

Web 2.0 for Knowledge Transfer

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This presentation was made to the TII (Technology Innovation International) Annual General Meeting in Dusseldorf April 2010 by Neil Rathbone and Mark Wingate.

Introductions

Neil Rathbone has a background in marketing and technology consultancy for 23 years and is a freelance 'Associate consultant' at Pera

Mark Wingate has a background in IT and project management. He joined Pera in 2003 to take over the project we are going to talk about

Overview

1. What's it all about?
2. The Knowledge Transfer Network story
3. Some lessons learned
4. Where are we heading next?



The presentation is in four sections

Web 2.0 for Knowledge Transfer

1. What's it all about?



First let's look at Web 2.0 in the context of what TII members do

Web 2.0 – A definition

The second generation of the World Wide Web, especially the movement away from static web pages to dynamic and shareable content and social networking.

Wikipedia, April 2010

Most importantly for information communities

- Users can create content for other users



Web 2.0 is being conceptualised and defined after the event, and the term is often used simply as a 'buzz word', but the significant factor is that users can interact with a Web 2.0 site, rather than being passive consumers of content provided by the site owner. It is almost defined by not being web 1.0.

Knowledge Transfer functions

- Broadcasting information
- Networking
- Partner matching
- Negotiation
- Collaboration and clustering
- Mentoring
- Monitoring and evaluation



In the stone age, technological knowledge traveled only as fast as a person could walk. Since then we have developed ways of accelerating technology adoption as part of our economic and social progress. These fundamental elements of knowledge transfer remain the same today.

Traditional environment

- Publications
- Conferences/events
- Face to face
- Email
- Web sites



The tools that we use have however changed over the years. In the last decades we have used the Internet as part of the mix but this has been mostly as a simple broadcast publication tool.

Knowledge Transfer (Traditional environment)

	Broadcasting Information	Networking	Partner Matching	Negotiation	Collaboration & Clustering	Mentoring	Monitoring & Evaluation
Publications	✓						
Conferences		✓	✓		✓		
Face to face				✓	✓	✓	✓
Email	✓				✓	✓	
Web sites	✓						



Some of the tools have multiple uses, creating a matrix of functions and tools.

Web 2.0 environment

- Web pages (static, dynamic, user blogs)
- Membership (mailing list, profiles)
- Searching (manual, personalised, automatic)
- Networking (member to member contact, email, IM)
- Conferencing (meetings, webcasts, IM)
- Collaboration (shared spaces, discussion groups)



Our big idea was that, using Web 2.0, we could conduct ALL the functions required for technology or knowledge transfer online. This was quite a bold idea and to be frank although we knew it could work in theory, we didn't know if it would work in practice and be acceptable to the actors involved.

Knowledge Transfer (Web 2.0 environment)

	Broadcasting Information	Networking	Partner Matching	Negotiation	Collaboration & Clustering	Mentoring	Monitoring & Evaluation
Web pages	✓				✓		
Membership		✓	✓		✓		
Search tools			✓		✓		✓
Network tools		✓	✓		✓	✓	
Conferencing tools	✓	✓	✓	✓			✓
Collaboration tools				✓	✓	✓	✓

However, you can create a similar matrix of functions against tools, and you can see that each tool maps onto more functions than before. So we planned to build an integrated Web 2.0 site that would contain these tools.

Pera Managed Portal

- One integrated Web 2.0 space with single sign-on and seamless movement for the user
- Locally managed as multiple individual sites with both shared and individual content
- Centrally managed in terms of cost, support, reporting, backup, recovery, branding, licenses, and development



The important features are these. As you can see, it is more than a single web site. We would have to build a platform or if you like a 'Portal'; something capable of supporting multiple sites, each focussed on a different subject, with management of those sites devolved to subject experts who were not necessarily IT experts.

Knowledge Transfer (KTN platform)

	Broadcasting Information	Networking	Partner Matching	Negotiation	Collaboration & Clustering	Mentoring	Monitoring & Evaluation
Managed portal	✓	✓	✓	✓	✓	✓	✓
Community action	✓	✓	✓				



Another important factor, if we were to successfully sell this to our client, the UK Government, was that it could be operated on a large scale. To achieve this, you have to understand the important division between the actions that can best be done at portal level, and often automated, and those that are best devolved to the individual communities, and to people. Again, one can show this as a matrix against the fundamental functional elements of knowledge transfer.

