

Wiki-Based Collaboration in a large Organisation: An Enabler of Effective Knowledge Management

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A dissertation submitted in partial fulfillment of the requirements of Dublin Institute of Technology for the degree of MSc. In Computing (Knowledge Management)

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ABSTRACT

The World-Wide Web has evolved into a collaborative learning environment, where contribution and participation are replacing consumption and passive involvement. The shift which has taken place towards 'web 2.0' has been extraordinarily rapid, with the true potential of the web to connect people and their knowledge being seen. The use of web 2.0 tools as enabling technologies for knowledge management is becoming increasingly popular, with organisations replicating the success of these technologies on the consumer web behind their firewalls. The goal is to improve the knowledge sharing cultures internally and make better use of their organisational knowledge, so as to gain competitive advantage.

The full potential of the adoption of web 2.0 tools has yet to emerge, however early cases of successful implementation of social tools in support of organisational goals are positive. By closely aligning the aims of the knowledge management initiative with the goals and business objectives of the organisation, together with the early support of senior management, the potential success of the program is improved. An experiment to introduce web 2.0 technologies in a large financial services organisation has been undertaken to examine the challenges which arise and how the approach and language of the initiative helped to overcome potential misunderstanding and confusion about the terms web 2.0 and knowledge management. A pilot of an enterprise wiki platform was implemented, with full engagement of design and technical teams to position the technology as a potential collaboration standard. The focus was always about the capture and sharing of knowledge throughout, with many learning points for wiki champions and knowledge managers emerging.

Confusion around the true definition of knowledge management can be harmful to the potential success of initiatives if the wrong approach is taken. Focusing too much on technology can distract knowledge managers from the most important elements of

implementing a successful knowledge management program; people, social networks and their knowledge. While technology will almost always be part of any knowledge management initiative, it is important to recognize that it is only an enabler of the cultural change with which knowledge management is associated. In order to facilitate effective collaboration between cross-functional and geographically dispersed teams, a new suite of enabling technologies is required, as the frequency with which these types of collaboration occur increases. Traditional tools such as email and file share have been overused and actually detract from effective collaboration amongst teams in projects which appear with increasing complexity.

This approach has shown that the terms knowledge management and web 2.0 are not crucial to the success of these programs. Aligning the goals of the project to the business objectives of the organisation allows senior management to better engage with the efforts involved in achieving those aims.

Keywords: Knowledge Management, Web2.0, Wiki, Collaboration

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1 Introduction

Knowledge management (KM) is primarily about people, their knowledge and how to make best use of the collective knowledge of the employees in your organisation. This invariably leads to technology being used to capture and deliver this knowledge to those who can benefit from it, when they need it. The main focus however, should be on developing a KM-friendly culture supported by the appropriate structure. Knowledge management is a business-enabler, and should not be considered a stand-alone concept in isolation from an organisations wider strategy (Kelleher and Levene 2001).

“It is directly linked to what people know, and how what they know can support business and organisational objectives. It draws on human competency, intuition, ideas, and motivations. It is not a technology-based concept. Although technology can support a Knowledge Management effort, it shouldn’t begin there.” (Knowledge Management Research Library 2008)

Early knowledge management systems focused on capturing and storing this information in web-based database systems with extensive categorisation (Loshin 2001). However, these systems often do not cater for dynamic knowledge which is more difficult to categorize or generalize in a database system, allowing no control for the end user (Suarez 2007). This specialist knowledge is often better codified as a narrative or story like piece. Search and retrieval in a system designed around the database which holds the information it delivers often becomes less user friendly as the user may need some degree of knowledge of how to search and find the information they are looking for.

Compare this to the evolution of the user experience on the web. Search and retrieval have become increasingly important to the user experience, with sites such as Google and Yahoo making the discovery of knowledge on the web easier for even novice users. Other

emergent tools and technologies such as RSS, tagging, bookmarking, blogging and user driven communities like Wikipedia, YouTube and Facebook have transformed the static, publication natured web into a participative discussion environment.

This change in user experience has started to take hold 'behind the firewall' of large organisations. They are looking to the web for the latest and best ways to facilitate collaborative technologies which will enable their employees to work more effectively towards their goals. The debate still remains over what Web 2.0 can deliver in terms of real value to large organisations, however there are examples emerging where employees are sharing and collaborating in new ways to the benefit of their employees.

In this research, the use of Wikis will be examined in the context of knowledge management for a large financial services organisation, so as to explore the challenges and benefits of web 2.0 adoption.

1.1 Project Background

Web2.0 tools have become increasingly popular for social computing and knowledge sharing on the internet. Organisations are always looking for ways of making better use of their organisational knowledge/intellectual capital from within (Davenport and Prusak 2000). From studying the foundations of knowledge management, two key points emerged:

1. Capture knowledge from all available sources.
2. Make it available to those who need it.

In the past, knowledge management was focused on explicit knowledge – codifying it and storing it as intellectual capital. Tacit knowledge was more difficult to approach with the tools available. Tacit, complex knowledge, developed and internalised by the knower over a long period of time, is almost impossible to reproduce in a document or database (ibid. p70). Social computing taps into networks of people to access relevant expertise when it is needed. (Suarez 2001)

There is a growing trend, particularly in large organisations, for collaboration between teams in different geographies. Today, much project and BAU (business as usual) work is executed via cross-functional teams. This has increased over the last 10 years as the strategies and enabling technologies have evolved in this area (Director of Operations & Technology 2008).

In light of the changing requirements for technology to serve these new virtual teams, the Web2.0 suite is one which could serve as the enabler for virtual collaboration. This research examines the potential of a wiki-based collaboration tool to enable knowledge management in a large enterprise.

1.2 Research Aims & Objectives

The following objectives have been achieved throughout the dissertation and contributed to the overall outcome:

- To define what knowledge management is.
 - *Looking at the various foundation elements of knowledge management and to settle on a definition which contextually fits the experiment in this research.*
- To show how collaboration is key to successful knowledge management.
 - *Examine the role of collaboration and its contribution towards effective knowledge management.*
- To examine existing and emerging collaboration tools.

- *Highlight the common tools and explore their effect on collaboration.*
- To examine wiki as an enterprise collaboration tool.
 - *Define wiki and look at how wiki-use fits the knowledge management process.*
- To pilot wiki in a large organisation.
 - *To run a live experiment over 3 months in a large organisation to examine the research question.*

1.3 Research Methods

A number of research methods combined to contribute to this dissertation. This was partly due to the nature of the technology being used, but also because of a user-centric focus involved within the project itself.

Anecdotes: *“A good story is often the best way to convey meaningful knowledge”* (Davenport and Prusak 2000 p82). A big part of using technology in knowledge management is knowledge engineering. This requires a clear understanding of the needs of the user group who will interact with the system. To enable this, anecdotes were used to capture the user stories before engaging in system design or requirements definition.

B-Learning: Knowledge Discovery in the Blogosphere. As an emerging domain, there are not many significant case studies of wiki-based collaboration in large enterprises published. One of the significant methods for tracking developments in this area in the process of this research was to follow the blog postings of thought leaders who were communicating their experiences on the web.

For many of the emerging technologies which are associated with web2.0, the blogosphere is an important reference guide as to what is happening, in relation to best practices and commercial developments.

The author also published thoughts and commentary in this area through a blog called “Extacit”, <http://www.extacit.blogspot.com> . This helped to make contacts and gather feedback on some of the ideas which contributed to this dissertation.

Qualitative Research: Papers in the background and orthogonal areas of knowledge management, collaboration, organisational behaviour which relate to the web, web2.0 and enterprise 2.0 were analysed.

Structured Interviews: Part of this research involved a pilot in a large financial services organisation. Two key members of the pilot were interviewed, a senior director and an IT architect, to gather information on the collaboration needs and technical architecture implications of deploying an enterprise wiki tool within the organisation.

User Community Survey: The wiki pilot associated with this research began in January 2008 and ran for 3 months. During this time, a number of user groups were engaged, and used the wiki as a collaboration tool to help them in their day to day work. The user survey was an important method of extracting feedback for initial reaction to enterprise wiki use in this way.

1.4 Structure of the dissertation

Chapter 2 examines knowledge management and the multiple definitions associated with it. The relationships between knowledge and the processes (knowledge cycle), and

transformations (spiral of knowledge) which help make it a reusable asset for organisations are explored. Finally, the importance of social network analysis in relation to improving collaboration for effective knowledge management is outlined.

Chapter 3 discusses the phenomenon known as Web 2.0. The definition and important elements are defined, the comparison between Web 2.0 and Web 1.0 is outlined, the relationships between social computing and Web 2.0 tools are discussed and the concept of Enterprise 2.0 is introduced.

Chapter 4 introduces Wiki technology and tools. The features of Wiki and how they are comparable to the knowledge management processes are outlined. Finally Wiki use in organisations is discussed, with reference to adoption patterns, use cases and a comparison of commercial Wiki products.

Chapter 5 describes the enterprise wiki pilot which took place in a large financial services organisation as part of this research. The initiation, scope, aims and challenges which presented themselves in the running of the pilot are discussed throughout the chapter.

Chapter 6 describes a selection of the pilot groups who took part in the pilot. The use cases, reaction and design for each group are shown. Activity statistics captured from the portal itself are also discussed.

Chapter 7 presents and analyses the data collected as part of the research. The sources are a combination of user surveys, interviews, and activity data collected from the wiki during the pilot.

Chapter 8 discusses the conclusions of the project inclusive of suggestions for future work which could build on the findings of this research.

2 How Knowledge Management Works

2.1 Introduction

“There is a broad range of thought on Knowledge Management with no unanimous definition.” (Wikipedia 2008)

This chapter investigates the nature of knowledge management, the multiple perspectives on it, the benefits of knowledge management, and how it will be interpreted in this research. There is much confusion around the definition of knowledge management and this leads to confusion when implementing a knowledge management strategies in organisations. The types of knowledge, the process associated with knowledge management, and how they are used are also explored. The knowledge cycle and spiral are used to demonstrate knowledge management techniques. This topic is important when considering knowledge management, as there are many definitions and interpretations about what it is.

2.2 What is Knowledge Management?

Knowledge management is *“a multi-disciplined approach to achieving organisational objectives, by making best use of knowledge.”* (New South Wales Government 2007)

There are many definitions for knowledge management, which often leads to uncertainty over what it is exactly. It may be viewed from each of the following perspectives:

- **Techno-centric:** A focus on technology, ideally those that enhance knowledge sharing and growth.
- **Organisational:** How does knowledge management contribute to achieving organisational goals?
- **Ecological:** Seeing the interaction of people, identity, knowledge and environmental factors as a complex adaptive system. (Wikipedia 2008)

For the purposes of this research, the organisational view is considered, where most definitions focus on the capturing, organising, storing of the knowledge and experiences of individuals or groups, resulting in this knowledge being available (shared) to others. It is important to remember that any definition of knowledge management chosen by an organisation should be closely aligned with the mission and business strategy of the organisation (Kelleher and Levene 2001). Some examples are listed here:

“Distinct but interdependent processes of knowledge creation, knowledge storage and retrieval, knowledge transfer and knowledge application.” (Alavi and Leidner 2001)

“The explicit and systematic management of intellectual capital and organizational knowledge as well as the associated processes of creating, gathering, organizing, retrieving, leveraging, and using intellectual capital for the purposes of improving organizations and the people in them.” (American Society for Training & Development 2007)

“Focuses on defining the knowledge employees or systems used to perform activities and saving it in some format so that others can access it.” (BPTrends 2008)

“A system or framework for managing the organizational processes that create, store and distribute knowledge, as defined by its collective data, information and body of experience.” (Bridgefield Group 2008)

“...knowledge management is the process by which we manage human centred assets....the function of knowledge management is to guard and grow knowledge owned by

individuals, and where possible, transfer the asset into a form where it can be more readily shared by other employees in the company.” (Brooking 1999)

“KM is the process through which organizations generate value from their intellectual and knowledge-based assets. Most often, generating value from such assets involves codifying what employees, partners and customers know, and sharing that information among employees, departments and even with other companies in an effort to devise best practices.” (Levinson, M. 2007)

“Managing tacit knowledge (held in an individual’s brain in the form of know-how and experience) and explicit knowledge (recorded independently of humans).” (The Cura Consortium 2007)

“The tools, techniques, and strategies to retain, analyze, organize, improve, and share business expertise.” (Groff and Jones 2003 p2)

The methods and technologies used for this can vary, but the important thing is to focus on what it is you want to capture, and who your audience for this knowledge is. Successful knowledge management can help an organisation to realise the full potential from the intellectual capital of its employees. Creating an environment in which individuals, teams and departments share their experiences and best practices can result in improved operational excellence through constant organisational learning (Davenport and Prusak 2000).

When the setting for knowledge management is right, and the support for the initiative is present, three common tasks or methods used include;

Knowledge Audits: This is a formal, documented assessment of the current knowledge base, which is likely to be used by larger organisations when starting a knowledge management program. The audit will help to discover how employees currently store,

access, use, and share the knowledge that they need to do their jobs (Kelleher and Levene 2001).

Knowledge Mapping: A knowledge map is like an inventory of what people in the organisation have written down or entered into systems, and identifies sources of information employees use that come from outside the organisation such as libraries, websites or subscription services.

Knowledge flows: A knowledge flow examines how people process information, since ultimately that determines how well an organisation uses and shares its knowledge. Connectivity between people can be mapped using social network analysis (Baird and Cross 2000).

The social side of knowledge management will be important in the future. Social software technologies emerging through consumerisation will support web-based tools as rich learning, knowledge creation and collaboration environments (Harris and Mann 2007). The rise in popularity and adoption of web 2.0 tools in the enterprise will expand the benefits of knowledge management, making it easier for information to be discovered by those who need it.

2.3 The Benefits of Knowledge Management

There are many benefits to effective knowledge management. However, it is important to keep the language of knowledge management simple when it comes to “selling” these benefits to your organisation. Examples include higher workforce morale, greater corporate coherence, and richer knowledge stock (Davenport and Prusak 2000). Five of the key benefits, which will be obvious to most organisations, are:

Avoiding redundant effort – Avoiding duplication of effort saves time and money, something every organisation should aim to do. “Re-inventing the wheel” will not allow you to focus on what is most valuable to your organisation. Knowledge management will help you to discover knowledge and experience which already exists elsewhere in your organisation.

Avoid repeating mistakes – *“Those who ignore history are doomed to repeat it”*. If we don’t learn from our experiences, then we will experience them over and over again. Knowledge management allows us to share lessons learned, not only about successes, but also about failures.

Take advantage of existing expertise & experience – Teams are made up of individuals with specific knowledge and experience. Collectively, these team members contribute to the success of the group overall. Knowledge management helps to discover where teams and groups work well together and share this with others across the organisation. The result is an organisational culture where the people can make best use of existing knowledge and experience to implement in their own area (Garfield 2008).

Making individuals more effective: The deployment of knowledge management systems like intranets and portals can play a huge role in making individual employees better informed and more effective. The objective of such initiatives is to empower employees, with advantages for the organisation such as integrating new hires quicker by giving them access to the organisational knowledge via a single interface.

Making teams more effective: *“Teams, especially cross-functional teams, are the new primary unit of knowledge creation in a knowledge-based organisation”* (Young 1999).

Improving the business intelligence of teams and business units should be one of the goals of any KM program. Knowledge flow is often most effective in teams where there is a broad range of experience resulting in improved creativity and innovation (Kelleher and Levene 2001 p73).

2.4 The Categories of Knowledge

It is important to identify the categories of knowledge and the difference between them. In order to plan for a knowledge management system, it must be clear as to the types of knowledge you want to capture and operate on. Nonaka identifies two main types of knowledge (Nonaka 1991):

2.4.1 Tacit Knowledge

This is knowledge gained through experience, learning, common sense, rules of thumb, values and beliefs. This is the knowledge held inside the individuals' brain. It is often difficult to capture and codify in a document or database.

Tacit knowledge is what makes employees individual and unique from one-another. This promotion of tacit interactions and knowledge sharing between individuals will help to transfer this tacit knowledge across the organisation. This is known as the socialisation process (Nonaka 1991).

“Tacit knowledge appears to be really key to innovation - organisations should therefore strive to create the contexts in which such knowledge exchange can take place.”(K Harris 1999)

Tacit knowledge transfer can be a key driver of innovation. While capturing and storing of documents and other business objects is quite technical, the cultural and organisational behaviour barriers to encouraging tacit knowledge transfer are more difficult to overcome. Knowledge Managers must support the sharing of unwritten knowledge and the generation of new knowledge through conversation and interaction amongst employees.

2.4.2 Explicit Knowledge

Explicit knowledge is knowledge that has been or can be articulated, codified, and stored in certain media. It can be readily transmitted to others. The most common forms of explicit knowledge are manuals, documents and procedures. Knowledge also can be audio-visual. Works of art and product design can be seen as other forms of explicit knowledge where human skills, motives and knowledge are externalised.

