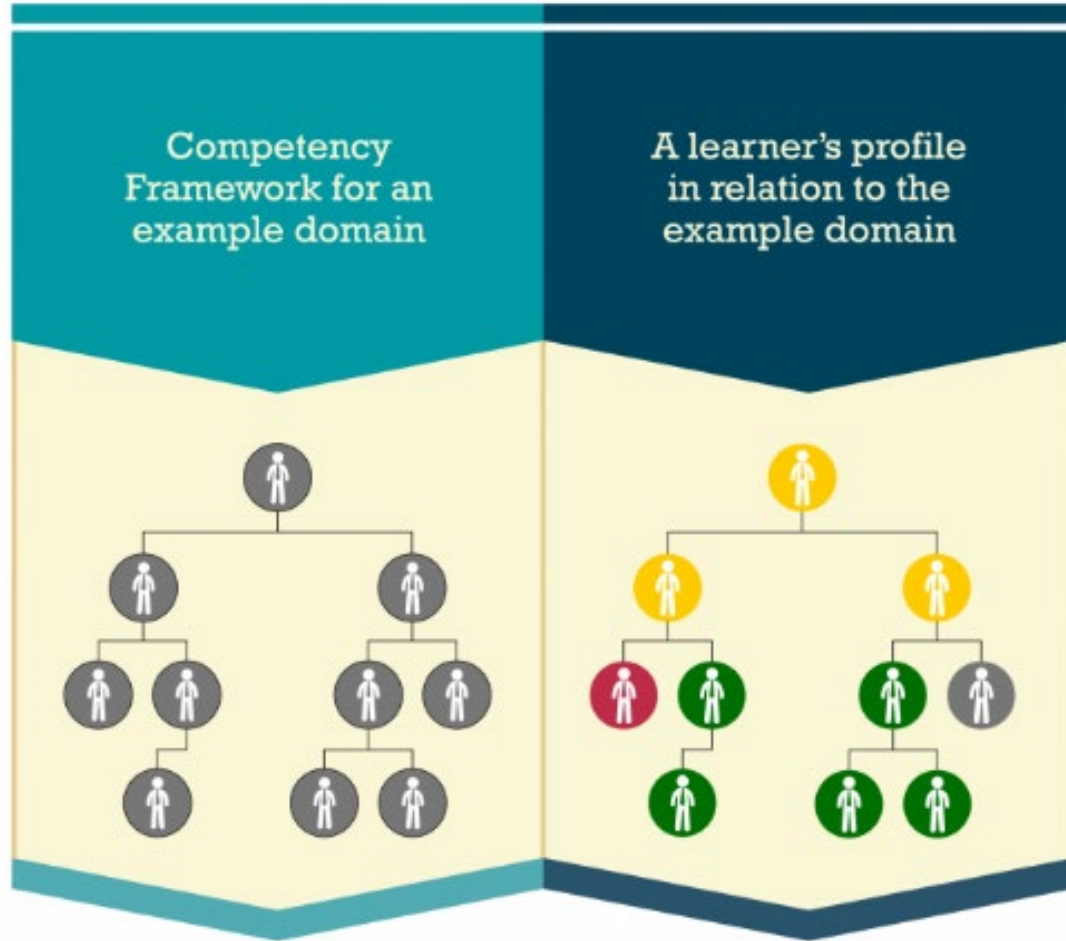
Callout 1: Edit, Delete, Competencies, Request approval, Review request