Web 2.0 for Knowledge Transfer

2. The Knowledge Transfer Network story



In this section, we are going to set the scene for our case study, covering the origins of the project, the reasons for its existence and a summary of the results, then we will drill down into the lessons learned.

Knowledge Transfer Networks

- Proposed by Pera to existing UK Government programme (Global Watch Service)
- Focused on key/strategic sectors
- Connect actors together
 - industry, research, finance, regulators, education etc.
- Overcome barriers to technology exploitation
 - knowledge, information, standards, finance etc.



The subject for our case study review is the Knowledge Transfer Networks (KTNs). This started life as an experiment carried out under a UK Department of Trade and Industry (now Business Innovation and Skills) programme called Global Watch Service. Global Watch was an international trade promotion programme which successfully collected areas of technological excellence with UK and sought out overseas markets for them, and also identified market failures and opportunities within UK industry and found global innovations and inventions to service those opportunities. The service was delivered via traditional means - a mobile team of trade promoters and specialists, international missions, secondments and publications, and had a full-industry spectrum scope.

At the same time, a second programme was in operation: the Faraday programme. These were existing sectorally-scoped traditional technology transfer networks, which whilst successful, were seen by the establishment as dinosaurs of a bygone age.

Something new was needed and the KTN experiment proved to be it. Many of the Faraday centres became KTNs and on the demise of the Global Watch Programme KTNs became the successor. In 2009 the process began of handing KTNs over to a newly created government agency called the Technology Strategy Board.

dti
Global Watch ONLINE **FUEL CELLS FORUM**

Welcome Peter, Event User Logout

Home News Web Events Technology Applications Patents Policy International Regional Membership Search Conference Centre

Conference Centre

The next online event scheduled is:

INTELLIGENT ENERGY

- **Issue and The Way Forward for PEM fuel cells**
- **Denis Heydel, Commercial Director, Intelligent Energy**
- **Thursday 04 March 2004, 16:30 GMT**
- **Click here to view the organisation profile.**

The most recent event was:

SAT NETWORK

- **Fuel cells in France – Interim report**
- **Helen Dickinson, UK SST attaché, Foreign and Commonwealth Office Paris**
- **19 February 2004 16:30 GMT**
- **Click here for the presentation used.**

Events Programme

- **Past Events**
- **Or, for more information on #events, click here.**

Hot Topics

The **Fuel Cells Forum** library of articles and information sources gathered from across the Internet!

 Technology & Roadmap	 Application	 Patents	 Policy, Standards & Regulation
UK Roadmap APC DPEC PA	Defence Domestic Fuel Clean-up Fuel Storage Hydro Portable	Granted: US Applied for: US Granted: EU Inventor	Carbon Trust DTI EPSRC REGV/D&T

 International	 Regional	 Universities	 Business
Australia Canada France Germany Italy Japan	Adel. West US etc ASDA GLA Highlands & Islands NWDA	Bath Birmingham Charm Ing Birmingham New Atlas Cambridge	Adelco Air Products Ceres Power Clean Energy Chall Dart Systems

Latest News

Tuesday February 24, 2004

 **FUEL CELL TODAY**

Other Sources:

Green, Friendly and Competitive: The key attributes that will drive the future of air travel says QinetiQ (10%) 24/02/2004 - www.qinetiq.com	Panasonic pictures on a Symbian OS phone as QinetiQ applies its imaging expertise to the mobile sector (10%) 23/02/2004 - www.qinetiq.com
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Search News more news

Note: Fuel Cells Advanced Search is currently Under Construction.

After an abortive launch, the Fuel Cells Forum was launched as the first KTN in 2003. It pains us a little to see this design, but at the time it was contemporary and hit the brief of being “information rich” and industry-focused.

Fuel Cells Forum

- Narrow sector (manageable)
- Some existing actors in sector
- Need for leadership
- Government policy a key issue
- Rapidly evolving technology and market



The fuel cell industry was a good choice for a pilot programme. It was a high profile technology area with positive green credentials and a high science backbone.

The industry itself was small enough to be easily identified, but also held a broad spread of large organisations and SMEs, from sole-trading inventors to multi-nationals such as Rolls Royce. There were also national networks already in existence with which we could ally ourselves and share resources.