However, this type of knowledge needs to be managed in order to be used. Structured, explicit knowledge does not become usable simply by being codified. It needs to be evaluated, organised and made available to the people who can use it to the benefit of the organisation (Davenport and Prusak 2000).

2.5 The Spiral of Knowledge

The transfer and conversion of knowledge is important to consider. The Spiral of knowledge (Nonaka 1991) illustrates the process of capturing and transferring the two categories of knowledge defined in section 1.1 above:

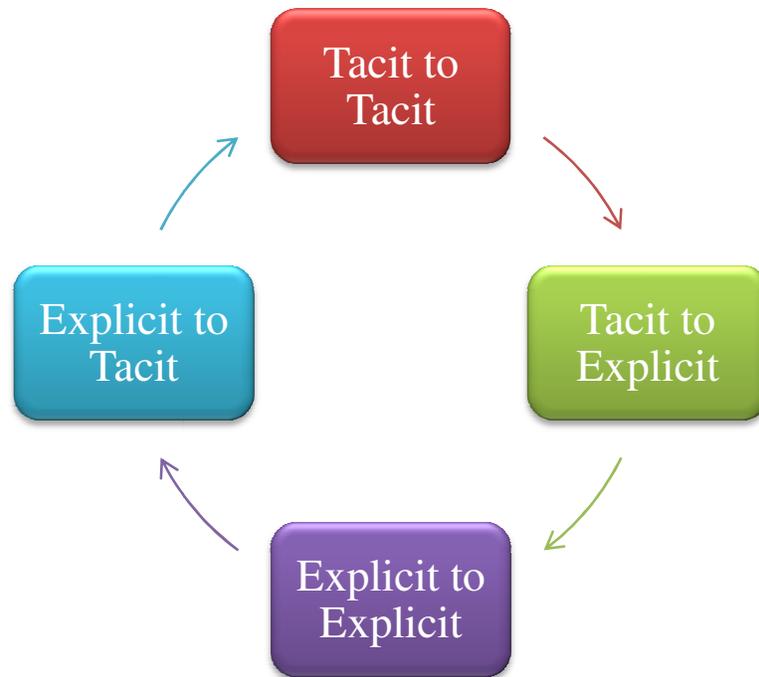


Figure 2.1 - The Spiral of Knowledge

The four processes illustrated are:

2.5.1 *Tacit to Tacit (Socialisation)*

Social interactions between people enable tacit to tacit knowledge transfer through observation, imitation and practice. These interactions take place every day in the work that people carry out through communication with others. An obvious example of this can be observed at team or project meetings where knowledge is exchanged and discussed

This can be also described as the “master and apprentice” method. The apprentice can learn the skills and knowledge of the master through observation, imitation and practice. However, neither know the how and why of what they are doing, as the knowledge is never captured or codified, and therefore is not easily leveraged by the organisation as a

whole. It is therefore important to have a strategy which encourages tacit to explicit knowledge capture.

2.5.2 Tacit to Explicit (Externalisation)

By capturing and codifying tacit knowledge into explicit forms, an organisation can make knowledge available to others. This is one of the major benefits of knowledge management systems, which enables much experience to be accessible to new or inexperienced employees. It also provides for the retention of valuable knowledge gained through experience by the many domain experts within the organisation. It is often damaging to local teams or projects when a key member either leaves the organisation or changes roles within it.

2.5.3 Explicit to Explicit (Combination)

When a new body of knowledge is compiled through the combination of existing explicit knowledge objects, this is known as combination. The example used by Nonaka is the comptroller of an organisation who produces the financial report by gathering data from all of the departments within the organisation; synthesizing knowledge from many different sources. A simple example is where a team may create an FAQ page on a wiki from the many questions or incident reports which have been captured during their work.

2.5.4 Explicit to Tacit (Internalisation)

Employees who access explicit knowledge and use it to broaden and extend their own tacit knowledge are internalising the new knowledge. This can be done by reading documents, accessing portal pages, formal learning scenarios (training courses) and other related

methods. Traditional knowledge management systems have focused on the capture and storing of knowledge in explicit databases also known as knowledge bases. However, the interfaces of such tools were not user friendly and intuitive, and often failed to encourage mass adoption or interaction.

2.6 *The Knowledge Cycle*

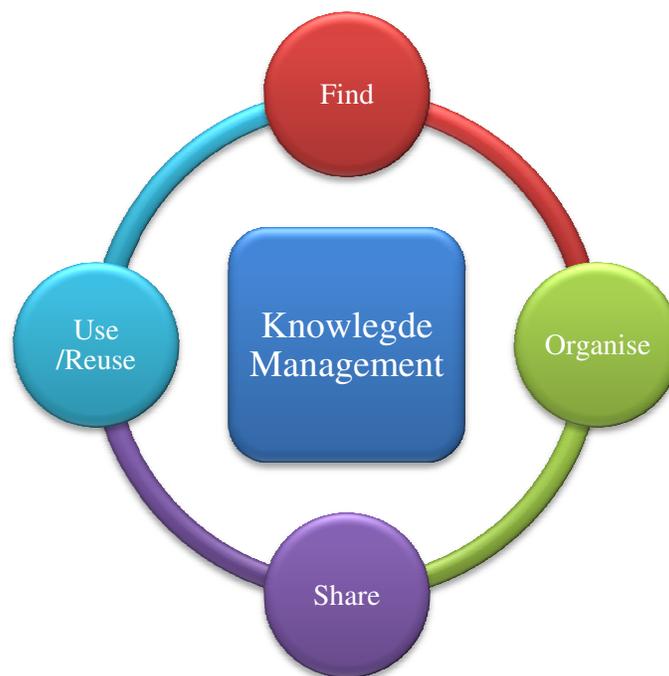


Figure 2.2 - The Knowledge Cycle

2.6.1 *Find (Create)*

“The next best thing to knowing something, is knowing where to find it” (Samuel Johnson)

When thinking of a knowledge management strategy, it is important to understand what knowledge you want to make use of. This will help to determine the enabling technologies

which best suit your needs. The “knowledge audit” is one method for assessing the knowledge assets with which you will work with. Knowledge which is relevant to your business comes from many sources, both internal and external. These include internal publications, project experiences, external research, industry expertise, best practices, work in progress, and raw data. If you cannot find the knowledge stored within your organisation, then it may as well not exist.

2.6.2 Organise

It is important that the knowledge captured and stored is organised in a way which makes it accessible and easily retrievable for those who need it. It is sometimes said that knowledge management is getting the right information to the right people at the right time. Emerging best practices in this areas include tagging, bookmarking and linking (such as in web portals or wiki technology). These features allow the data owners and consumers to customise their interaction with the knowledge that is important to them.

2.6.3 Share

Successful knowledge management is about releasing valuable knowledge from siloed file shares and documents making it available to those who will gain from its use. The internet, and web technology in general, is a great example of the power of centralised knowledge bases which can benefit many in the networks who operate on the information being shared.

Emerging portal and web publishing applications inside large organisations are helping to achieve the sharing of business knowledge to employees based around the world. This

knowledge network works to transfer the organisations knowledge to those who may use it or benefit from it.

2.6.4 Use / Reuse

The key benefit of an effective knowledge management system or portal will be seen in the reuse of knowledge and the development of existing knowledge and experiences into new ideas. By making internal knowledge accessible to all, the organisation can reduce re-work by using existing knowledge, improve information retrieval, and increase productivity overall.

Collaboration in the new knowledge environment helps to build on the intellectual capital and explicit knowledge which the organisation has developed to best utilise this asset going forward.

2.7 Knowledge Engineering – Transforming information into Knowledge

A major aspect of knowledge management which presents itself during a knowledge management program is knowledge engineering. This involves working with a target group to help them transform the information and data sources with which they work with into a valuable knowledge resource. As part of this research, this process was repeated with many pilot groups using anecdotes to enable them to describe their collaboration requirements. The process was simple:

Clarify – Taking the ‘raw’ anecdotal description of the groups’ interactions. As described in section 1.3 above:

- Describing the members of the group

- Describing the goals of the group
- Describing the information/knowledge they worked with
- Describing their collaboration needs

Simplify – This involves examining how the information is currently captured and represented. This often means looking at Microsoft Office documents and how they were stored on file share drives in folder hierarchies. Each group examines how they could simplify the customer access and experience with this data/information.

Implement – This entails, for example, setting up a wiki space for the intended use-case, creating the initial pages, and allowing the user group to take the process from there. It is important to provide as much help as possible in the early stages so that the user group feels comfortable with ‘their’ space, and familiarise themselves with wiki editing quickly.

2.8 Organisational Knowledge

“if only we knew what we know, we would be three times more profitable” (Lew Platt, Former CEO of HP)

If an organisation is to benefit from knowledge management, it must be able to determine where the expertise is located. Most large organisations will have expertise in many domains e.g. finance, operations, technology etc. The key thing is to identify and mobilise this knowledge so that it can be used, re-used and built upon to improve return on their knowledge assets – the employees. Whether you call it Organisational Knowledge (Little, Quintas and Ray 2002), a Knowledge Market (Davenport and Prusak 2000) or Intellectual Capital (Tiwana 2003 p16), it represents the collective tacit knowledge of your

organisation gained through experience and daily interactions with each other and those outside.

This is very important for multi-national organisations, or organisations that are growing through merger and acquisition activity. Multi-national organisations will often have a department of the same function in many locations e.g. IT, or HR. What is important is to link the knowledge workers in these locations in order for them to share and collaborate on tasks and to establish enterprise wide best practices through improved collaboration.

An example of achieving this is evident in the Siemens ShareNet case study. In this case, the Siemens engineers in South America were able to re-use valuable knowledge gained by their colleagues in the Senegal by accessing it on the enterprise ShareNet portal which enabled them to win contracts faster and better. This type of return on effort and reduced re-work is where the value can be seen. Siemens attributed a \$1 million saving to this conversation/knowledge transfer. (Davenport, Dous and Voelpel 2005 p12).

Another element of this is the cost of hiring outside expertise for projects. Specialist consulting firms thrive on the fact that organisations do not know where their own expertise lies. Often, there will be hired consultants working on projects to which internal employees could have equally contributed. An example of “knowing what you already know” would be continually mapping the qualifications gained by your employees, so that you would at least have a point of reference for a new venture or product investigation.

2.8.1 Knowledge Networks

“It’s not what you know, it’s who you know” (Cross and Prusak 2002 p105)

Organisational behaviour or culture will often determine how you get things done. People and their relationships are very important to your organisation. If the communication and collaborative flows internally are channelled through particular roles or are effected by management bureaucracy, then it can often prevent you from making the most of your organisational knowledge. This “Knowledge Flow” (Baird and Cross 2000) is important to examine, as it may be the key to creating a collaborative environment in your organisation. Prusak has discussed this idea many times, particularly in the paper “The People Who Make Organisations Go – or Stop” (Cross & Prusak, 2002) and in “Working Knowledge” with Thomas Davenport (2000). They define four characters that may exist in your organisation, and how they may affect the knowledge flow:

The Central Connector

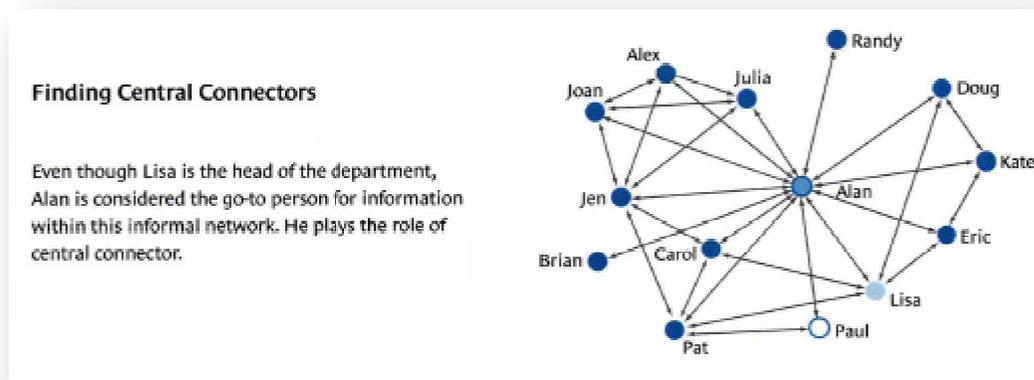


Figure 2.3 - The Central Connector

This is the person in a group who everyone talks to the most. In most cases, the central connectors are not the formally designated go-to people in the unit. The importance of these people in your organisation comes from their experience and tacit knowledge of the processes and systems with which their unit works on. They answer questions and queries

for their colleagues, and when they can't, they will point them to someone who can. In this way, these people help to knit the informal networks of knowledge together within your organisation.

While most central connectors serve the organisation in a positive way, some end up creating bottlenecks that can hold back the informal network. There may be little incentive for these people to continue sharing their knowledge without recognition or reward. In this scenario, it may result in almost every task or project to go through the central connector as they use their position in the network for power or personal political gain.

The task here is to both reward and utilise the central connector's knowledge by finding a method for capturing the experience of these people to help others around them.

The Boundary Spanner

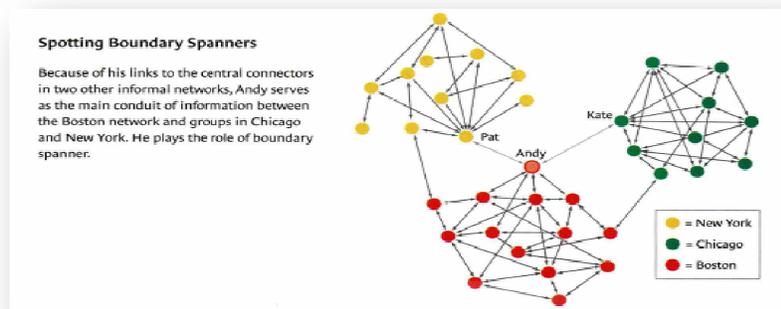


Figure 2.4 - The Boundary Spanner

The boundary spanners are the connectors between networks or formal divisions/departments in your organisation. They serve as the group's eyes and ears in the wider network. They play an important role in situations where people need to share kinds of expertise like establishing strategies or developing new products. If "your" boundary spanner left the group, the performance of your group in inter-departmental projects would be affected due to the loss of this key communicator/boundary spanner.

The boundary spanner makes best use of their intellectual expertise, wealth of social contacts, and personality traits necessary to be accepted by vastly different groups. While these people are very important to the overall make-up of your internal networks, they may often highlight the underlying issue of restricted knowledge flow in the organisation. It is important to recognise these people in the organisation, and try to establish more free-flowing communication between the boundaries they span.

The Information Broker

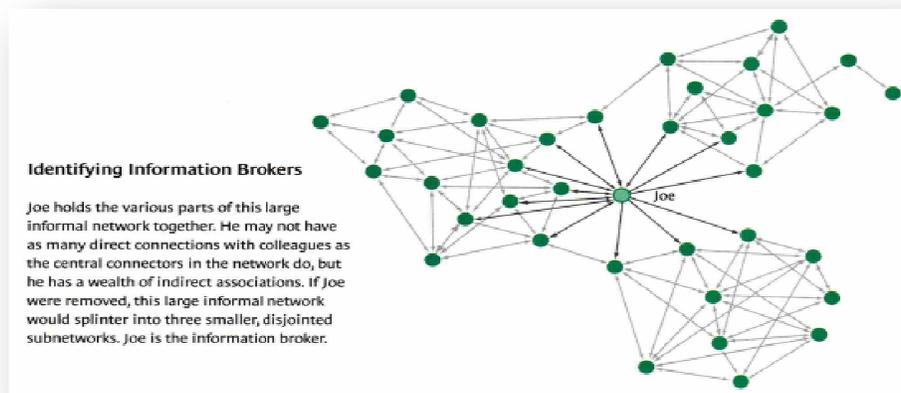


Figure 2.5 - The Information Broker

The information broker plays a similar role to the boundary spanner, only they do it within the social network. They wield the power of a central connector without necessarily possessing the number of direct links that connectors have. They are characterised by a wealth of indirect connections. These individuals are often designated as official go-to people by senior management as the importance of their role in the network is recognised. By connecting these individuals together within your organisation, information sharing can often be improved due to the amount of interactions these people have with those around them.

There is a danger in relying too much on information brokers, whose departure could actually tear apart an informal network. Improving communications and transfer of collective expertise to a wider audience is therefore a goal with which you should focus on in any knowledge management initiative.