Callout 2: Edit, Delete, Competencies

Personal Learning Records

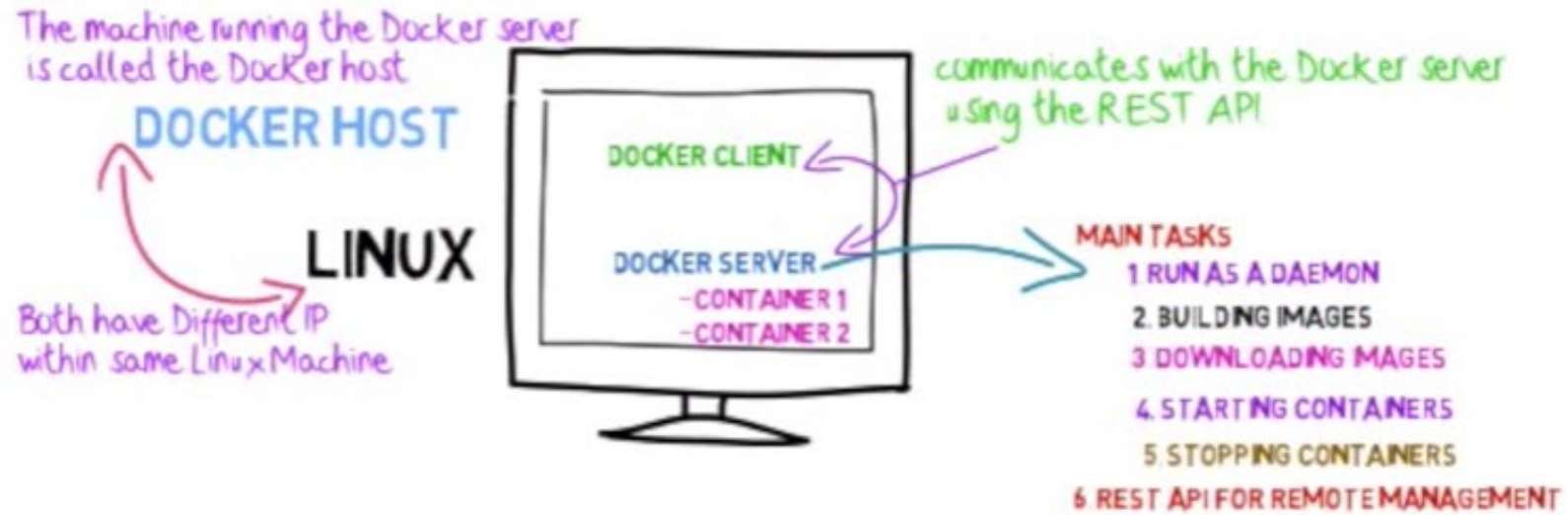
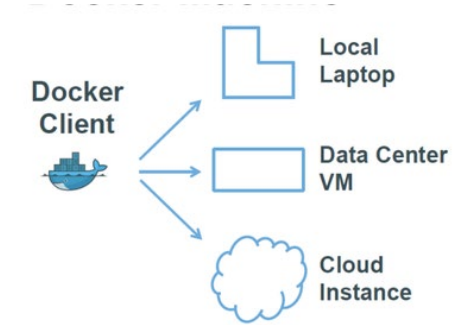


CASS



Competency and Skills System

Docker



Part Two. What Does Learning Become?

1. Context-Sensitive
2. Engaging
3. Personal



Any Time / Any Place?



- It's all about context
- The airplane cockpit is no place for a two week course
- Learning will be like water or electricity – or text

Engaging = Immersive + Wanted

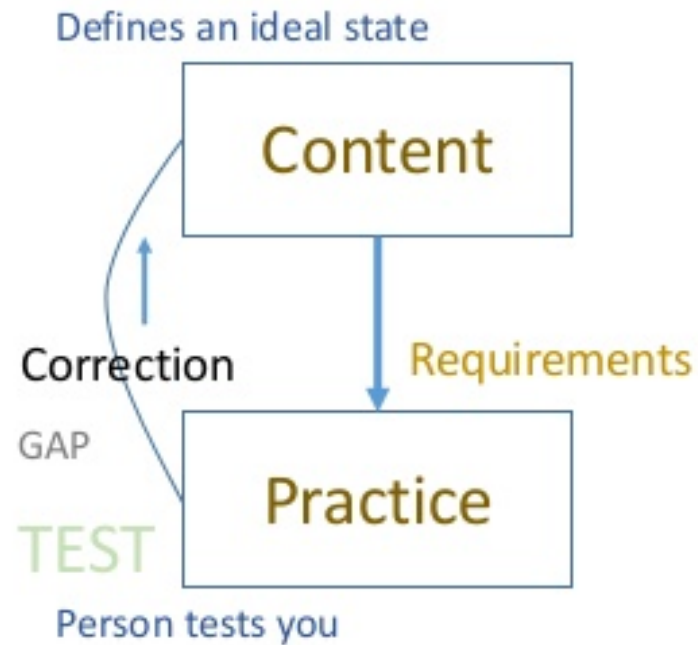
- Just because it's interactive doesn't make it engaging
- We have to *want* to be there
- And we have to *believe* that we're there