Political Success

- 2003 - pilot programme 'Fuel Cells Forum'
- 2004 - roll out 30 KTNs and replace Faraday programme
- 2007 - Umbrella programme (Global Watch Service) closed. KTNs take on the lead
- 2010 - New platform rolled out, KTNs rationalised to 14



And it was successful!

The pilot programme generated a lot of interest and the membership rapidly grew to encompass not just the Fuel Cell industry, but also the relevant supply chain and active intermediaries such as venture capitalists and policy advisors. A 3 year programme targeting 30 KTNs was initiated and continued after the withdrawal of the Global Watch programme.

Operational Success

- 7 years of operation
- 24 KTNs
- 65,000 registered users
- 100,000 page impressions per month
- 20,000 person minutes of meetings per year

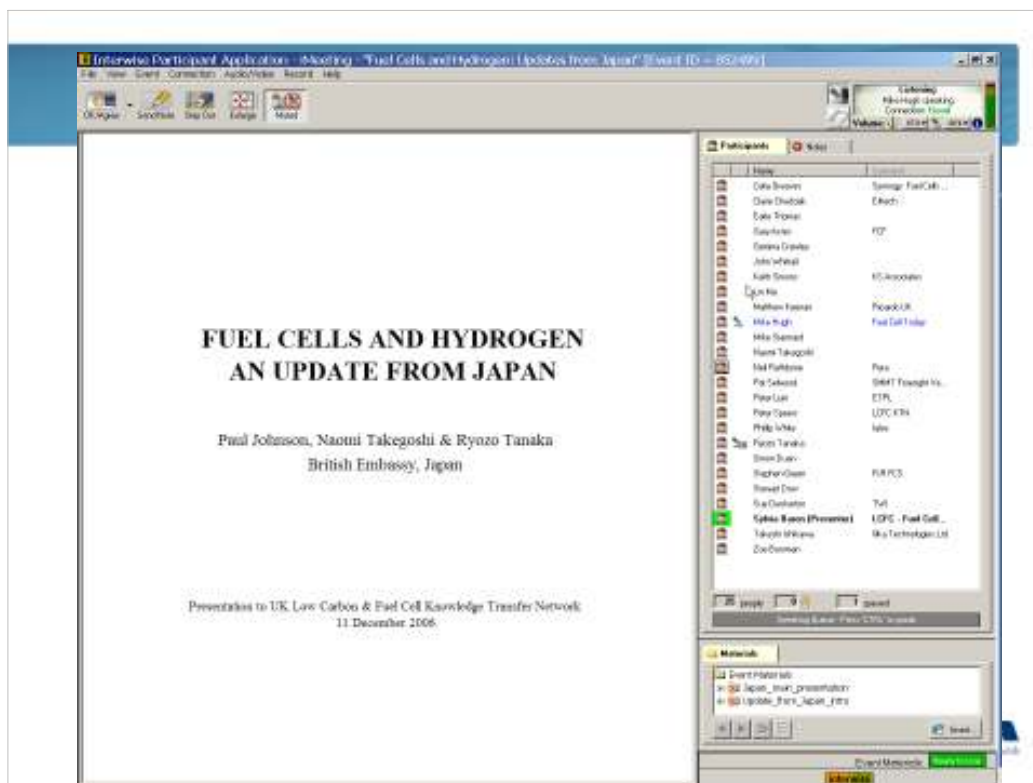


And the programme is going strong today, the platform continues to evolve, with some impressive statistics showing the activity within the network from last year.



During the life of the programme, the UK DTI itself was restructured and the KTN programme adopted formally by UK Technology Strategy Board.

We were able to seamlessly rebrand all of the KTN websites overnight.



One of the jewels in the KTN crown from “Day 1” was online conferencing. We used a technology called Interwise to provide Voice over IP web conferencing free of charge to participating KTN member organisations. In times of efficiency and cost-cutting, online conferencing is easy to demonstrate a positive return on investment:

For example, take a conference of 25 delegates with travel costs of 100 Euros each, and daily billable rates of just 400 Euros. To hold that conference would incur a cost to industry of 12,500 Euros before you have taken the costs of hosting the conference etc. Travel costs and loss of billable time are effectively eliminated.