The Peripheral Specialist

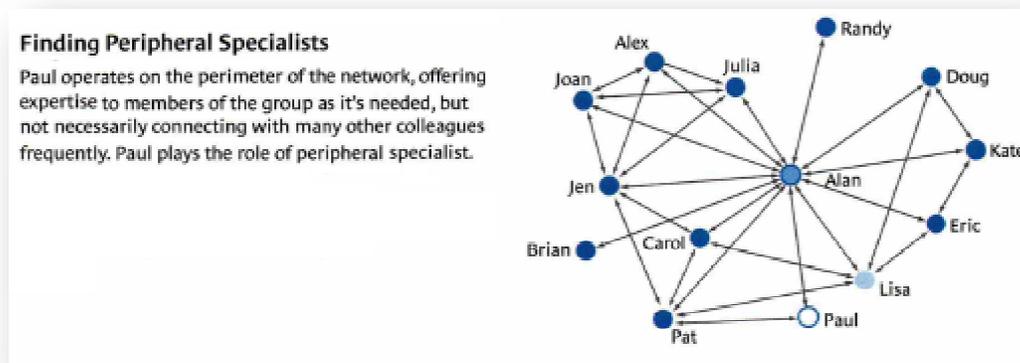


Figure 2.6 - The Peripheral Specialist

Peripheral specialists play a vital role in the network by serving as experts. They possess specific kinds of information or technical knowledge (research data, software skills or customer relationships) that they pass onto the other members of the group whenever it is needed. So, they are not often prolific in the overall interactions of the group, but when called upon, provide they key, specific information which the others do not know.

It is important to engage peripheral specialists in your organisation. These people may not feel they are being rewarded for the knowledge they possess. It is also important to consider that, they possess the knowledge because of the position or role they have in the organisation. In this way it is important to define the tie the relationship between organisational knowledge and personal knowledge. If these people “hoard” their knowledge while working for your organisation, then they are prohibiting effective collaboration and become a risk/threat should they leave.

2.9 Collaboration is fundamental to effective KM

Knowledge management is about people, and therefore collaboration and knowledge sharing between people in an organisation are important enablers of a knowledge management strategy. Organisations are structured in to divisions, departments, business units and teams. These groups can vary between functional and project teams. In order to work successfully towards achieving the goals of the projects they are working on, it requires the individuals involved to collaborate with each other.

“Collaboration is a structured, recursive process where two or more people work together toward a common goal.....by sharing knowledge, learning and building consensus” (Wikipedia, 2008)

The need for collaboration has increased in the current business world of distributed and virtual teams. Communication is very important especially when there are large numbers of project teams involved. Projects often require documentation and processes to be followed, e.g. a software development lifecycle in the development of software applications. However, these processes can become difficult to manage, particularly the management of documentation and access to shared resources.

As part of this research, the factors which influence effective collaboration on large projects were examined. Users who took part in the pilot were asked to rate how each of the following influenced collaboration:

- **Geographic Location of team members** – In a multi-national organisation, enterprise-wide projects often require representation on project teams from all over the world. These team members need to communicate and collaborate effectively in order to achieve the overall goals of the project. These people may not be able to meet face-to-face on a regular basis, so effective tools must be delivered in order to help overcome the challenges which distributed or virtual teams may encounter.
- **Complex team structures** – Similar to virtual teams, enterprise project teams will often be made up of people who come from different parts of the organisation. This will mean that they would not normally work with each other day to day, and may have different views depending on the culture of the department or division they are representing.
- **Team Size** – The more people involved in the project, the higher amount of communication that is needed. If a project team is very large, then it is important that effective communication is in place. This is very evident in enterprise-wide projects which may involve large project teams working on separate streams, and may not directly work side-by-side each day.
- **Volume of documentation** – Most projects, especially those involving the implementation of technology or IT systems, will involve documentation to support the development process. It is important that project team members can access the documentation related to their project work quickly and accurately.

Section 2.9.1.1 describes the problems of storing and delivering project documentation using email and file share drives. This problem gets even more complicated as the volume of documentation and associated folders grows.

2.9.1 Collaboration tools

“The world wide web has been instrumental in catalysing the knowledge management movement. Since knowledge and the value of harnessing it have always been with us, it must be the availability of these newer technologies that has stoked the knowledge fire.” (Davenport and Prusak p123)

Networks and computers, with their ability to connect people and store and retrieve virtually unlimited amounts of content, can dramatically improve knowledge market or network efficiency (ibid. p45). Email has long been used as a collaboration tool, although it was originally intended to be a form of electronic communication. The ability to attach documents to emails, along with improvements in the editing and formatting features of email clients has resulted in email becoming the most used collaboration tool in many organisations.

Davenport (2005) conducted a survey of knowledge workers in relation to their use of email. The findings support the view that there are problems with how people use it for collaboration:

- 26% thought it was overused in their organisations.
- 21% felt overwhelmed by it.
- 15% felt that it actually diminished their productivity.

File Shares allow for the storing and organising of documents on ‘shared drives’. They allow for multiple users to access documents from the same place. Each team or project

can have a folder on the shared drive to which they are all granted access. They can then store and organise the documents produced as part of the project in these folders.

Collaboration portals such as IBM Quickr and Microsoft's Sharepoint are the major offerings from the 'big two'. These platforms enable enterprise-wide collaboration through shared portals supported by integration with Lotus Notes (IBM) and Microsoft Exchange Server and Office. While these offerings have been the leaders in the market in the past, the cost and vendor lock-in risks associated with choosing one of these products is sometimes prohibitive depending on your collaboration needs and resources.

2.9.1.1 Email & File Shares

Collaboration requires discussion and review in order for decisions to be made at various times during a project. Email is the most commonly used collaboration tool in most organisations, with possibly 90 – 95% of collaboration being facilitated via Email (Levitt and Mahowald 2002). However Email is not well suited for this type of collaborative discussion:

1. Email is one-way communication, not discussion.
2. Written words and tone often get misinterpreted.
3. Email is asynchronous, so messages often cross, meaning that while you are responding to message 1, others are commenting on message 3.
4. People don't read every word of an email message.
5. It is difficult to follow the flow of a discussion in large mails compiled through repeated 'reply with history' mails.

(Oxenford 2007)

In large organisations, emails with attachments are a big issue. Documents get duplicated many times when sent by email. Some recipients may choose to download a local copy; some can forward it on to another, and so on. The risk to the project is that it is difficult for each person to know if they are working from the latest version of the document or not. To find out, they may have to mail the document owner or project manager, or navigate through the folder hierarchy to find the latest version if they have access to a file share.

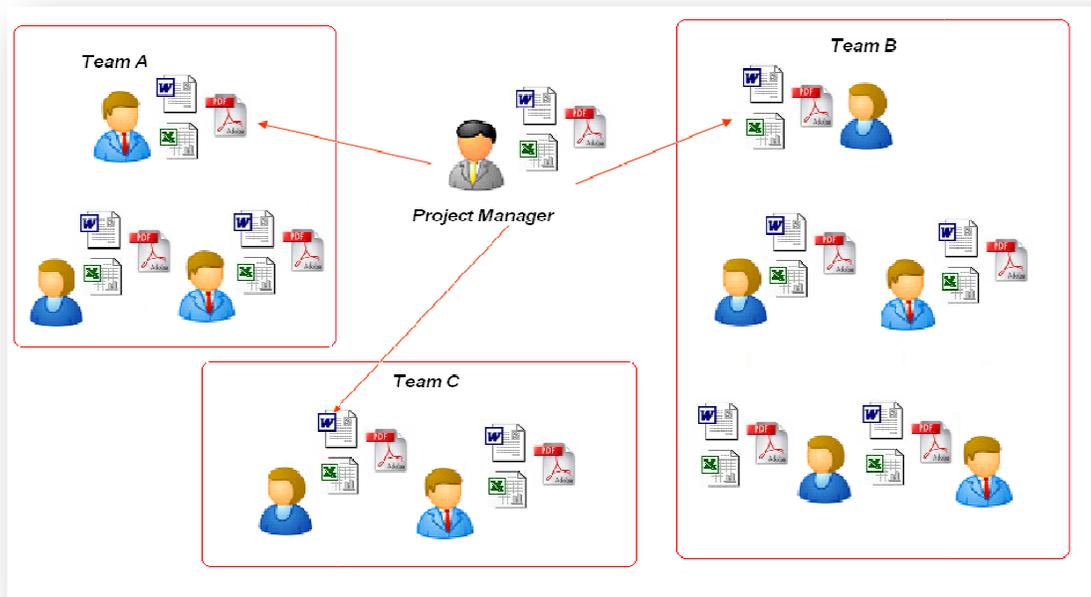


Figure 2.7 - Email Collaboration

Shared file drives facilitate central stores for documents, to which many employees can have access. They are a good method for local collaboration which involves documents which need to be reviewed or used by many people. They allow asynchronous access to documents in a familiar way through the windows explorer tool on the user's desktop.

The difficulty with file share systems is demonstrated when there are requirements for collaboration amongst virtual or geographically dispersed teams. Often file share

technology restricts access to individuals who are located outside of the network. These results in users using email to transfer documents over and back through multiple iterations, attaching files in the process. This method of collaboration can cause problems for organising information, communication and specifically document versioning – where it is up to the recipient to check for the latest document version in their inbox.

File shares also lack context. Folders are organised hierarchically, and are very much dependant on good naming conventions to enable users to travel the correct path to the document they are looking for. This requires familiarity with the information and is not very intuitive to a new or novice visitor to that information. The search facilities associated with file shares have long been out dated when compared to internet search engines which offer contextual exert snippets to show the search term in the target document or web page.

File shares enable teams to store all documentation relating to a project in one location. There are concerns however about the security, administration and interaction with file shares which can hamper effective collaboration. An example of this is document versioning; workers habits have evolved into producing several copies of the same document to maintain the separate versions in the review iterations which took place in its creation. This results in many unused and potentially misleading copies of a document being stored.

As the internet was quickly becoming a huge phenomenon for the consumer market in the mid to late 90's, corporate collaboration tools were very much centred on the desktop and the documents created by individuals. This was a big improvement on what had come before, as email allowed new channels for long distance communication which could include the swapping of files and attachments on different sides of the world.

2.10 Conclusion

The definition of knowledge management can often be confusing, so for the purposes of this research the definition in section 2.2 was chosen.

This chapter has defined two main types of knowledge, tacit and explicit, and the transformations from one to another as demonstrated by the spiral of knowledge in figure 2.1. This concept is important when considering what types of technology to provide to your employees. The technology must enable them to easily capture knowledge, organise it in a way that contextually makes sense for others, and to make it easily accessible to those who need it. This is demonstrated by the knowledge cycle in figure 2.2.

The idea of organisational knowledge is then discussed. It is important to consider knowledge management in this context, because the goal is to make best use of the collective knowledge of the employees in your organisation. Understanding the knowledge networks internally, can help you discover where the knowledge is and how the character of your organisation is creating bottlenecks or areas where knowledge is not shared effectively.

The outcome of these ideas are that knowledge management is about people, and how they interact within your organisation when working on projects to achieve your goals. The key element of enabling this is to create a collaborative environment where knowledge is used as an asset to support your knowledge workers.

The problems which present themselves in enabling effective collaboration are centred around the tools which we use for collaboration. As organisational environments change to mobile workers and virtual teams, we will have to provide these individuals with tools which enable mobile and virtual collaboration into the future. This is what is important when you look at larger, more complex multi-national organisations who have a workforce which is scattered all over the world.

Chapter 3 will examine a new era of collaboration tools which are collectively known as 'web 2.0', which reacts to this changing working environment, enabling virtual collaboration and knowledge discovery from the emerging toolset on the web

3 Web 2.0 – The Web as a Platform

3.1 Introduction

“Web 2.0 is the business revolution in the computer industry caused by the move to the internet as platform, and an attempt to understand the rules for success on that new platform. Chief among those rules is this: Build applications that harness network effects to get better the more people use them.” (O’Reilly 2006)

The growing popularity of social computing on the internet, creating a more interactive environment for the consumer has seen the emergence of a new media collectively known as Web 2.0. This was brought to world-wide attention when Time Magazine bestowed the *Person of the Year* award on ‘You’ in 2006, meaning the next generation of web users through Web 2.0 and social computing on the internet (Time Magazine 2006). These tools or technologies have transformed how we engage with the World Wide Web, from one of publish and consume model to a more interactive and participative model.

“The internet is evolving from a channel for content distribution to a platform for collaboration, sharing and innovation” (Gilroy and Ives 2006)

Gilroy and Ives (2006) identify 3 important factors of Web 2.0:

The Web has become a collaboration space – The shift from x to users accessing distributed web services that allow them to work collaboratively. Services like bookmarking, tagging and rating of content allow many users to recommend content to others on the web. An example of this is del.icio.us (<http://del.icio.us>), which is a popular social bookmarking tool which enables users to independently upload and tag URLs to a server where they can be accessed and shared.

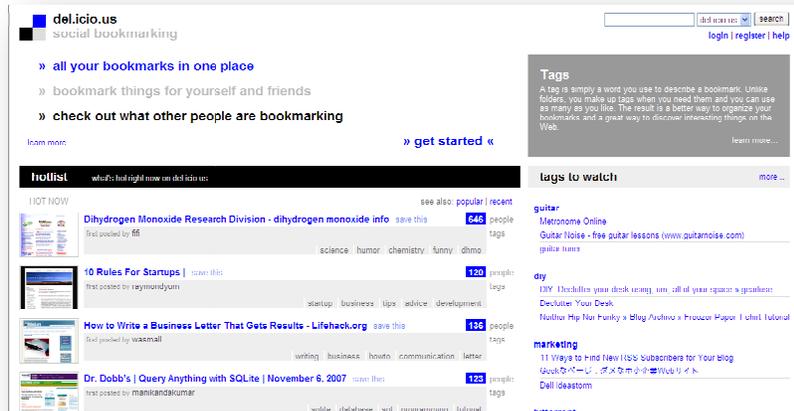


Figure 3.1 - Social bookmarking

The web is now a platform to publish and create – People do more now than just read the web. They participate with it by blogging, podcasting, publishing and contributing to collaborative sites such as Wikipedia (<http://wikipedia.org>). Particularly through blogs and podcasting, anyone can document and publish what they know without any need for specialist training in web programming. These combined channels can be connected through emerging aggregators and directories such as Technorati (blogs) or podcast directories like Apple iTunes.



Figure 3.2 - Blogs enable anyone to publish on the web

The web becomes an innovation platform – In the web 2.0 model, there are millions of publishers and thousands of web services scanning each new piece of information. Information published on the web is now read, analysed, repackaged and passed on in a new form. This allows for the discussion and evolution of our thoughts and trends to live on the web. RSS readers like Google Reader (<http://www.google.com/reader>) enable users to keep up-to-date with many sources from across the web and organise them into categorised feeds. This enables them to compare information on a topic from many sources. This then leads to new ideas and innovation.

adoption and use of those technologies towards a more user-centric, participative model (O'Reilly 2006). Figure 3.4 shows the Web 1.0 sites and the equivalent Web 2.0 services or communities which are replacing them:

Web 1.0	Web 2.0
DoubleClick	--> Google AdSense
Ofoto	--> Flickr
Akamai	--> BitTorrent
mp3.com	--> Napster
Britannica Online	--> Wikipedia
personal websites	--> Blogging
Evite	--> upcoming.org and EVDB
domain name speculation	--> search engine optimization
page views	--> cost per click
screen scraping	--> web services
Publishing	--> Participation
content management systems	--> Wikis
directories (taxonomy)	--> tagging ("folksonomy")
Stickiness	--> Syndication

Figure 3.4 - Web 2.0 V Web 1.0

Where the internet of the late nineties was an environment for publishing and consuming, the era of web 2.0 is one of participation and contribution by the user community who power the web, thus “*harnessing collective intelligence*” or “*wisdom of crowds*”. O'Reilly lists the core competencies which differentiate web 2.0 companies over their predecessors:

- Services, not packaged software, with cost-effective scalability
- Control over unique, hard-to-recreate data sources that get richer as more people use them
- Trusting users as co-developers
- Harnessing collective intelligence

- Leveraging the long tail through customer self-service
- Software above the level of a single device
- Lightweight user interfaces, development models, AND business models

Empowering the user community in the new participative model enables them to stay connected and share knowledge with each other easier than in the past. Andrew McAfee (2006) defines six characteristics of web2.0 which provide the new services to users called SLATES:

- **Search** – Users must be able to find what they are looking for. Thanks to sites like Google, users are now bypassing navigation in favour of faster search solutions.
- **Links** – Links between information adds context to it. They can contribute to providing structure to online content. In this way, “the best” content will have the most links to it. This enables others to find it easily.
- **Authoring** – The popularity of blogs and sites like Wikipedia have shown that many people have a desire to author content, reaching a wider audience. There are many types of contributions such as knowledge, insight, ideas, facts, links etc, and authorship enables the elicitation of knowledge on the web.
- **Tags** – User driven categorisation of content in the form of tags enable larger numbers of people to recommend web content to the wider community. Sites like del.icio.us and Digg allow communities to rate relevant content for each other.
- **Extensions** – “Smart” online applications like StumbleUpon and Amazon.com enable users to teach the application what their preferences are. Over time these applications then suggest content in which the user may be interested.
- **Signals** – Checking for updates on sites, particularly with the growth of the blogosphere and other user-contributed communities can be overwhelming. RSS (really simple syndication) alerts users when new content to which they have subscribed has been updated. Combined with an RSS aggregator (e.g. Google Reader), the user can follow hundreds of sites from one place.