$$\begin{aligned}dA &= -PdV - SdT \rightarrow dA = (\partial A/\partial V)_T dV + (\partial A/\partial T)_V dT \text{ \&} \\dG &= VdP - SdT \rightarrow dG = (\partial G/\partial P)_T dP + (\partial G/\partial T)_P dT \\ \& \ dH &= (\partial H/\partial S)_P dS + (\partial H/\partial P)_S dP \rightarrow V = (\partial H/\partial P)_S = (\partial G/\partial P)_T \\ &\rightarrow -S = (\partial A/\partial T)_V = (\partial G/\partial T)_P \text{ \&} (\partial P/\partial T)_V = (\partial S/\partial V)_T\end{aligned}$$

Learning is Personal

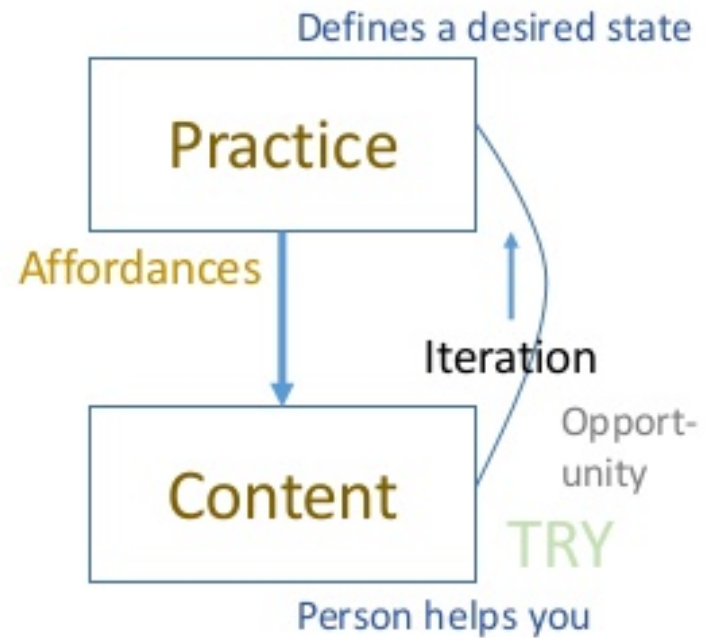
Personalized

We do for you

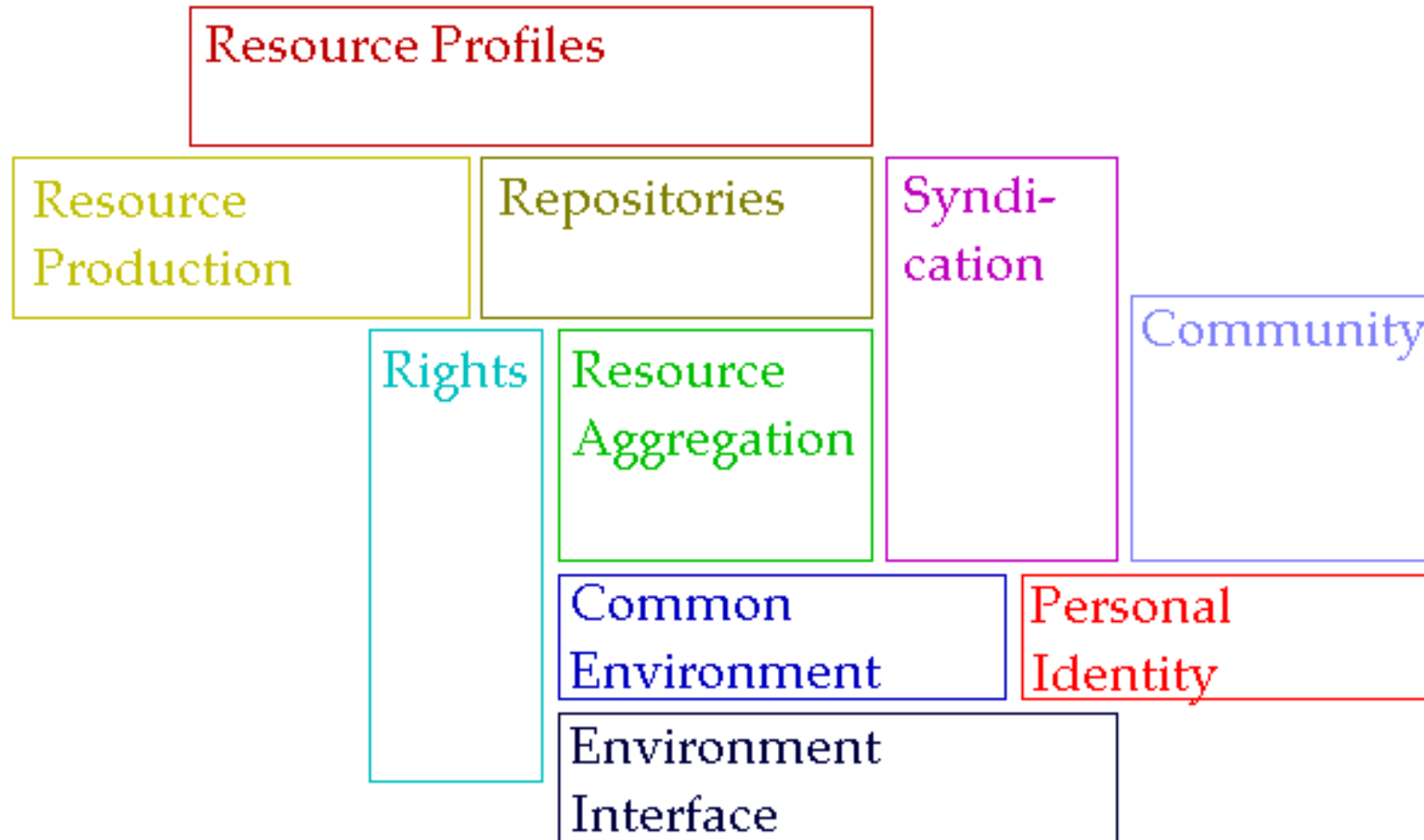


Personal

You do for yourself



A Personal Learning Architecture

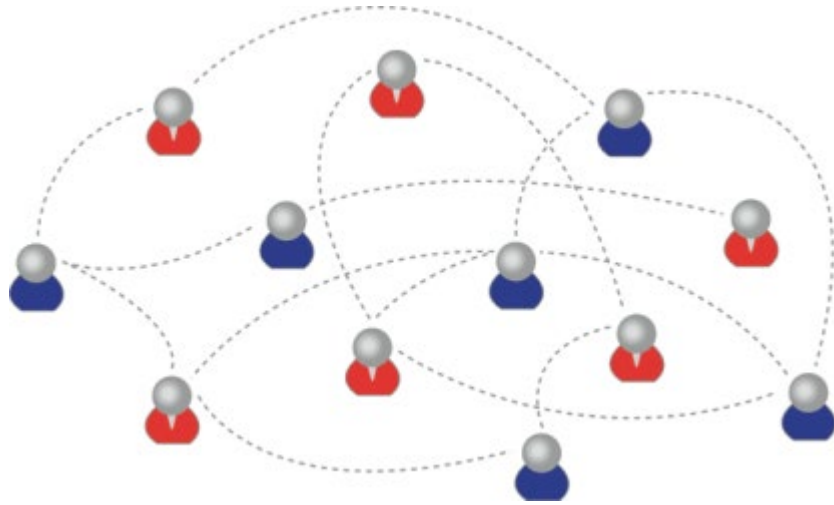


The New Institutional Perspective

From Management to Meaning

- Don't do things *to* people, do things *with* people, help people *do things*
- If we have to ask “how do we motivate people” then we're taking the wrong approach – Kohn
- “Knowledge sharing is your job” – Buckman
- Provide opportunities for autonomy, mastery, purpose – Pink