It is not long before the technology has paid for itself many times over. Also by recording the conference using the system, members that are unable to attend can get an experience close to that of attending the event, and attendees themselves can review the recording, removing the need to take notes at the live event.

Top | Up | Explore

Add

- Document
- Web Page
- New Folder
- New Discussion
- New Calendar
- New Tasks Folder
- New Dashboard

Manage

- Link This
- Add To Offline
- Edit Properties
- Delete

Manage contents

- Paste Here
- Link Items
- Move Items
- Remove Items

Inform

- Subscribe
- Tell People


Collaborative R&D Partnerships
Private area and collaboration space for the DTI Technology Programme C progress reports should be filed

Show: Properties Descriptions

Email Address: RDPartnerships@ktnmail.globalwatchonline.com

Name	Modified	Modi
Advanced Composite Materials and Structures Collaboration space	05/12/2006 09:03	Julia
Application of modelling techniques to predict material properties during manufacturing and in-service performance	09/08/2006 14:30	Julia
High Performance Materials in Extreme and Hostile Environments collaboration space	09/08/2006 14:26	Julia
Materials for Extended First Use and Re-use collaboration space	09/08/2006 14:28	Julia
Smart Materials collaboration space	09/08/2006 14:29	Julia
dti management information	09/08/2006 14:32	Julia
Materials presentation at dti future focus on 4 July 2006.ppt	06/30/2006 16:50	Julia

[Advanced Materials Forum](#) > [AMF Private Area](#) > Collaborative R&D Partnerships



For project work, such as joint proposal development or out-sourced project management or remote resources, the platform integrated a comprehensive collaboration suite. The feature-rich environment included

- Document repositories
- Version controlled resources
- Calendars
- Task lists
- Messaging
- Subscriptions and notifications

Given its complex nature, and security requirements, it was a daunting application area for some users and required training and practice, but it provided a secure environment for private collaborative work. Typically the projects were initiated and mentored by KTN managerial staff, in order to maintain some control over its use. Appropriate security was essential in this area.

Reflection

- 2003 was before the Facebook revolution
- Predated open-source credibility
- Early adoption leads to experience



Let us close this section with a few reflections:

1. This happened in 2003, well before Facebook and its ilk had turned the web on its head and the Web 2.0 revolution was retrospectively christened.
2. Open Source software was not viable for us at the time - too unstable, too risky, too insecure, not acceptable for public sector programmes. How that has changed! We are pleased to say that the new KTN platform does use open source technology.

But we were there in a pioneering role and those experiences enable us to build a model for success for future programmes. We hope that our experiences will be valuable to you.

Learning experience

Networks require individual nurturing

- Slow to build (natural gestation period)
- Resistance to new media
- Require positive animation

And management of expectations

- Proprietary software inflexible



The view from outside was that this was an IT project, but the challenges we were facing were in the area of promotion and support and of cultural change. Experience of technology transfer, marketing, and community building helped to address the challenges the programme really faced...

- Networks that were “set in their ways”
- “Luddite” techno-phobic users sceptical of new media
- Risk-averse corporate IT departments unwilling to unblock websites or install software
- And worst of all, key software vendors whose roadmaps diverged from our strategic directions.

We never did solve that last one with the vendors themselves. The only solution is to take control.

Web 2.0 for Knowledge Transfer

3. Lessons learned



Now let's look in detail at some of the key lessons.

Know your network

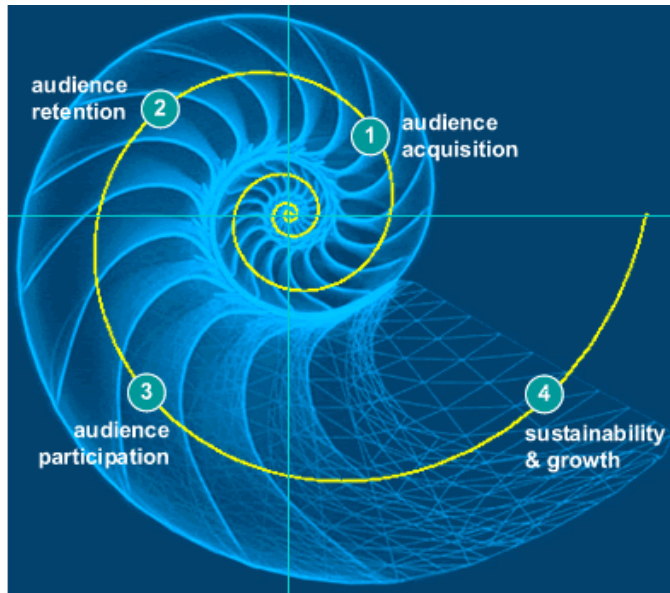
- Engender a culture for collaboration
 - Fuel cells forum was actually the second pilot
 - Stem cells forum
- Individual community needs vary
 - Growth
 - Speed
 - Connections



