Leveraging Web 2.0 and the Cloud to enhance collaboration and learning

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HK’s transformation into a KBE
**Nature of Knowledge Work**

- Increasingly less routine, more analytical and cognitive skills are needed
- Highly unstructured, unpredictable, disruptive yet often come with a sense of urgency
- Not only requires data and information but also knowledge and experience of the individual
- Group/Collaborative task execution, decision making and problem solving
- A different set of metrics for performance measurement is needed
- A huge amount of data and information to deal with
- Often more than one way to solve a problem, collaboration, reflection and a learning environment are crucial

**Support for performing Knowledge Work**

- Automate routine tasks/processes as much as possible
- Tools to coordinate ad hoc tasks among workers
- Tools to identify and connect with subject matter champions; codify and share tacit knowledge
- Tools to discover, aggregate, analyze and visualize document/information/discussion summary, trends, work tasks etc.
- Leverage on input and preferences from trusted peers
- Knowledge Repository for keeping core assets
- Powerful Search mechanisms (proactive, multi-modal, multiple search modes, visualisation,...)
- Create a Personal and Organizational Learning Environment
- Personalization (role type, multi-generational workforce, mobile workers, content, tools, networks etc.)
Definition of Cloud Computing

A widely adopted, formal definition comes from the National Institute of Standards and Technology:

“Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.”
Cloud applications, building blocks (Oracle) & benefits (EMC)

Consistent configuration of resources yields multiple benefits:
- Elasticity
- Flexibility
- Accessibility
- Reliability
- Security
- Abstraction
- Optimization

Cloud Value Chain
Cloud Value Chain (cont.)


Opportunities brought about by the cloud
Aiming beyond the primary set of benefits?

Cloud characteristics: Ubiquity, Connectivity across platforms, Perpetual storage, Accessible by/to the masses

Secondary benefits

- Upgrade management
- Spams and virus threats
- Value-add functions provide by a S-a-a-S provider
- Integrated data management
- ...
1. Collective intelligence
   - Crowds -> Groups -> Meta-selves

2. Re-factoring

   - Mining for patterns and new knowledge embedded in very large structured and unstructured datasets
   - Decompose a problem into smaller ones for parallel processing (aka Grid Computing)
   - Allocate/Divert resources to meet a surge in demand
   - (Re-)Prioritise tasks and resources for high gain areas/applications
   - Elicit human input on a massive scale (aka Web 2.0+)
   - ...

Cloud Intelligence
(Source: Nova Spivack, presenter at The Singularity Summit, 2010 & Tom Koulopoulos, author of Cloud eBook & presenter at ILA 2010)
Cloud Intelligence in action

Singapore's Smart Traffic Cloud
(Source: FutureGov, Dec 2010)

SMART TRAFFIC CLOUD ROAD TESTED

Singapore is trialing a traffic management system that could improve the monitoring of the citystate's roads by using geo-location data captured from drivers' smart phones.

GPS sensors in drivers' smart phones can determine the location, direction of travel and speed of vehicles, and the data, captured in real-time, is hosted on a cloud platform that the Land Transport Authority can use to monitor – and predict – traffic conditions.

"It would be very costly to deploy sensors all over the city. We only have sensors on highways and major roads, so why not make use of GPS sensors in drivers' mobile handsets?" said Dr Lim Hock Beng, Programme Director, Intelligent Systems Centre, Nanyang Technological University, who leads the research team behind the initiative.

The smart traffic cloud platform, a joint effort by LTA, NTU, the InfoComm Development Authority and SingTel, will be available for government and private sector service providers to use the data to develop location-based services.

Singapore has been working in collaboration with the University of Berkeley, which is testing the same concept in the San Francisco Bay area.
Amazon Mechanical Turk

Mechanical Turk is a marketplace for work.
We give businesses and developers access to an on-demand, scalable workforce.
Workers select from thousands of tasks and work whenever it's convenient.
74,997 HITs available. View them now.

Make Money by working on HITs
HITs = Human Intelligence Tasks - are individual tasks that you work on. Find HITs now.
As a Mechanical Turk Worker you:
• Can work from home
• Choose your own work schedule
• Get paid for doing good work
Get an interesting task Work Earn money

Get Results from Mechanical Turk Workers
Ask workers to complete HITs = Human Intelligence Tasks - and get results using Mechanical Turk. Learn more.
As a Mechanical Turk Requestor you:
• Have access to a global, on-demand, 24 x 7 workforce
• Access thousands of HITs each day
• Pay only when you're satisfied with the results

Elance & Livework

Hire Online Workers. Get the Job Done.
Thousands of businesses use Elance every day. Teams and manage online, instead of in-person.