3.3 The language of Web 2.0

It is often difficult to explain the concept of Web 2.0 or the tools associated with it to those who have not heard of it or experienced it on the internet. This is sometimes a generational issue, with the social computing audience usually comprising those in the 15 – 35 year old range. Common questions when working with Web 2.0 include: What is a wiki, blog, RSS? A technical answer to these will often lose the real collaborative benefits that these tools deliver and often will not be understood by the listener.

However, it is important to understand that Web2.0 is about people and connections rather than the tools and technology which enable these interactions.

One solution to this is to keep things simple. A consulting company called “Common Craft” (Commoncraft 2008) has produced a number of Web 2.0 short videos which explain some of the Web 2.0 tools in a style they call “plain English”. Their product is “explanation” and they act as “interpreters”; using “a simple format and real-world stories to make sense of complex ideas”. These videos are very popular amongst bloggers, being used to explain the different tools in the Web 2.0 suite.

3.4 Web 2.0 & Social Computing

The home of web 2.0 and the reason for the “buzz” or hype associated with the potential for the use of web 2.0 in organisations has been on the internet. Social computing tools have revolutionised the user interaction with the web. Millions of people now use the web for social networking, blogging, and video/music sharing.



Figure 3.5 - Web 2.0 Sites

The new participative web has allowed a bigger audience to share their thoughts and experiences in an innovative and intuitive way. It seems to have revealed the true potential of the web in being the inter-connector between people all over the world. People now have a “place” where they can find others with similar interests and share experiences in groups or online communities.

The “net generation” has emerged from this phenomenon, connecting with each other all over the world. Sites like Facebook, MySpace and Bebo have allowed these “Digital Natives” to connect with their peers and customise their web presence and the experience they have in their interactions. The shift from communication to conversation has enabled the masses to rate and discuss what is important to them.

Digital media portals like YouTube, Flickr, and SlideShare have provided mediums for mass sharing of these resources. It is now possible to find footage of almost any video ever made in the digital age on YouTube. This has enabled new communities to come together around specialist topics, such as artist fan groups.

It is not just the net generation who have benefited from Web 2.0; people of all ages can now interact with the web. The nature of most of these success stories is that the sites are intuitive and easy to use.

3.5 *Enterprise 2.0*

Enterprise 2.0 is the adoption of Web 2.0 tools inside organisations for business applications. The success and popularity of these tools has led to users adopting them for use within their organisations. This phenomenon has reversed the trend of previous technologies which have initially been disseminated by specialist advanced enterprises and later transferred to consumers (Kakizawa 2007).

Gartner have called this the “Consumerisation of IT” (Gartner), where grass-roots users are using a combination of Web 2.0 and open-source tools combined to form new applications which can be delivered as a service or system inside their organisation. However, there is confusion about the success of web 2.0 adoption ‘behind the firewall’. The view or understanding of Enterprise 2.0 differs between technologists and business professionals. For the technical community, it is about the tools – wikis, blogs, rss, podcasting, mashups etc. Companies such as BT (Dennison 2008) and Janssen-Cilag (Wallace 2007) have already shown how an IT-driven web2.0 initiative can sample some of the best elements of the Web 2.0 when implementing them in their enterprises. The language in these cases are very much about the technology and how it enabled the improvement in collaboration and information delivery to their employees. This combined with the correct cultural and environmental supports were key to the success of these programs.

For the business community it is about finding new business opportunities, marketing new innovative products, engaging large-untapped user communities, and enhancing customer

satisfaction and retention. This is particularly true for companies wishing to find new channels to interact with the net-generation customers who will ensure their success into the future. This community is now part of the web 2.0 era in which social networking has changed how they communicate with each other and their world. Platforms such as the Facebook applications are providing new markets for large corporations to target potential business. These environments may prove to be key business channels in the future (Govil 2008).

A key trend emerging for the success of Enterprise 2.0 projects is the support of Senior Management. Web 2.0 are often considered to be social computing tools, and it very much helps the adoption of such tools in the enterprise when senior management encourage their use and take away the early scepticism often associated with interacting with new technologies.

“The risks involved in embracing Web 2.0 are outweighed by the benefits experts say, and CIOs are already adopting Web 2.0 thinking to deliver a new approach to information creation, publishing, aggregation, discovery and validation.”
(Cornelius 2008)

3.6 Conclusion

Web 2.0 is a descriptive term for the evolution that has occurred on the web in relation to how people are interacting with information. The web has now become a collaborative environment where users can participate with, and contribute to the larger body of knowledge which makes the internet such a powerful knowledge resource. This is very evident when examining the trends for blogs and community sites like Wikipedia. The SLATES characteristics are important in terms of differentiating Web 2.0 with what was before.

Enterprise 2.0 is a term used to describe the Consumerisation of Web 2.0 tools and processes by organisations, but it is maybe too early to analyse significant cases of a transformation towards realised benefits. It remains to be seen whether adopting web 2.0 practices will provide the return which the Enterprise 2.0 concept promises.

Chapter 4 examines one of the Web 2.0 suite of tools, Wiki, as a technology and how it is being used to enable improved collaboration for users inside organisations.

4 Wiki

4.1 Introduction

A wiki is a website allows users to create, edit and link web pages easily. It allows a group of people to collaborate on a single piece of information in one place. This reduces the need for the group to pass many iterations of the information to each other, and enables each participant to keep up to date on the shared resource they are working on. One of the key success factors of wiki technology is the fact that it is an intuitive experience for the user, increasing participation, and reducing the need for familiarisation.

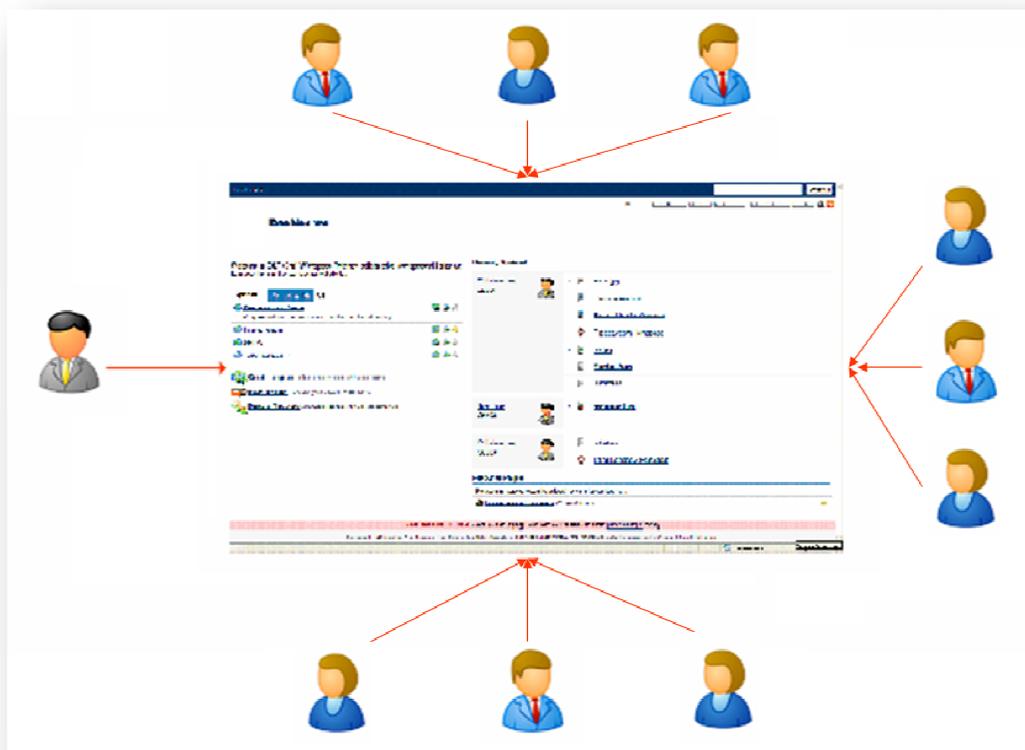


Figure 4.1 - Wiki-Based Collaboration

The word wiki comes from the Hawaiian word wiki, which means “fast”. The name comes from the shuttle buses at Honolulu Airport which are called “Wiki Wiki” buses. Ward Cunningham developed the first wiki called WikiWikWeb in 1994 (Wiki, from wikipedia).

The basic principle for wiki use is that many people can work on the same information by contributing, updating, reviewing and retrieving the information without having to handle complex communication scenarios. It is “centralising” the knowledge.

4.2 Wiki Features

Edit & Save – This is the fundamental element to wiki technology. It enables the user to contribute knowledge to the wiki, and encompasses the tacit to explicit knowledge transformation element of the knowledge spiral defined in section 2.5. The success of wiki is based on the user community contributions to the ‘crowd wisdom’ which is the overall wiki content. This is what makes a successful wiki a valuable resource.

Attachments – Much of the existing knowledge in a corporate environment exists in the form of documents (Word, Excel, PowerPoint, PDF and many more). To help wiki adoption, an enable explicit to explicit knowledge transformation, the early stages of a wiki adoption will need to facilitate the combination of new wiki content with existing documents in the organisation.

Access (Both Public & Private) – Wikipedia has benefited from the open access to its user community, and this critical mass has contributed to the success of the site. However, in a corporate environment, certain information must be kept private to those who have the

authority or roles to view it. For this reason, the commercial enterprise wiki products come with comprehensive security and data access models.

Linking – The power of the web is that it connects related information across the globe. Similarly, wiki's become an inter-linked knowledgebase which contextually links related information determined by the users who author the content held within them. This is a great improvement over documents on file shares or siloed email-based collaboration.

Tagging – Just like social bookmarking on the internet, tagging can enable a user to categorise information relevant to them, with tags which are personalised to them. This helps them to group knowledge available in the wiki for easy retrieval. This enables the use/re-use element of the knowledge cycle as the user can retrieve their tagged/labelled content.

4.3 *Wiki as a knowledge management tool*

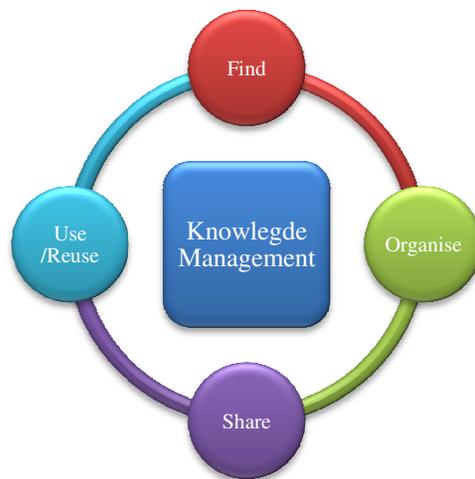


Figure 4.2 - The Knowledge Cycle

In section 2.6, the knowledge cycle was used to show the processes which contribute to knowledge management. Here we compare each of the 4 processes with the tools which wiki provides:

Capture: Editing wiki pages is simple, just click the edit button, and create the new content. Wiki editing is made simple by the use of the WYSIWYG ('What You See Is What You Get') editors, known as rich-text editors.

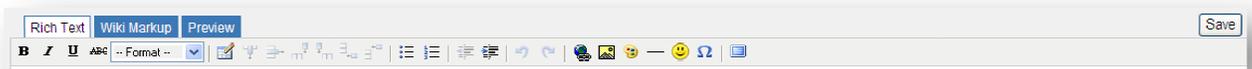


Figure 4.3 - Wiki Editing

Organise: The structure of a wiki is determined by the users who contribute to it. The normal structure is based on a parent-children relationship between pages in the wiki. An interwoven wiki solution adopted in an enterprise will have other ways of organising content such as linking pages together, tagging content to other related resources, and search facilities which can improve information retrieval.

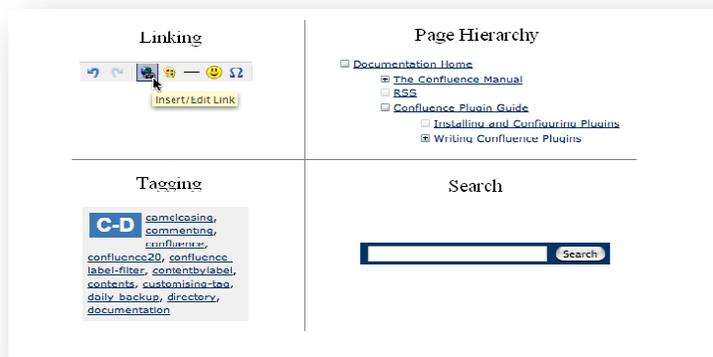


Figure 4.4 - Wiki Content Organising

Share: One of the major problems associated with sending documents by email is that it can be difficult to find this information or ensure that each recipient has the latest version. By storing your information in a wiki, your users will always see the latest version of the content, therefore reducing the risks of using out-of-date material. Built-in notification and feed services also help to improve the communication of newly updated material. By its nature, it is accessible to everyone on the wiki.

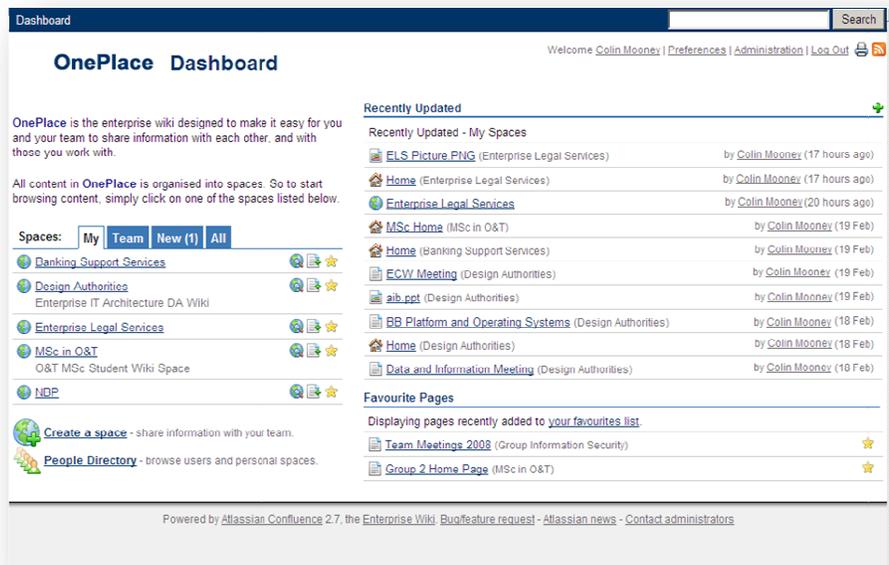


Figure 4.5 - Wiki Dashboard

Use & Reuse – As previously mentioned, users can quickly and easily update information that is no longer relevant, without the need to circulate a copy to all relevant stakeholders. They know that anyone who accesses the information will see the latest version. This is one of the big benefits of wiki, it is a ‘live’ environment where knowledge is updated whenever it is needed and those who use/consume that knowledge will always see what

they need. This information can be displayed in a “recently updated” section on the homepage, like in Figure 4.6.



Figure 4.6 - Wiki (Recently Updated Feed)

4.4 *Wiki in the Enterprise*

The ideas of web 2.0 and enterprise 2.0 have been discussed, with the focus on defining what these concepts are. Now the use of wiki by organisations will be explored. Wiki use in a corporate environment is different to that on the internet. Wikipedia demonstrates the “crowd wisdom” effect of mass collaboration using the technology, but the needs of an enterprise are somewhat different. There will be a smaller population of users within an organisation, and the information held on the wiki may be of a sensitive or confidential type. This requires governance, development of an adoption strategy (also known as a Wiki Pattern), and wiki championing.

In order for an enterprise wiki to be a success, a balance of accessibility and security must be obtained. For the senior management of the organisation, they must trust that the wiki can provide the same safety and security levels as existing ICT tools. At the same time, it

must be accessible to the right people in order for them to gain benefit from the knowledge available on it.

The adoption strategy will play an important role in introducing wiki into the enterprise. Also known as wiki patterns (wikipatterns.com), these act as a 'play book' to how you can approach the wiki implementation in different ways; depending on your culture and needs. It is important to pick one which suits your organisation, because gaining a critical mass of regular users is the only way of ensuring sustained engagement with the wiki.

The flexibility of wiki's enables them to be used in many ways inside organisations. A new wiki page can be considered a blank canvass onto which you can represent and organise your information in whatever style you want. Some of these are listed below:

- Knowledge Base
- Document Management
- Dashboard
- Collaboration Tool

Wiki's are different to traditional word processing tools such as Microsoft Word. They are web-based and will not provide the same 'horse-power' as desktop applications. Considering this, there may be some resistance to the adoption of wiki in certain areas of an organisation, particularly in areas where documentation plays an important role. If people are used to creating and working with traditional Microsoft office documents, then they may be sceptical of the appearance of documentation when created solely in wiki pages using a WYSIG editor. This is why the integration of the office suite with 'new' native wiki content can help to include these areas in participating in the wiki environment.

Training materials and support will be important also. Even though wiki technology is user-centric and intended to be easy to use, there will be initial ‘learning curves’ to overcome. Sometimes it may be useful to ‘spoon-feed’ a new group to help introduce them to the wiki, and also to demonstrate the speed and ease at which content can be created and linked in this new environment. It could help to source initial filler content which might be of use for the group, so that they don’t feel that there is just a ‘blank space’ on the wiki; resulting in them asking themselves ‘What do we put on the wiki’?