If you only take one message away from this presentation it should be that it is about managing people and content. It is definitely NOT about ICT systems. In Web 1.0 we used to see 'site under construction' as early adopters built sites with no content. The Web 2.0 equivalent is empty spaces - discussion groups with no postings, conferencing facilities with no conferences planned etc.

The receptiveness of the target audience will to some extent depend on their situation. Before we were involved, there was an attempt to start a pilot in stem cell technology. However, that industry is so sensitive, both commercially and ethically, that there is no way they will welcome an open and shared online space. Each community has its own characteristics; its own leaders and its own values.

Engagement Model



Regardless of community differences, every human being has a process that they have to go through in becoming a part of an online community. We have conceptualised this into a four-stage model.

The first stage is simple awareness and an awakening of interest.

The second is an action to make a permanent bond – typically by joining a mailing list

Third is active participation as part of the audience – so making a forum post, or attending an online event

Finally, there is the ultimate goal of active participation – for example starting a blog or organising a conference

There will always be people at each of these stages and it is a big mistake to try to miss a stage out or assume a higher level of commitment than actually exists. There is also a natural gestation period at each stage – I think of it like a courtship, you can't jump from a first date straight into marriage. You need to be constantly coaxing your planned community through each of the stages. As you achieve this, the reward is that the resource you have is growing and the community takes on a life of its own and becomes sustainable provided the portal remains available to them.

Animators and moderators

- Marketing communication skills
- Network / community building skills
- Sector knowledge and respect
- Technical familiarity with web skills
- Well-trained in operating portal



All very good, you say, but they must have made mistakes. Well yes we did.

Despite specifying that the portal could be operated by moderators with no Web skills, many KTNs recruited Web Administrators. These were Web technicians, who of course wanted to create new things and “meddle” with their part of the portal, or even build their own version ‘off platform’. These people typically had limited people and community skills, and so were often poor performers in terms of growing their communities. We now specify much more strongly the actual skills required for the job, as listed here.

Central support

- Induction and operational training
- Monitoring and remedial support
- Telephone/email helpdesk, with clear SLA
- Support in legal, ethical, design, and marketing areas
- Account management and performance support



We provided central training, support and monitoring. Another lesson we learned was that no-one really wants to invest the time in training. In particular, some moderators were part time and the training was too big a commitment in proportion to their working week, or some were already qualified Web Administrators and felt the training was beneath them. The result was that these untrained people became the biggest consumers of the helpdesk support facility. This is not just a simple case of on-the-job training. By the time they got stuck and contacted the helpdesk, such moderators may have already invested considerable time in building content using the wrong tools – so for example creating complex HTML code to perform something that was already available in the collaboration suite. It was then very difficult to undo what they had done, and consumed both their time and ours.

Although we made mistakes like this, we also demonstrated to our client the value of having central support. It is a mistake to think that Web 2.0 and social networking sites run themselves – especially if you have a specific aim, such as knowledge transfer, rather than just social networking for its own sake. Promotion, animation, moderation, editorial, quality content, and structuring the site to meet the communities needs are all management tasks and the people performing them need managing.

Moderator management

- Regular online meetings
- Online 'moderator community' space for resources and information sharing
- Transparent and democratic development request system
- Anonymised sharing of statistics



The approach that we evolved for moderator management was to hold fortnightly online meetings and to provide a site within the portal that was specifically for the moderator community. Here they could discuss issues, download training materials, and request system-wide changes and developments to the portal functions.

Portal management

- Monitoring system performance
- Standards compliance
- Legal compliance
- Hardware upgrades
- Software upgrades
- Portal development
- Cost management



There is also a ‘behind-the-scenes’ operation that ensures that the portal is fast, reliable, legal, and efficient. This does require technical knowledge, but only one organisation needs to possess that knowledge. Close centralised management of facilities and sub-contractors is largely invisible – until something goes wrong. Our contract even covers disaster management; work that we hope will be completely wasted.