Outsource Business Tasks To Teams of On-Demand Workers
Answer thousands of emails

On-Demand Outsourcing
Boost your workforce
High-quality results
Flexible execution on any task
Get work done faster

Recent Projects

KMRC
Cloud Marketplace: SpotCloud

Built on Google App Engine and the Amazon S3 platform, SpotCloud is a new competitive market mechanism for computing power. The one-time upfront payment model is not required. In essence, the service providers are selling computing power on a pay-as-you-use basis. The entire process of creating and buying SpotCloud instances is fully automated. The SpotCloud marketplace is a Web-based service for procurement. The SpotCloud marketplace is a Web-based service for procurement.

Real Time Enterprise

(Source: Delic & Riley, 2010)
Example of an IT support environment

Knowledge for IT problem solving

Enterprise Knowledge Cloud
(Source: Delic & Riley, 2010)
Biomedical Knowledge Cloud
(Source: Ken Buetow, National Cancer Institute, USA, 2009.)

IT-Tude project (Source: ERCIM News, October, 2010)

As a result, 98 organisations from across Europe united in what was the FP6’s largest Grid project. Grouped into 25 different pilots, each with an end-user, Grid provider and specialist, they focused on the real-business problems faced by the end-user and built a solution around them. Each was highly autonomous in their solutions: some used GriA, others Globus, Grid or Unicore. Some were open source, others proprietary. Some were to be delivered as SaaS, others used in-house.
Opportunities and impact of CC on...

1. Business Process Management
2. Taxonomy building & maintenance
3. e-Discovery
4. Open Innovation
5. Personal Knowledge Management & Learning

Knowledge Management Vs Personal Knowledge Management

<table>
<thead>
<tr>
<th>Year</th>
<th>Google Search “Knowledge Management”</th>
<th>Google Search on “Personal Knowledge Management”</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>About 500,000</td>
<td>18</td>
</tr>
<tr>
<td>March 2010</td>
<td>About 8,400,000</td>
<td>About 39,400</td>
</tr>
</tbody>
</table>
A PLE needs to address these challenges & more

• Information Overload
• Content authoring by the masses
• Sustainability & quality of contributions
• Knowledge Classification & Navigation
• Development & tracking of personal competencies
• No single platform can fulfill all the need
Use of RSS feeds, tagging, Google Buzz to create a co-learning environment

- Selective RSS feeds, filters & aggregators to better target incoming information
- Tagging & annotation of articles
- Sharing, searching & navigation of articles by tags
- Ongoing discussions in Google Buzz
- Suitable for learning, marketing, intelligence gathering & research

Ongoing discussions in Google Buzz

A graduate & practitioner sharing his experience
Potential usages in the corporate world

- Marketing department monitors industry trends, customer preferences and competitive intelligence
- Corporate communications department monitors all news about the company
- Research department keeps abreast of business and technology trends
- Human Resources department monitors, evaluates and selects appropriate courses for learning & development
- Staff engage in collaborative filtering and focus on reading and/or discussing the received articles

The Personal Learning Environment (PLE)

- Leverages on public domain tools to combat information overload, filter information and foster ongoing collaborations
- Only minutes to set up and virtually no maintenance effort; it is ongoing and perpetual
- Highly personalised for the individual yet support a co-learning among peers
- Harness the collective wisdom of all participants
- A core intellectual asset of the organisation
Challenges in delivering knowledge services in the cloud

- Security / Privacy, Data location, compliance
- Integration with legacy systems
- Service Level guarantee
- Customisation of vendor-specific tools & applications
- Portability of applications across clouds (especially PaaS & SaaS)
- Discovery, de-duplication and selection of services & data
- Advancements & adoption of Semantic Technologies
- Paradigmatic change to PAGO model, work style and workplace
- ...

Service, Service, ...Everything as a Service (Source: HP)
**The Crowd To Cloud Journey**

- Co-Evolution (MetaWeb)
- Co-Creation (e.g. Cloud Apps)
- Collaboration (e.g. Web 2.0)
- Cooperation (e.g. Crowdsourcing)

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**President Hu on China’s service innovation**

Hu Jintao, President of China, stated at the country’s top academic conference in June, 2010, "The rapid development of Internet, cloud computing, Internet of things, knowledge services and intelligent services offers a powerful tool and a favorable environment for service innovations."

Source: CCID Consulting, 23 Dec 2010
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