4.4.1 Wiki Patterns

In order to grow adoption of wiki in your organisation and to recognise some of the challenges or anti-patterns which will appear, it is useful to choose which wiki pattern could work well in your organisation. A website called “WikiPatterns” (<http://www.wikipatterns.com/display/wikipatterns/Wikipatterns>) has been setup as a community tool for wiki champions to collaborate towards defining the common adoption trends which they have experienced. Others can use the site as a knowledge base and reference guide when starting their own initiative. The site is split into four main sections:

- People Patterns
- People Anti-Patterns
- Adoption Patterns
- Adoption Anti-Patterns

These sections describe the approaches towards wiki adoption based around people and use cases which will help grow wiki use. Members of the community can contribute to and learn from the content, as the site itself is a wiki. Adoption patterns for wiki will differ depending on the organisation. The pattern you choose may be a single use case or a mix of patterns, depending on the size and variation of teams within your organisation.

As part of this research, the patterns available were analysed and used as pointers towards some of the challenges of the pilot described in chapter 5. Here are a selection of patterns, relating to people and adoption which were helpful in this research:

People Patterns:

Starting Point – New users to a wiki may not understand or have seen how a wiki portal works. A starting point, or demonstration space, helps them to get familiar with the look and feel, rules and etiquette, and technical tips which will help them. An example of a starting point page is available here: <http://www.usemod.com/cgi-bin/mb.pl?StartingPoints>

Viral – Wiki adoption is often viral in nature. Once a few people begin to use the wiki, they realise that it would be even more efficient if all of their colleagues and collaborators were using it too. The tip here is to recognise use cases which suit this description and spread the word through the potential user community. This can happen naturally through word of mouth as users recognise the reduction in rework and the time savings associated with wiki use. Two examples of the viral nature of wiki adoption are Nokia and Dresdner Kleinwort (Carlin 2007).

Welcoming – This pattern recognises the social drive associated with being a wiki champion. It recommends that new members are ‘welcomed’ to the wiki community, so as to encourage sustained engagement and to help address some of the early interaction.

Champion – “A *passionate, enthusiastic champion is essential to the success of wiki because s/he will be able to generate interest, give the appropriate amount of training for each person at the right time, monitor growth of the tool and fix problems that could derail adoption*”. The wiki champion makes her/himself synonymous with wiki in an organisation. They act as the go-to person for guidance and learning associated with wiki use and adoption.

Adoption Patterns (including use cases):

Agenda – By setting up agenda wiki pages for upcoming meetings, you are allowing your attendees to contribute-to or comment-on the content for that meeting. This can save time when compared to the traditional method of emailing the contents around to all, and then doing this repeatedly as items get updated, added or removed.

Community Portal – This pattern is based on a five stage observation of how a typical user will get involved with a wiki. Number three is “*looking for edits which need to be made*”. The task here is to make information available to users allowing them to see where updates are being made, or new pages are emerging, so that they will know where they can contribute also.

Critical Mass – As mentioned previously, in order to benefit from “Crowd Wisdom”, a critical mass of wiki users is essential. Tactics which can be used for this are based around content and contributors. For content, the suggestions are to establish significant amounts of exclusive information and convert/’wikify’ existing documentation so as to attract more users. For contributors, the advice is to build the number of existing users so that new users will feel that there is a community around the wiki. Other tips include getting respected or senior people involved so that others will be encouraged to join.

FAQ – An FAQ page can act as both an information provider and an invitation to edit for users. They can either find the answer to a question they are looking for, or add a new one to which they need an answer. It promotes use, and can be a central point for focus in the community.

One Wiki Space Per Group - In a large organisation, different teams want to share knowledge and collaborate on different topics. A natural approach might be to give each project or group a distinct space. The advantages of this approach are:

- Easier page naming in the context of your knowledge area and fewer problems with naming clashes
- Space to focus on a particular topic without distraction of other teams editing
- Team-based permissions e.g. other teams can view but not edit, or hide the whole thing from other teams
- Keeping projects separate just feels like a sensible approach

4.4.2 Your wiki is not necessarily Wikipedia

The most commonly known wiki is the online encyclopaedia called Wikipedia. It is a huge repository of information which has been contributed to by millions of users since it launched in 2001. As of December 2007, Wikipedia had over 9.25 million articles in over 253 languages. Wikipedia has become a valuable source of information, with many people now using it for research and reference.

While there may be some use cases which suit the wikipedia, i.e. a knowledge base, not all corporate wiki-use will be like wikipedia. There will be a need for security and access controls for certain confidential information on a wiki in an organisation, depending on the content. For example, wikipedia allows anonymous edits and differing points of view on topics. This may not suit all use cases in an organisation, where there is a need for focus on the information with which you handle. Audit and traceability for edits is often important in this way.

Many of the commercial wiki products aimed at enterprise-use behind the firewall have taken these points into consideration when designing their products. Section 4.4.3 discusses this with a comparison of some selected products.

4.4.3 Commercial Wiki Products

There are many commercial and open source wiki products available. Choosing the right one for your organisations needs is important. This will depend on the size, culture, existing collaboration suite, and your integration needs. As explained in section 4.4, there are different requirements for enterprise wiki implementations ‘behind the firewall’ to

those which are more public and hosted on the web. Some of the more popular enterprise wiki tools used for collaboration in organisations are compared:

Product	SocialText	Traction TeamPage	Near-Time	Atlassian Confluence
Features	8	9	8	9
Performance	9	9	9	9
Ease-of-use	8	9	8	8
Management	8	9	9	9
Scalability	9	9	9	9
Security	8	9	8	9
Value	9	9	9	8
Total	8.4	9.0	8.6	8.8

Table 1 - Commercial Wiki Comparison

The product comparison in table 1 above closely rates the 4 products. This is not surprising considering the extent to which they all focus on the needs of an enterprise in relation to wiki instances. Traction TeamPage rated highest at 9.0 overall, mostly due to its ease-of-use and presentation of information to the user. This product also comes packaged with an integrated blogging tool for team/project communication.

When selecting a product for the enterprise wiki pilot, the decision was made to opt for Atlassian Confluence. There were a number of reasons for this, including the existence of

an instance of the product in 'evaluation' already in the organisation. This product is discussed in more detail in section 5.9.

5 Enterprise Wiki Pilot in a Financial Services Organisation

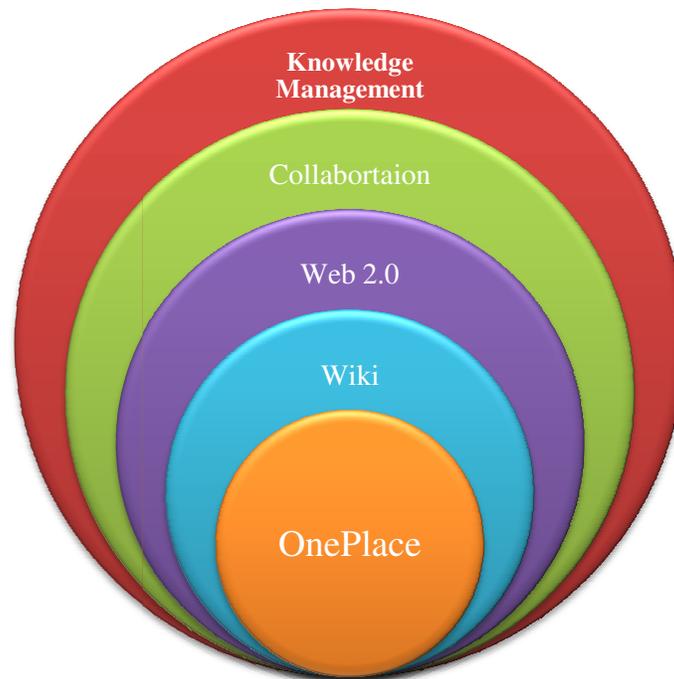


Figure 5.1 - 'OnePlace' as a Knowledge Management tool

5.1 Introduction

As part of the research for this dissertation, an enterprise wiki called “OnePlace” was piloted in the Operations & Technology division of multinational financial services organisation. Figure 5.1 above positions “OnePlace” in relation to knowledge management.

5.2 The Organisation

The Operations & Technology (O&T) division provides technology and operations support for the organisation across all its divisions internationally. There are approximately 4,000 employees within the division, located in many cities around the world. The division had undergone a very large transformation process over the 30 months preceding this research. This included the bringing together of functions which had long been siloed, and also the move towards a more enterprise approach to systems, operations and the provision of services.

5.3 *The Beginning*

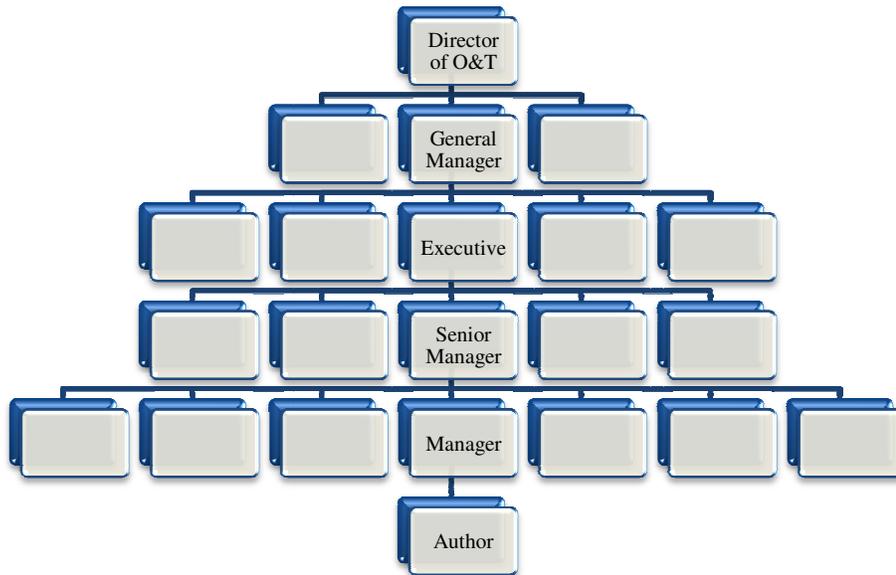


Figure 5.2 - Pilot Organisational Chart

The director of O&T was invited via email to discuss this dissertation in October of 2007. This email briefly described the project and requested a “chat” about the possible applications for wiki as a collaborative platform at the bank. The reason for approaching this high level of senior management was that there were case studies of other large

organisational web 2.0 adoptions which pointed to senior management support as being pivotal to the success of the projects (BT and Dow Jones).

This “chat” took place on October 5th, 2007 in the Directors’ office. The topic of knowledge management in general was discussed at first. The author was trying to understand what collaboration meant to the organisation and what difficulties existed with the tools we were currently using. The most significant outcome of this first session was the encouragement, support and openness of the organisation to new ideas which could benefit the members of the community within O&T.

Following from this initial contact, the Management of the O&T division made every effort to encourage and support this research through to the pilot implementation and data gathering exercises which followed. The “news” of the project quickly spread as the topic was discussed at board meetings and subsequent briefings across the division in the weeks that followed. This ensured that the audience for the research was a true cross section of the community of potential users.

5.4 Aims & Objectives of Pilot

The aims of the pilot were decided upon as part of the proposal process towards the approval of the pilot. Presentations were organised and meetings were held to initiate this process. These aims were aligned with the goals of the supporting group and the objectives of this research. Clarity of purpose and terminology is a critical factor with any type of organisational change project, but it is particularly important for successful knowledge management projects (Kelleher and Levene 2001). The aims were:

- To demonstrate the commercial wiki products were now ready for use in an enterprise environment for business applications.
- To encourage collaboration between teams in the “O&T Community” through the use of the “OnePlace” wiki portal.
- To position wiki technology as part of the overall suite of collaboration tools in the pilot organisation.
- To analyse the reaction and comments of users involved in the pilot.

5.5 The scope of the pilot

The pilot involved a number of groups who used the “OnePlace” portal to collaborate on projects and shared resources within the O&T community. It was also used to explore and test the Atlassian Confluence product with a view to adopting it in a production state.

The pilot groups were a mix of those who volunteered and some that were chosen to demonstrate the features in the time available. In total, the pilot included approx. 100 users from across the division were involved at various stages.

5.6 Current Collaboration Toolset

Like most organisations, there were many collaboration tools in use across the enterprise. These varied in type and style, and were mostly being used in geographical silos (one division or one country.). The issue with such a scenario is the inter-connectivity between these environments. In order to achieve enterprise-wide collaboration within your organisation, employees must be able to access knowledge from all areas of your organisation. This is difficult to achieve outside of the email system and file shares in a single division.

Unsurprisingly, email was the most commonly used, and its use in collaboration was “*forced and not particularly useful*” (Director of Operations & Technology). They had been investigating the use of a number of other platforms internally. These included collaboration suites IBM QuickPlace, Microsoft Sharepoint, and the pilot of the Confluence enterprise wiki product as part of this dissertation.

5.7 Requirements Gathering

As mentioned in section 1.2, a number of methods were used to elicit requirements from the business and user community within the organisation. These methods are detailed here:

5.7.1 Anecdotes – Using Stories to Capture the Organisations Needs

“The use of story as a knowledge disclosure advice can have a dramatic impact on the amount of knowledge that organisations can extract from employees, when compared with formal techniques like interviews and questionnaires”

(Kelleher and Leven, p93)

A major benefit of using wiki as a collaboration platform is its flexibility. However, this can also lead to ungoverned use and a risk of not achieving sustained engagement with the system over a long period of time. So, each group in the wiki pilot at Allied Irish Banks were approached and asked to submit their own anecdote. The key elements of this process were:

- Describing the members of the group – what are their roles, what their contribution to the group entails, who are the key members?
- Describing the goals of the group – For each group, the objectives or terms of reference were captured to help understand what it was they were trying to achieve.
- Describing the information/knowledge they worked with - what form this information is codified in (i.e. documents, emails, databases etc.)
- Describing their collaboration needs – How they currently share information/knowledge, how would they like this to improve?

Once each group had produced their story (anecdote), the process of knowledge engineering began. This involved key members of each group, providing input and experiencing the design from their own perspective.

5.7.2 B-Learning: Knowledge Discovery in the Blogosphere

Wiki adoption is an evolving domain, and for the most part will differ in each organisation. Material in the blogosphere is constantly evolving, with new and up-to-date ideas emerging constantly. Many of the adoption patterns and techniques used during this pilot were sourced from subject experts who blogged their ideas on the web. In particular, the work of consultant Stewart Mader, from his video series “21 days of Wiki Adoption, helped to create a road map of how to begin. Some of the suggested ideas were:

- Grassroots is best
- Run a Pilot
- Don't Rush It
- Better Meetings
- Project Management
- Documentation

- WikiCharter

5.8 Challenges of the Pilot

Becoming a “wiki champion” is not an easy task. There will be many challenges which must be faced along the way to seeing a live system in pilot in a large organisation. A wiki champion is important to the success of adoption in any organisation;

“A passionate, enthusiastic, champion is essential to the success of wiki because they will be able to generate interest, give the appropriate amount of training for each person at the right time, monitor growth of the tool and fix problems that could derail adoption.” (wikipatterns/champion)

5.8.1 “OnePlace” – The Internal Brand

One of the key things which we focused on early on was what to call the wiki? It was important to sell the benefits of wiki-use rather than the technology itself. We were not adopting wiki for the sake of it; it was to be the enabler of the cultural approach to collaboration and knowledge sharing. Branding is also important in terms of giving the knowledge shared a consistent look and feel.

So, it was decided to focus on a name which would signify the key aspect of this research – making best use of the collective knowledge of the organisation in one place. Now all of our work, knowledge, and experience could be found in one place; “OnePlace” was born. It resulted in an accidental success, that the key objective was part of the name itself. It made it easy to demonstrate and explain the portal to new users, while at the same time, delivering the message of a single knowledgebase for all.

5.8.2 *Introducing Wiki to the organisation*

While the author was always confident that wiki was a suitable candidate technology for improving collaboration in the organisation, the challenge remained that there was no official wiki instances in use at the start of the project. There had been many “shadow” instances over the past 5 years which had laid the concept before the “OnePlace” idea was introduced.

The objective relating to this challenge was to position wiki as now being an enterprise ready technology which was safe, secure and dependable for use as a business application. This was achieved through the special interest group setup through the “Email, Collaboration & Workflow” design authority which supported the OnePlace pilot from start to finish.

5.8.3 *Senior Management Support*

“Most successful knowledge management programmes are driven top-down by senior management, bottom-up by employees and laterally through effective COP’s” (Kelleher and Levene, p84)

As previously mentioned in section 3.5, one of the key learning points before approaching individuals in the organisation was that the support of senior management was a must for success with wiki adoption. This was the reason for the first contact with the director of O&T and the reason the pilot was realisable. The management showed their understanding of the difficulties of dispersed collaboration across geographical and divisional boundaries in the organisation.