Learning Outcomes



We are using one of these

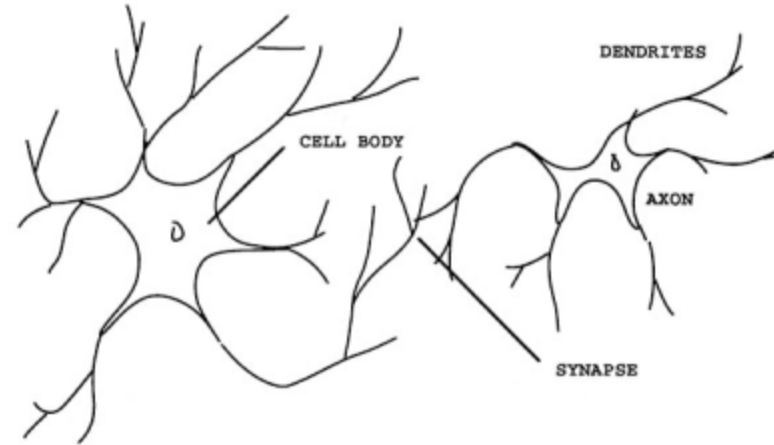


Figure 1. Biological Neuron

To create one of these

Personal knowledge consists of *neural* connections,
not facts and data

Learning Outcomes

- Learning a discipline is a *total state* and not a collection of specific states
- It is obtained through *immersion* in an environment rather than acquisition of particular entities
- It is expressed functionally (can you perform ‘as a geographer’ ?) rather than cognitively (can you state ‘geography facts’ or do ‘geography tasks’ ?)

Learning Outcomes

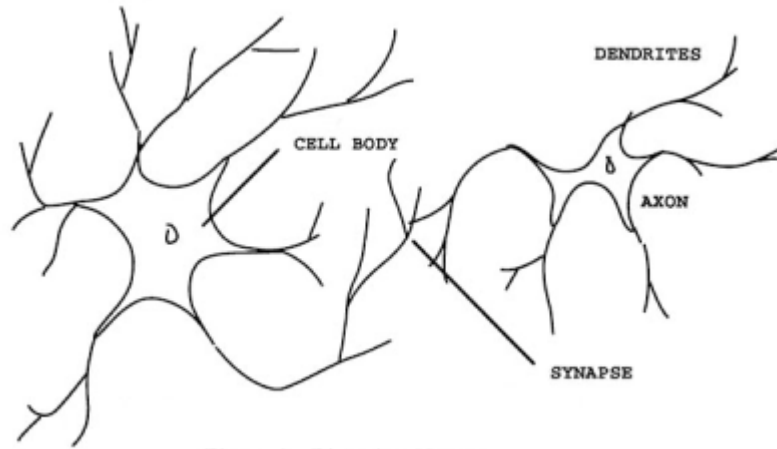
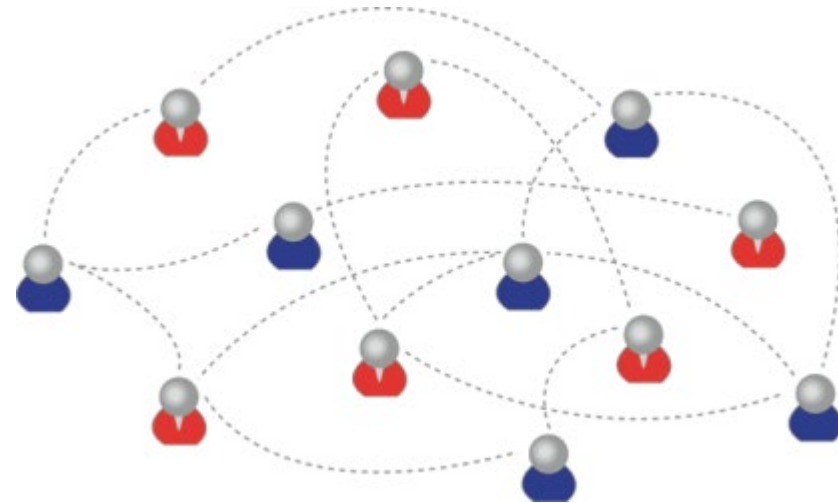


Figure 1. Biological Neuron

We recognize this



By performance in this

There are not specific bits of knowledge or competencies, but rather, personal capacities

The New Model of Work and Learning

- Sharing - create linked documents, data, and objects within a distributed network
- Contributing - employ social networking applications of the Web to facilitate group communication
- Co-creating - work through networks that facilitate cooperative group work toward common goals

(Dutton, p. 12)





<http://www.downes.ca>