Technology agnosticism

- Control your own direction
- Appropriate for the tasks
- Avoid lock-in
- Flexibility and growth
- Mash-ups



A painful lesson for us was the lack of flexibility of proprietary solutions, and the lock-in that seems to inevitably occur – either legally, technically or simply via inertia. In offering a multi-site public platform, flexibility, even in small things, makes a big difference. In the early days we had little choice as proprietary solutions were the only ones with the capability. Careful planning of the integration into the platform enabled us to customise to some extent, but we were still plagued with functions that were clunky, or didn't work on Apple Macs, or wouldn't talk to each other.

Open Source

- Flexibility
- Low-cost
- Greater integration opportunities



Our portals now are built using Open Source Software. This has the added advantage of being generally free, but that is not the main point as such major platforms anyway have a significant cost. The key quality is the flexibility of access to the source code, and the increased ability to build exactly the platform you want by joining multiple functions seamlessly together – a process often called ‘mash-ups’.

Conferencing

- Initial resistance
- Headsets and microphone control
- Testing and practice
- Meeting management
- Low-level frequent meetings v high-level 'celebrity' events



Now some lessons we learned from specific functions.....

Online conferencing is technically possible to a very high standard, but very slow to be adopted and often a bad experience for first-time users. Most of the problems can be traced back to over-eagerness to jump into a conference and the technical people not understanding the importance of first impressions. I myself was one of the biggest sceptics and enjoyed a sense of '*schadenfreude*' when the first demonstration was a disaster. However, I realised that the reasons for failure were more to do with the preparation and management than the technology, and just like born again religious fanatics, I will now try to persuade total strangers to believe in online conferencing, and many users have referred to it as the 'killer application' of the platform.

These are examples of the things you need to think about. [Talk through list]

Collaboration

- Start with real world needs
- Start with simple functions
 - document sharing
 - group emailing
- Stimulate demand
 - Calendars
 - Roadmapping (technology to market)
 - Event management



Collaboration is another 'killer application' although with the emergence of 'Google everything' the uniqueness it once had is wearing off. Using such a facility has to start with a need – a typical scenario being a group of organisations wanting to construct a collaborative bid for EU funding. The system allows them to share documents, jointly author text, and keep control of versions and amendments. Projects can be scheduled on calendars and discussions held that are recorded for the record and also available for newcomers to use to catch up. As users get more relaxed with keeping their files in the 'cloud' they begin to demand more functionality.

Look and feel

- Human face
- Community feel
- Automated for efficiency



An important aspect of a community is how it feels to belong. Too many Web sites leave you with the feeling that there is no-one behind them. While you have to automate a lot of functionality for cost-efficiency, there are many little things you can do – such as pictures of members and contributors, regular columns or blogs – to make you feel that there are real people around. Achieving this within the medium of a Web site is not a natural thing – it has to be learned.

Brand management

- Strong and consistent public identity
- High level of professionalism
- Compliance with accessibility and web standards



In the kind of multi-site portal we produce the user has to have a consistent experience, which means that for example the conference centre of one KTN should be in the same place relative to the home page as it is in another KTN. The terminology has to be consistent, and the design and branding too. This means fairly rigid centralised control, which we are able to exercise while allowing site managers and moderators freedom to layout their site and to incorporate graphics etc.

Dangers

- Techno-fanatics
- Under performers
- New moderator handover



Finally, here are three pitfalls to avoid:

The techno-fanatic who will never manage a site, but always wants to build a better one. I reiterate that Web 2.0 is not about the technology but is about the **users**.

Under performers who cannot begin to build a real community. While communities may be slow to grow, you need to see real community growth and not just ever-bigger mailing lists.

In terms of training, do it properly every time, then remember that people leave and are replaced so it will need doing again. We have found that, ironically, because the well trained find everything so easy, they assume that it simply **is** easy and that their replacement will easily pick it up as they go along.

Web 2.0 for Knowledge Transfer

4. Where are we heading next?



There is no doubt that the technologies of Web 2.0 brought a sea change in network activity to knowledge transfer. Or at least they brought the potential for a sea change. So where will the future take us?