Davenport and Prusak (2000) outline the types of support from senior management which are helpful to knowledge management initiatives:

- Sending out messages to the organisation that knowledge management and organisational learning are critical to the organisations success.
- Clearing the way and providing funding for technology and infrastructure.
- Clarifying what type of knowledge is most important to the company.

Both the BT and Janssen-Cilag (ref) cases had pointed towards senior management support as being key to their web2.0 adoption projects.

5.8.4 Understanding working in the “Wiki Way”

Educating stakeholders as to the benefits of wiki use in difference to the current email + file share environment was a large part of the communication process for the project. At almost all presentations, a focus was placed on the benefits of wiki mapped with the difficulties we were currently encountering.

5.8.5 Changing Culture

Email has become so embedded in corporate organisations, that it is sometimes difficult for people to understand how wiki use can improve their work. Even though most will admit that there are problems with email, they use it so much, that it is a tool that could not be replaced as part of the business application suite.

5.9 Product Choice and Deployment

The Confluence Enterprise Wiki, from Atlassian, was the chosen product for the pilot. There were several reasons for this, including the fact that the organisation was already another Atlassian product for bug tracking for software development. Section 4.4.3 above discusses Confluence in comparison to other commercial collaboration products available.

The Confluence product was easy to customise and administer. The software was initially deployed on a test server which was supported by an internal IT team in O&T. There were minimal changes to the ‘out-of-the-box’ solution, mostly around logo’s and branding. This would have to be explored more in-depth when going to a full production deployment.

5.10 Architecture

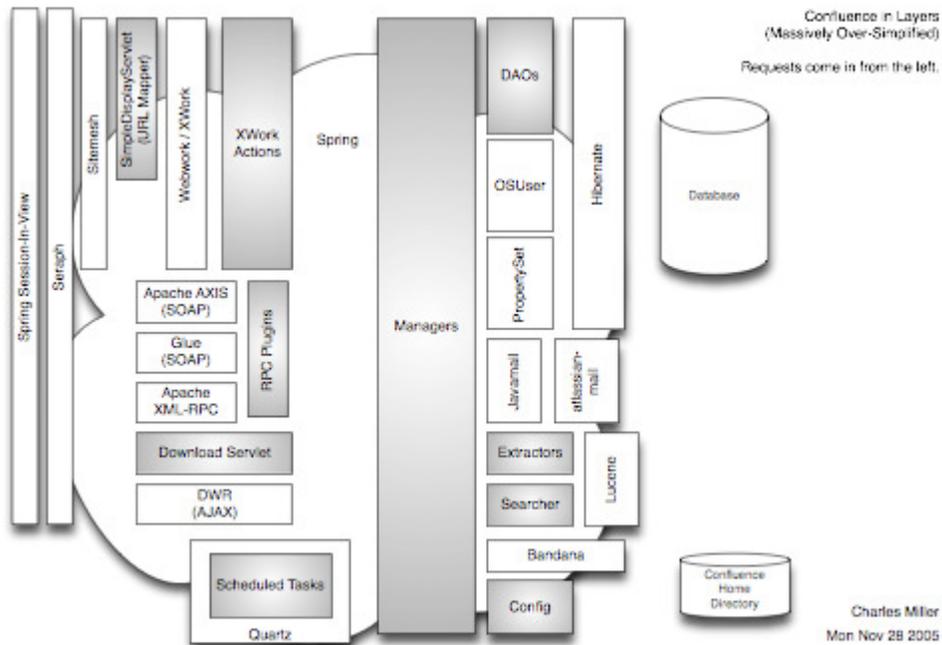


Figure 5.3 - Confluence Architecture

Confluence is a very flexible platform, and gives the adopting organisation many options when it comes to deployment. However, it is important to consider the implications of introducing a new knowledge management system to the existing suite of applications used for documentation and project-based content management.

In a large organisation, there will be many factors to consider. Issues like ILM (information lifecycle management), archiving, data storage and speed/performance in a web tool will be important when driving the implementation decisions around a large enterprise wiki environment.

For the purposes of the pilot, the potential number of users was known, so these decisions were less of a factor than for a full-scale deployment. The pilot was used to scale comparative statistics in order to facilitate decision making in relation to deployment options going forward.

5.11 Security

Security is one of the largest concerns of web 2.0 adoption in any enterprise. This is partly due to a miss-understanding when it comes to open and transparent collaboration when compared to the security needs of the organisation.

In the case of the Confluence enterprise wiki, security is an integral part of the product. Organisations are broken up into divisions, departments and teams. There will always be a need for secure local knowledge sharing which may not be relevant to the wider organisation. As part of the pilot, the security and simplicity of “OnePlace” had to be demonstrated so as to ensure the integrity and security of the information which it would hold.

It was made clear from the beginning that “OnePlace” would act as any other web application when it came to security, i.e. that users would sign in under single sign-on by being authenticated by the existing enterprise LDAP instance.

6 Wiki Pilot Groups

6.1 Introduction

The groups who were involved in the pilot were specifically targeted to demonstrate a number of different use cases and collaboration types. They were each engaged in the anecdote process for explaining how they collaborate and some specific challenges were addressed. The thinking behind this approach was based on the guidelines suggested by Davenport and Prusak (2000):

- The place to start is with high-value knowledge.
- Start with a focused pilot project and let demand drive additional initiatives.
- Work along multiple fronts at once (technology, organisation, culture).
- Get help throughout the organisation as quickly as possible.

The outcome was that we started with users who were high profile and members of senior management. This was to demonstrate the benefits of the system to those who could easily spread the message to others in the organisation. The pilot was focused on a small number of groups and we let it grow organically/virally from there. A selection of pilot groups are discussed in more detail in section 6.2.

6.2 Group Descriptions

The O&T Board: The O&T board consists of a number of general managers and executives which report to the Director of Operations & Technology. This group meets on a weekly basis, and was previously sharing the documentation related to this using IBM's QuickPlace. As part of the pilot, this group used the "OnePlace" portal to replace the

QuickPlace equivalent. This enabled the participants to experience the portal and to analyse its potential benefits for their areas.

This group was dealing with “high-value” knowledge, as they were the people who set out the strategy and drove the agenda for the whole community. It was important to gain the support of this forum in order to have the message “trickled” down through the organisation.

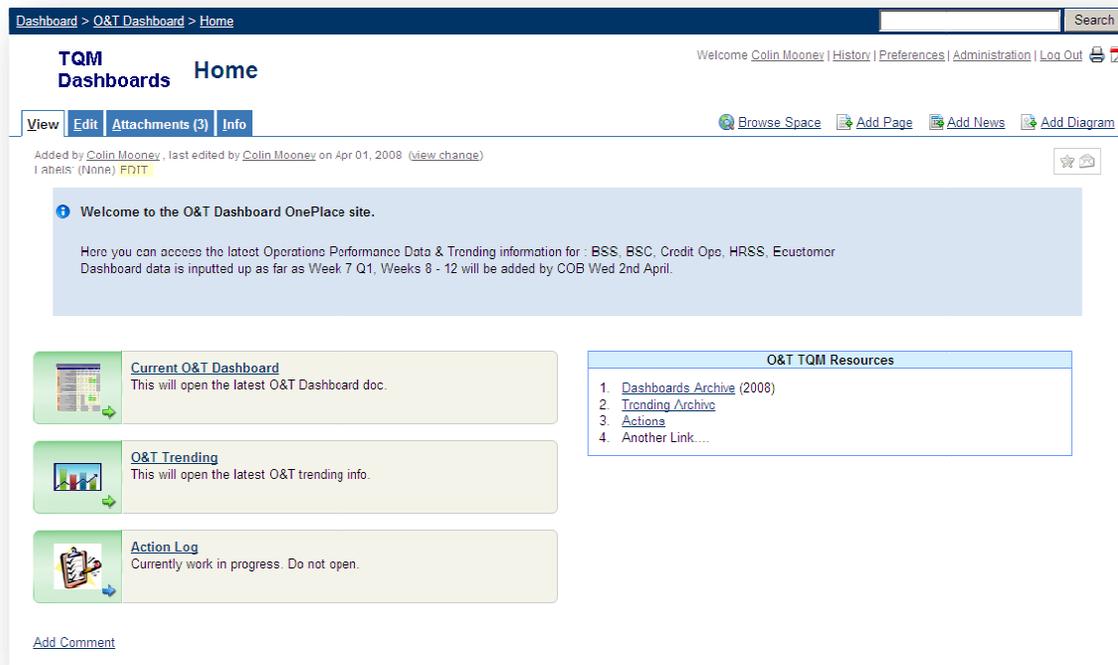


Figure 6.1 - Information Sharing Dashboard Screenshot

IT Development Teams: A number of development teams used the “OnePlace” portal to centrally document systems information and support resources. Some of these included FAQ’s and How To documents which had previously not been available to the wider community. Other examples included specific project documentation such as business

requirements, functional and technical specifications. These teams seemed to adopt the wiki portal with ease, and many were quickly comfortable with the look, feel and usage of the platform.



Figure 6.2 - IT Development Page Screenshot

Special Interest Groups: A number of special interest groups such as committees, management groups and project teams used the portal to share documentation and resources with one another. This allowed them to overcome the difficulties with using file share collaboration and the restrictive access security associated with this. It also provided a single location for their resources to which they could get access. Figure 6.3 shows a space homepage for nine separate groups all in one place. Previously, the running of these groups was a high administration overhead, particularly in relation to circulating the latest documentation to the group members.

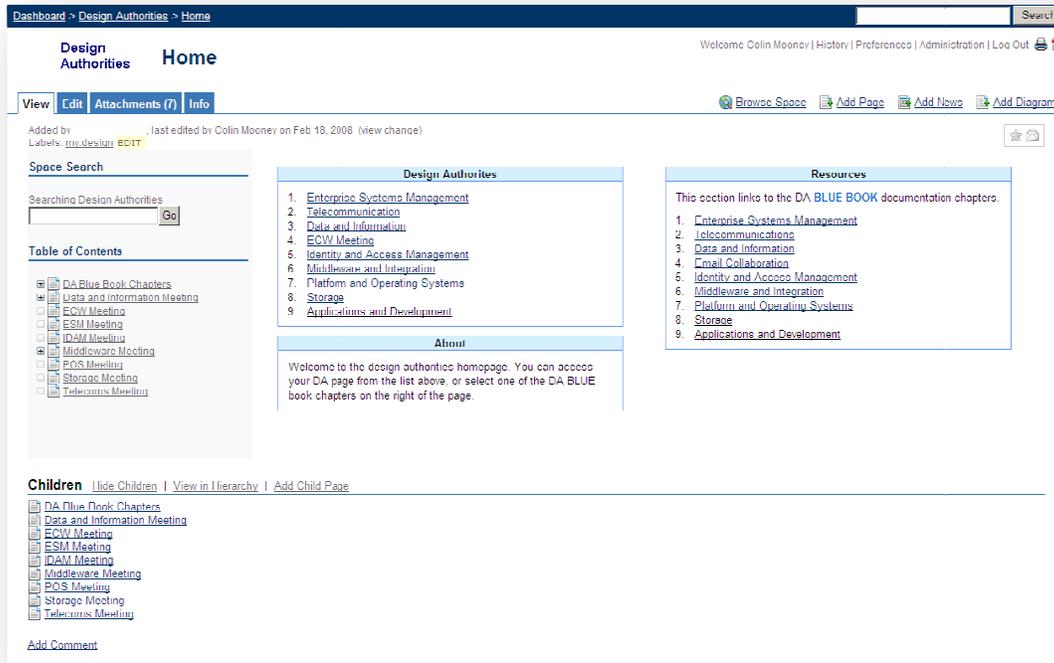


Figure 6.3 - COP Page Screenshot

Meeting Areas: One of the collaboration tools in use before this pilot was IBM's QuickPlace (see QuickPlace section above). One stream of the pilot was to examine whether wiki use could replace this outdated, out of support tool in the enterprise. One team who had previously used QuickPlace as a collaborative store for meeting agenda, minutes and other related material, used OnePlace in a similar way during the pilot.

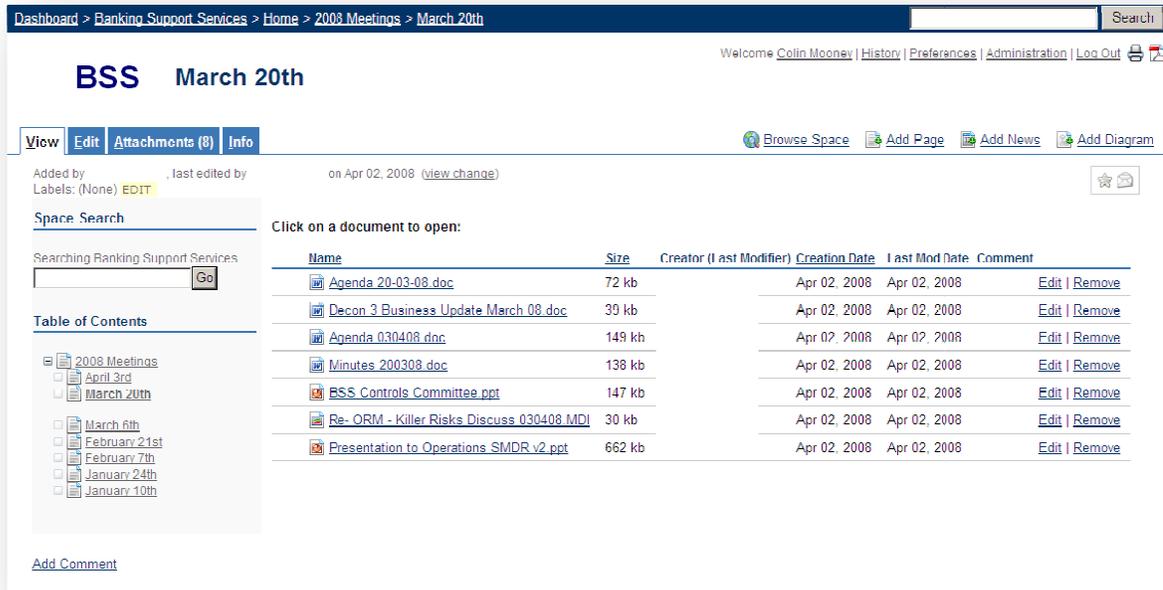


Figure 6.4 - Wiki Meeting Area Page Screenshot

6.3 Activity Statistics

The Confluence wiki portal has in-built activity statistics which enable administrators to analyse usage. This data is very helpful in the early stages of running a wiki pilot, as it shows which spaces and content are most popular. It also gives an indication of demand for the system at particular intervals (daily, weekly, monthly etc.).

For the purposes of this pilot, we analysed the monthly statistics for both the viewing and editing of wiki pages across the portal. The system provides details of:

- **Views** – A total number of views for the wiki are graphed, the 10 most popular spaces are listed. This information can be broken down further into pages within spaces and can be split by day, week and month.
- **Edits** – The total number of edits for the wiki are graphed, the 10 most active spaces in terms of edits are listed and the 10 most active individuals in terms of

edits are listed. This information can be broken down further into pages within spaces and can be split by day, week and month.