More social networking

- Greater user familiarity
- Personalisation
- Improved ability to profile yourself
- Improved finding of contacts
- Own home page content channels



It is inevitable that social media is here to stay and growing rapidly. Home-use is creeping into the workplace. End-users are demanding self-service, self-describing and ever evolving systems. These are key components of the semantic web. Web portals are implementing personalisation options to allow users to choose how their pages look, what information is presented, what applets are visible, how frequently the portal contacts them etc.

Personally, having provided technical support for such options on the original KTN portal, I automatically turn these features off out of sympathy for the tech support teams behind them, but I can see the benefits expanding over time and “aggregating portals” such as Netvibes and iGoogle becoming dominant starting points for business information searches. Applet provision will be a key entry point for technology transfer activities.

Variable security model

- Easy access to public information
- Simple restriction for private information
- Strong security for confidential information



Security needs to be central to future knowledge transfer work. This involves the relaxation of security for enticement information - making sure that the maximum number of potential users can access the content - and also the application of security to member-only content, and the strongest security for relevant aspects, as we discussed earlier.

Chasing the benefits of online collaboration can lead us into dangerous territory with respect to security. Google has a suite of freely available tools that offer great functionality. But their laissez faire approach to security is diametrically opposed to business sense. People will lose their jobs by taking the easy option and employing low-security options for high security activities. Security and its considerations will be an increasingly dominant feature of technology and knowledge transfer. The ISO27001 standard for data security is a good place to start looking for guidance.

Interoperability standards

- Portal-to-Portal connections
- XML and news feed standards
- Content syndication (duplex)
- Steps towards a semantic Web
- Greater understanding of “data in the Cloud”
- Increased use of mash-ups



The key point I want to make here is that the innovations in knowledge transfer are going on right now, in the next room, the next town, the next country. Success in the future will stem from tapping into successful external resources and networks which exist alongside your current activities. Some of these networks are complementary: The success of LinkedIn as a business directory is an asset that many networks are tapping into already.

Some of these networks are competitive: Say goodnight to Bebo! Facebook saw off the challenge to Bebo with sheer numbers of members. The future will see this trend grow and the space for new niche networks may very well be limited. Integrating with complementary networks will be essential. As will using syndicated news provision, and by reverse contributing to that syndication.

New laws are being established nationally regarding where data can and cannot be held. Cloud computing falls foul of these legislations, but also offers the solution. Dealing with computing in the cloud will be a challenge in itself. And finally, this strange phrase : “mash-ups”. Free functionality, free upgrades, free enhancements. By accepting a bit of risk, powerful knowledge sharing web applications can be built at relatively low cost. I suspect that it spells the end for software patent lawyers though.

Web 3.0

- Next time...



Does Web 3.0 exist? According to Tim Berners-Lee's definition of Web 3.0, not yet. Many of the component tools are in existence (Tag Clouds and Folksonomies) but as a complete methodology, no. There isn't the necessary rigour in the implementations yet. Moreover, the culture for their adoption is not core to industry or academia yet. But as the next generation of decision-makers and technologists take roles in industry, the Facebook generation, these tools and applets will become embedded in business best-practice.

Web 2.0 for Knowledge Transfer

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In conclusion, it is apparent that for the future of technology/knowledge transfer, Technology has the answers. Technology probably has too many answers, both right and wrong. And technology is moving fast, posing its own questions and challenging existing understanding and approaches.

Consider the effect that YouTube had on businesses when it was launched - I can tell you that back in UK, Pera blocked it immediately. It was fun; and you're not paid to have fun. But last year that decision was reversed. YouTube can be a powerful educational tool and information channel; one that industry needs in order to remain competitive.

The key must therefore be in how and where we use the available technologies. And that increases the value of the human intervention, the soft skills and the support that technology transfer experts have. Don't misunderstand me - you have still got to get the technology right. Bad technical solutions are a waste of time and resources and can hamper information acquisition. The technology translator needs to evolve, to use nascent Web 3.0 and existing Web 2.0 technologies to deliver traditional benefits, but that role will continue to exist increasingly as technology marches forward.

One of my clients uses the phrase "*Knowledge transfer is a contact sport*". I think he is right, but I will leave you with one thought: technology is changing the face of all sports, and that includes knowledge transfer.