The pilot ran from January to March 2008. Here we will look at some of the statistics from that period:

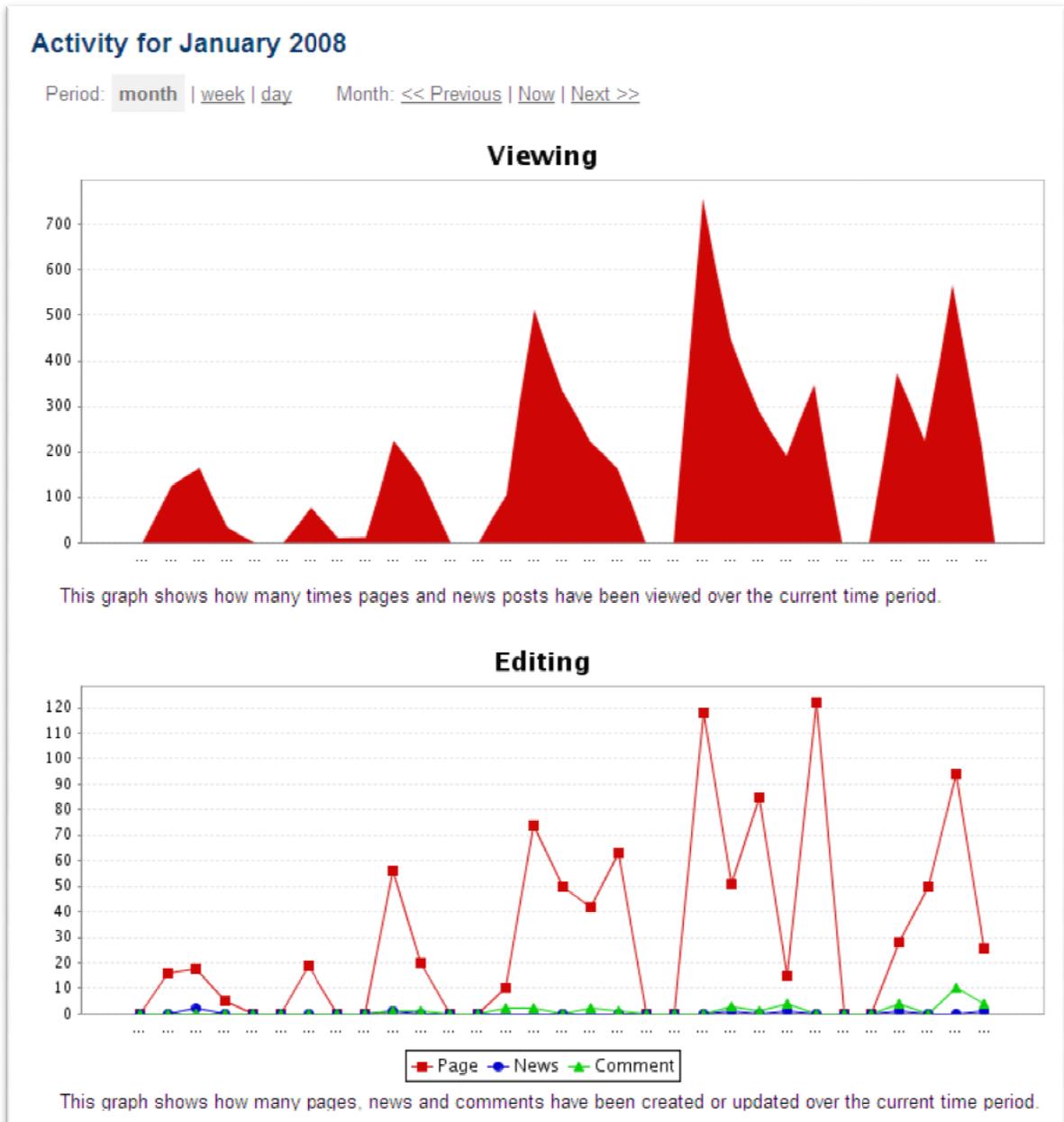
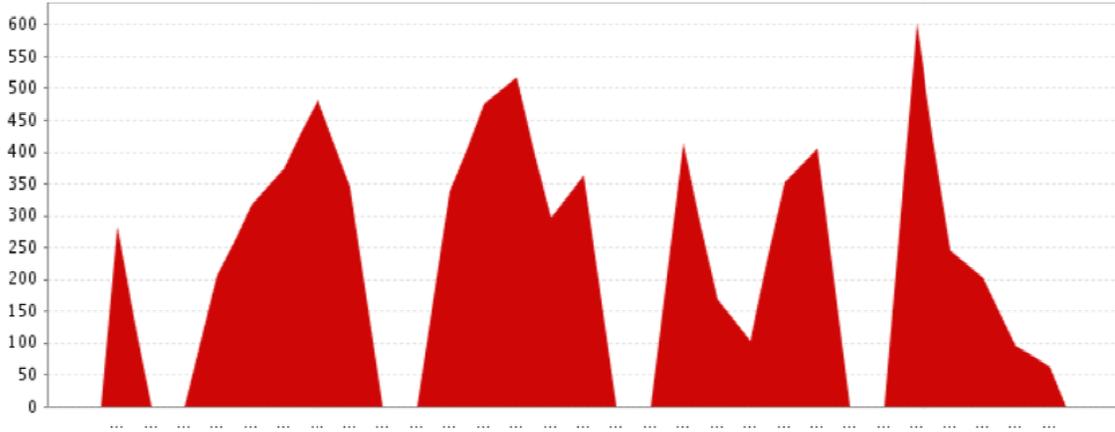


Figure 6.5 - OnePlace Activity Statistics (January)

Activity for February 2008

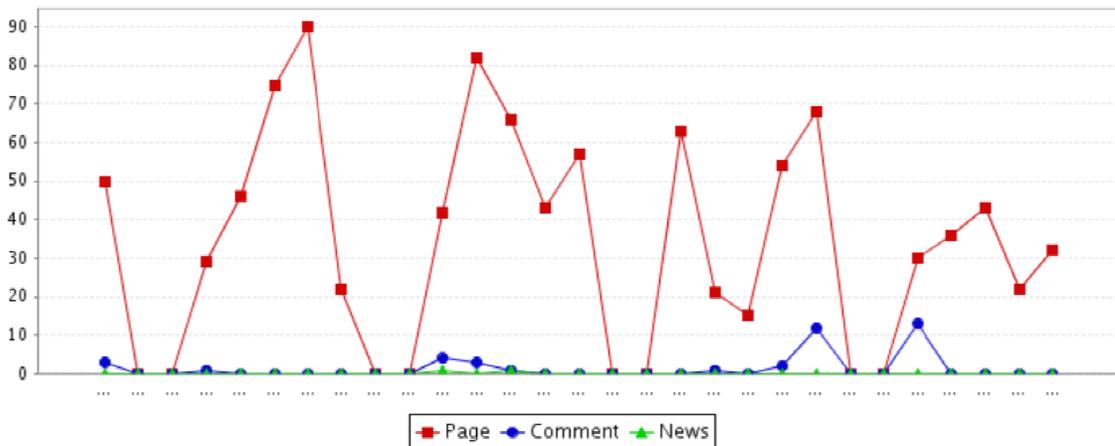
Period: **month** | [week](#) | [day](#) Month: [<< Previous](#) | [Now](#) | [Next >>](#)

Viewing



This graph shows how many times pages and news posts have been viewed over the current time period.

Editing



This graph shows how many pages, news and comments have been created or updated over the current time period.

Figure 6.6 - OnePlace Activity Statistics (February)

The results here were interesting, in that from a user base of approximately 100, the usage statistics show that there was a steady increase in hits over time. The total hits for the portal were 4230 and 5333 for January and February respectively. This was also reflected

in the increase in the number of active edits of content in these two months; with 779 for January and 809 for February.

Of the pilot groups outlined in section 6.2, the Design Authority space was the most popular, with over 2,000 hits in the space of two months. This may have been because of the number of participants in that group (over 40). This use case worked very well during the pilot, as the content was exclusively available through the OnePlace portal.

7 Data Collection & Analysis

7.1 Introduction

This chapter outlines the results of the data collection process. A number of data collection methods were used to gather feedback and reactions to the potential adoption of an enterprise wiki platform for use as a collaboration tool within the enterprise. The methods used in the data collection process, as outlined in the previous chapter were:

7.2 Quantitative Survey of Pilot Users

In order to identify the reactions of the users of the OnePlace system, a survey was developed to collect feedback from those directly involved in the pilot. The survey was targeted at that specific audience and questions were created in such a way so that all those relevant participants would be able to meaningfully contribute to the process. The online site SurveyMonkey was used to create, distribute and collect the results of the survey online. All intended audience member were e-mailed the relevant URL to participate. The total number of people that participated was 94 people and they were all employees of the financial institution facilitating the pilot.

7.2.1 Structure of the Survey

The survey was split into 3 main sections, with a mixture of question types. Section one focused on collecting background information on the individual answering the survey, and asked which project group they worked in, and their age group. Section Two looked at the general question of collaboration, collaboration tools and the effect of current collaboration methods on project efficiency.

7.2.2 Survey Results:

In this section the results of the survey are presented and discussed in the context of the key research question of the project; *“Is wiki-based collaboration an enabler of effective knowledge management?”*

Section 1 – Background Information

This section contained just two questions designed to position the respondent in terms of what section of O&T they worked in and what age group they were in. SurveyMonkey allows the survey creator to classify the responses to questions on the basis of responses to other questions, thus all the questions that followed could be examined on the basis of the answers to these questions.

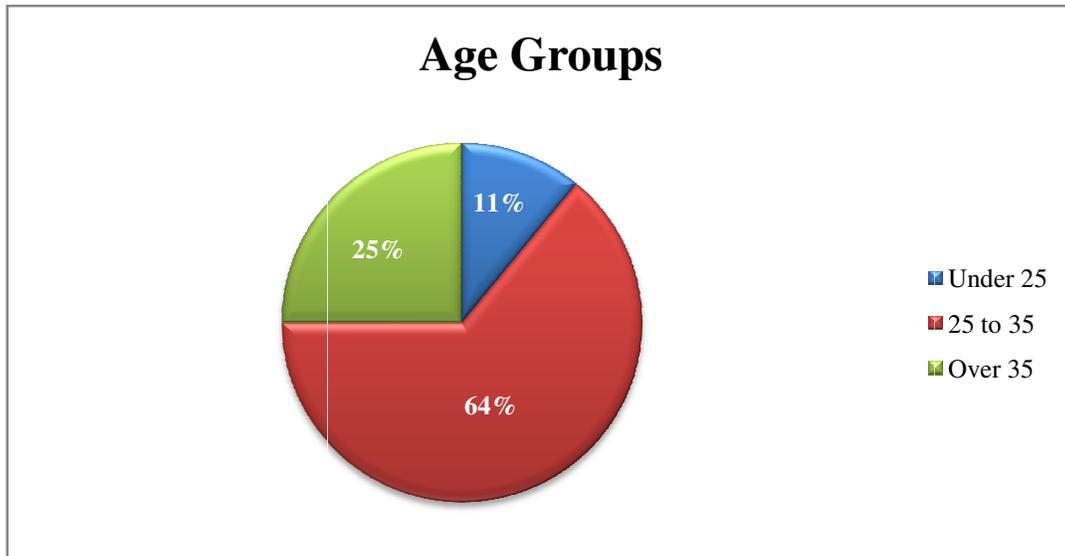
Question 1: What department of O&T do you work in?

The ES&T (Enterprise Systems & Technology) department made up 51.4% of the respondents to the survey. This was expected, as the majority of the pilot users were based in this area. It is significant that the IT development department adopted the wiki with ease, as IT users would be more comfortable with the technology.

Question 2: What age group are you in?

In section 3.3, the subject of generational response and interaction with web 2.0 tools was discussed. This question was used to position the responses based on age to examine the

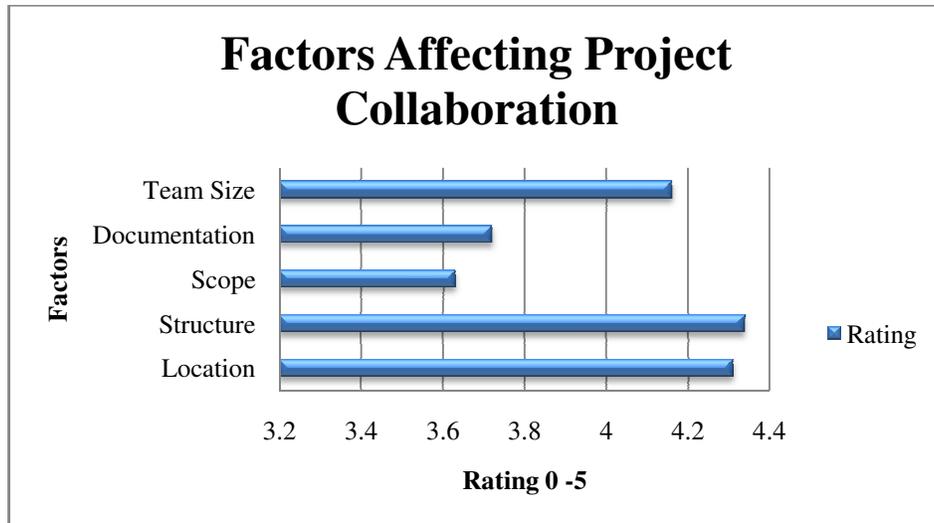
differences in opinion towards the wiki portal by different age groups. 64% of respondents were in the age group 25 to 35.



Section 2 – Collaboration on Enterprise Projects

Question 3 – Please indicate how you think the following items effect collaboration when working on projects.

In section 2.9, the factors effecting effective collaboration on large projects were discussed, the key factors identified were team size, volume of documentation, project scope, geographic location of people and team structure. Thus they became the basis for this question. The users were asked here to rate how each of those factors affected collaboration on the projects they had experienced.



The results show that of the 5 factors mentioned, the three most influential on collaboration are location of team members, the structure of that team, and the size of the team. These factors are related to the increasing amount of work which is carried out by cross-functional and enterprise-wide project teams. It is also interesting to note that the size and structure of the team is influential. This is a people challenge, where managing communications via email threads can often cause difficulty (Oxenford, 2007).

Question 4 – Project Communication & Documentation

In section 2.9, the problems with managing communication and documentation were discussed. In this question, the users were asked to respond to 4 statements relating to communication and transferring of documentation during a project.

Statement 1: *'It is easy to keep up to date with what is happening on large projects.'*

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
15.6%	75%	0%	9.4%	0%

The primary tools used for collaboration in the pilot organisation were email and file shares. This often results in a situation where many emails are being distributed among project team members with project documentation being delivered as attachments. 90.6% of respondents did not think that it was easy to keep up-to-date with projects when communication is being managed in this way.

Statement 2: *'It is easy to find documents and other resources relating to the projects I work on.'*

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
18.6%	68.8%	0%	12.5%	0%

By choosing to use file share for document storage and sharing during a project, team members will often have to know the structure of the folders they are held in so that they can access the documents they need. 87.4% of the respondents felt disagreed with the statement above. This issue was discussed in section 2.9.1.1 in relation to the difficulties in dispersed collaboration using file shares and email.

Statement 3: *'I save attachments locally to my workstation.'*

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
3.1%	18.8%	3.1%	65.6%	9.4%

75% of the respondents to this statement said that they download/save attachments relating to the projects they work on to their local workstations. This can cause serious problems in terms of document versioning when the group is geographically disbursed or do not meet often. This risk is discussed in section 2.9.

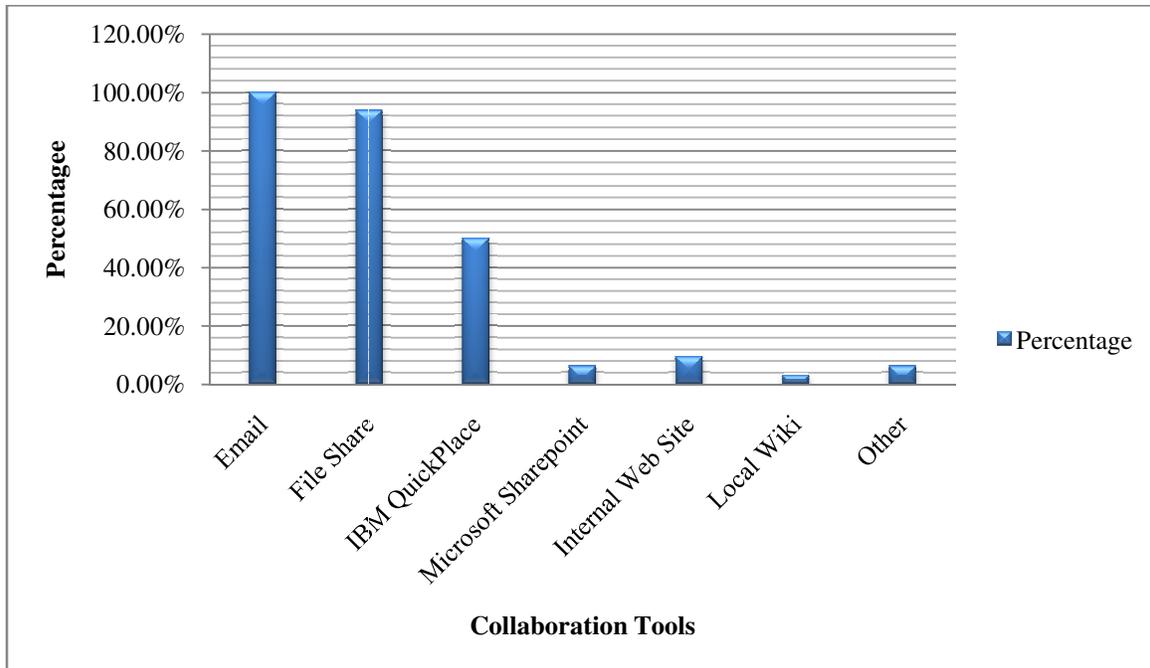
Statement 4: *'Project folders are easy to navigate through.'*

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
9.4%	78.1%	3.1%	9.4%	0%

Most respondents felt that it is difficult to navigate through project folders to find the documents they needed to work with in order to get project work done. This confirms that thinking from section 2.9.1.1 in terms of the difficulties in using file share systems as a collaborative environment for distributed collaboration.

Question 5 – Collaboration tools

This question asked the respondent which tools they used for collaboration on projects. It had been known previously that email was extensively used throughout the organisation, but it was important to discover what other tools were being used.



As expected, 100% of users selected email as a tool currently being used for collaboration, and with 93.8% also mentioning file share, the combination of these two is the most frequently used collaboration set in the organisation. This is similar to the levels expressed by Levitt and Mahowald in as discussed in section 2.9.1.1.

Question 6 – Comments relating to collaboration and the tools used to facilitate this.

This question allowed respondents to contribute any comments which they felt might be relevant in terms of the current collaboration tools in use at the pilot organisation. In general respondents felt that the existing toolset failed to provide the range of necessary functionality to adequately. In fact since many of the organisation’s existing projects involve international collaboration, this can lead to difficulties.

This attitude was typified by the following answer; *"Our current collaboration tools do not enable effective project work. We encounter many problems with our projects, especially when dealing with our colleagues in different countries."*

E-mail was the most common collaboration tool discussed by respondents (100% selected it as one of the tools used in question 5), the dependency on E-mail is recognised by the respondents; *"We depend too much on email to keep project communication up-to-date. It is often difficult to maintain this on large projects."*

Shared directories were also discussed in detail by a number of respondents and several shortcomings in the use of them were highlighted, including version management; *"We find it very difficult to direct our project members to the correct versions of documents when held in file shares. Also, there are many copies of the same document being circulated, which results in errors."*

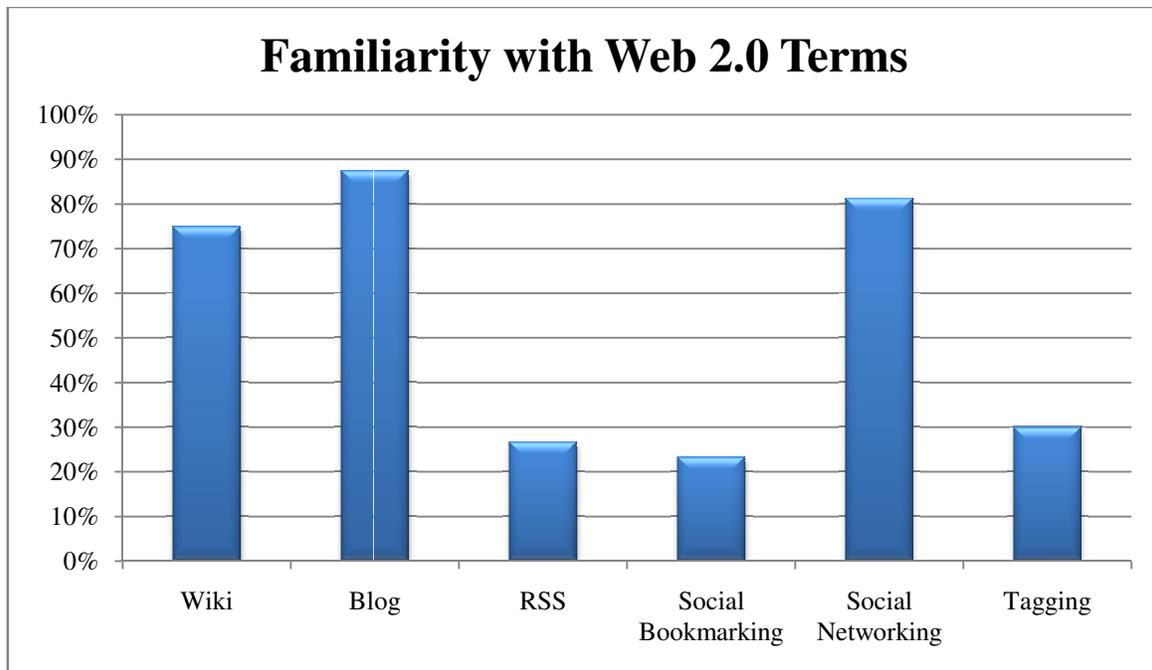
The issue of access permissions was mentioned; *"It is difficult when people working on the same projects don't have access to our shared drive. We end up emailing every document around, and it is difficult to track the communication."*, but overall the users recognised and were familiar with the issues which existed with the current collaboration suite; *"Current options do not support us and are inefficient. Shared drives are a help but are too easy to change and get material lost."*

Section 3 – OnePlace Enterprise Wiki Portal

The questions in this section were related specifically to web 2.0 and the enterprise wiki pilot carried out during this research. The aim was to assess the users' knowledge of web2.0 terms and provide feedback based on their experience of the pilot.

Question 7 – Web 2.0

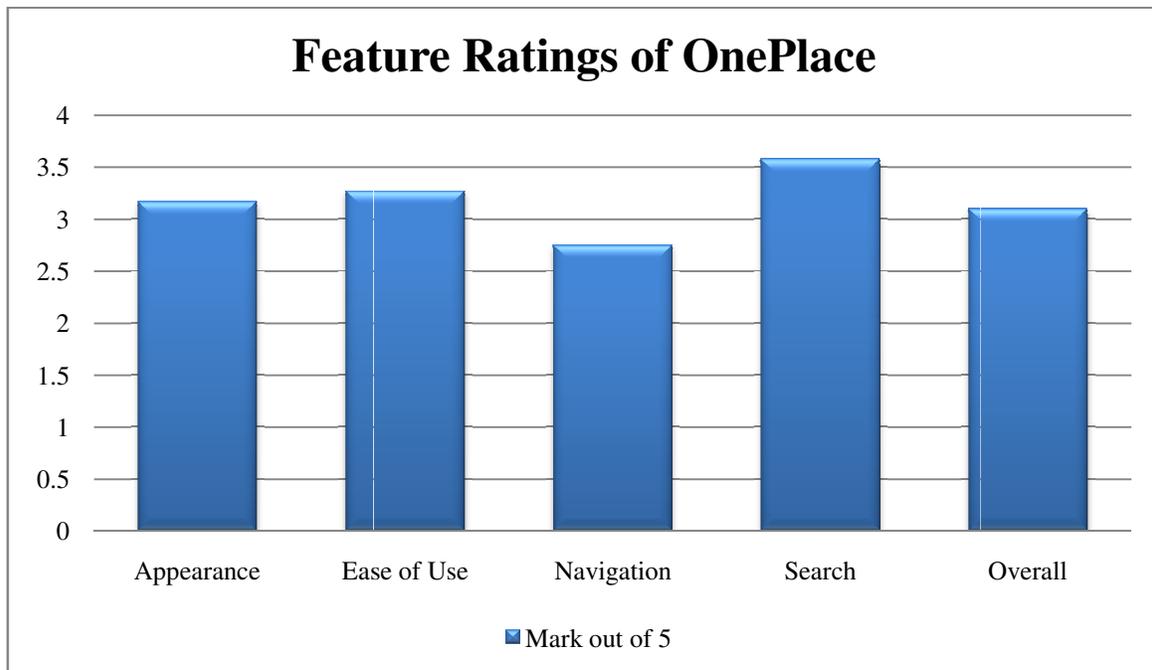
The respondents were asked to indicate whether or not they were familiar with a number of web 2.0 terms, specifically tools associated with web 2.0 such as Wiki's, Blogs, RSS, Social Bookmarking, Social Networking and Tagging.



As OnePlace is a wiki portal, the users were asked whether they were familiar with a number of web 2.0 terms.

Question 8 – Interaction with ‘OnePlace’

This question asked the respondents to rate a number of aspects of their interaction with the wiki including appearance, ease of use, navigation, search and an overall score.



The responses here are interesting with navigation scoring lowest in the ratings. The content in a wiki is organised by the users who contribute to the system. Experiences during the pilot provided valuable feedback in terms of the autonomy with which a group will simply adopt a new tool such as wiki. The wiki champion (<http://www.wikipatterns.com/display/wikipatterns/champion>) becomes important in this case, helping to overcome some of the issues which the users may experience when interacting with the system.

Question 9 – Overall Impression from pilot

This question presented the respondent with a number of statements, to which they could rate their response.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
OnePlace would improve knowledge sharing on my team	0%	3.7%	7.4%	77.8%	11.1%
OnePlace would enable more effective collaboration on large projects.	0%	0%	14.8%	48.1%	37%
OnePlace would improve document sharing on large projects.	0%	0%	18.5%	48.1%	33.3%
My team would use OnePlace for collaboration.	0%	3.7%	7.4%	66.7%	22.2%

The results of this question are very positive, and are a strong indication of how the users feel about the pilot.

Question 10 – Final Comments

The final question allowed the respondents to express their opinions on the experience they had with the portal and suggestions for its future use and adoption in the organisation. The key findings of this question can be grouped into the following categories; *Ubiquity of Use, Training, Interface, and Future Use.*

Under the heading of *Ubiquity of Use* many respondents identified the need for all sites to use the same tool since this has been an ongoing issue, for example, some people use SharePoint others use E-mail and file shares. Examples of relevant quotes include; *"It is important that our colleagues in all departments use the same tool."*, *"It's important that the chosen tool is used by everyone so make sure that it's the right one."* And *"This system would be great; however it would be important to make sure that we all use it so that everything is really in ONE-PLACE!"* It is clear from these comments that one of the key appeals of OnePlace is its potential as a single Knowledge Base which could help overcome some issues brought by the siloed nature of the organisational structure. By making key knowledge available in a single location, then errors and duplication will be reduced.

In the *Training* category, respondents were pleased with how quickly they were able to use the system with a minimum of training....*"Some training would be required, but it only took a couple of days before I was comfortable with OnePlace."* This confirms the user-centric design and intuitive nature of the wiki edit and save feature. Future planning will be necessary in relation to training as the user-base grows.

Under the *Interface* category, respondents*"Other than a presentation on the system I have had no involvement with it so I am unable to comment on it."* and *"Having participated in the one place pilot I found that the structure and organisation of information in one place was lacking. Perhaps creating some "How to" templates to guide*

users on organising their data would help. At present I feel that the canvas is too blank!"
This comment portrays the “blank canvas” problem well. It is the job of the wiki-champion to encourage and suggest use by engaging with teams using the wiki.

In terms of *Future Use*, the respondents were positive about where the use of wiki could be applied. Many agreed that even during the pilot, there were signs that collaboration could be improved over the current toolset being utilised in the organisation; "*I really liked this pilot, and hope that we can use OnePlace in the future.*" And "*It would greatly improve our collaboration*"

7.3 Interview with Director of Operations & Technology

It was important to gather the strategic view of collaboration and web 2.0 technologies from the pilot organisation. To achieve this, the director of O&T who had supported the initiative from the beginning was interviewed for the management view.

The interview was structured into 4 main sections:

1. Collaboration & Culture
2. Knowledge Management
3. Enterprise 2.0
4. “OnePlace” (questions relating to the wiki portal piloted in the organisation)

The full interview questions can be seen in appendix XX.

Section 1 – Collaboration & Culture

The idea behind this research was to examine collaboration methods so as to provide the tools which could enable effective knowledge management across all project teams in the organisation.

“Most large corporations execute a tremendous amount of project and BAU work via cross-functional teams”. This is very true of the organisation in which the pilot took place. Increasingly more projects have an enterprise-wide scope which require increased virtual teams and virtual collaboration across multiple geographies; *“There are many more cross-functional and cross-enterprise initiatives today than 10 years ago”*.

To achieve effective collaboration across teams which are made up of individuals from many areas within the organisation, the culture of that organisation must be accepting of new ideas and ways of working. The amount of complex delivery in this organisation over the last 3 years supports this; *“30 months ago NO ONE believed we would build 2 data centres, install a massive IPT system, progress a common SDLC, progress Operational Excellence and ISO 9001, XP the entire company, implement 2 core banking initiatives”*.

Section 2 – Knowledge Management

As described in chapter 2, there is no definitive definition of knowledge management, a fact which was familiar to the interviewee when asked if they understood the term knowledge management; *“Yes, but there is no generally accepted universal definition”*.

In the context of managing an Operations & Technology division, implementing knowledge management in a domain in which there are many specialists and technical experts is important for knowledge transfer and retention; *“Our people and their*

collective learning and knowledge are the most important asset we have...We need to get much better at identifying the key 'knowledge bits' that truly drive our competitive advantage". This is one of the major challenges associated with implementing a knowledge management strategy, and is recognised by the organisation; "We need to figure out ways to get the ideas of our people on the table. Most good things are thought up internally by people who see a better way to do what we do. How do we unleash that power?... how do we get our people to step back and 'think'?".

The Organisation has undergone a large transformation in terms of process control and standardisation over the past 30 months; *"We have embraced standards of practice, management and measurement. On a scale of 1 – 10 with 10 being 'best in class' we were a 2 at best when we were divisionally siloed. I think we have moved parts of O&T to about 7".* Now the challenge is to sustain this trend of knowledge sharing and adoption of best practice right across the enterprise, in all geographies.

Section 3 – Enterprise 2.0

Wiki and wikipedia were familiar to the interviewee, which helped the pilot. On the subject of adopting social computing and web 2.0 tools in the enterprise, the response was; *"The concept is valid and we need to pursue it".* However, an important point made was that of information security in relation to these new methods; *"info security will be a challenge even with an internal network".*

Section 4 – OnePlace

The response internally to the adoption of the OnePlace portal was very positive; *“It could be the collaboration tool kit”* for the organisation, *“I would hope we could make it happen”*.

Some of the contributors to the success were; *“Being open source, it is very cost effective”*, *“We now have a solution to replace QuickPlace”* with *“High info security”*

7.4 Pilot Outcomes

Senior Management support was critical to the success of the pilot. By engaging senior management at an early stage, the right connections were made possible to ensure that the pilot was taken seriously and that the resources required were made available. It was through these early discussions that the supporting design authority was engaged.

Targeting the ‘right’ groups to be early adopters of a wiki portal is important. In order to demonstrate the collaborative benefits of enterprise wiki use early, targeting groups and use cases which will provide a ‘quick win’ will benefit the pilot overall. This ensured that the potential target audience was maximised, with the Design Authorities space being a good example. This space was the most viewed over the period of the pilot with over 2,000 hits.

User acceptance of wiki will vary depending on their use cases. As discussed in section 4.4, web-based wiki tools will not have the same ‘horsepower’ or functionality as desktop word processing tools already in use. There will be coaching and discussion that must take place in order to demonstrate the advantages of working in the ‘Wiki-Way’. This is something that will have to be explored as the portal is rolled-out to more users across the organisation. The subject of training was not considered in-depth during the pilot, but would have to be addressed going forward.

A Wiki champion will benefit the pilot as users feel they have a ‘go-to’ person, who can quickly help with their adoption needs. Section 4.4.1 above discusses the role of a wiki champion in the early stages of adoption, and how this person contributes to the success of the project. It was beneficial to the project to have a wiki champion who understood what the purpose of the wiki was, how the product worked, and what the limitations and rules of the system were.

Commercial Wiki products are still evolving, as the vendors react to the customer requirements which are emerging with time. As more organisations begin to use Wiki products, then there will be evolving user requirements of the software. This will be particularly evident in highly-regulated industries like banking, where data protection, ILM and security are important. Consideration for technology issues will have to be evaluated as the system grows.

8 Conclusions & Future Work

In chapter 2, 'How Knowledge Management Works', the definition of knowledge management was explored. The key point was that knowledge management was more about people and the processes which enable knowledge management than specific technologies. Understanding how knowledge is transformed and shared between people in the networks which exist within large organisations can help a knowledge manager design the tools with which to enable the knowledge management strategy. With this in mind, it is important to remember that collaboration between people is the key to successful knowledge management in a corporate environment.

Chapter 3 focused on Web 2.0, 'The Web as a Platform'. The Web 2.0 trend on the internet has demonstrated the 'crowd wisdom' effect, so now organisations are exploring ways of bringing this 'behind the firewall'. Simplicity is important, providing knowledge workers with the tools to quickly capture, organise, share and reuse knowledge which is important to their work. The adoption of these tools by employees looking to improve collaboration will continue. It is nicely termed in the phrase coined by Gartner; "consumerisation", describing the adoption of consumer tools on the internet, behind the firewall.

Chapter 4 outlines Wiki and its potential as a knowledge management tool. Wiki's provide users with the collaborative environment required for successful knowledge management. The important consideration going forward is to ensure sustained engagement of the user community in these tools, and to provide incentives to contribute knowledge to the collective base in a large wiki. This will help reduce the concerns over knowledge retention and embed a knowledge sharing culture for incoming employees to participate in.

Chapter 5 described the wiki pilot which took place as part of this research in a large financial services organisation. The challenges and key success enablers are discussed, such as:

- Starting with high-value or exclusive knowledge.
- Engaging senior ranking users.
- Starting with a focused pilot group(s) within each department.
- Ensuring use across a wide variety of departments.

This pilot also provided some experience with driving wiki adoption in an organisation; being a wiki champion. Knowing the benefits that wiki-use can bring to your organisation is the easy bit, driving adoption and selling that message is what will ensure sustained engagement from the user community. From this experience, six characteristics which may be useful to others to be aware of are:

Be a Clear Communicator: Wiki and the ‘Wiki-Way’ of working will be new to many people in your organisation. It is important to keep things simple when selling the idea. I have found that gaining senior management support early for your project is important. Then you can let them sell the idea for you.

Be A Coach: Commonly known as ‘Wiki-Gardening’, you will need to coach some of the early users so that they can make best use of their Wiki from the beginning. They in-turn will pass this on to others, but a quick win is important to securing sustained engagement from your user community.

Be Patient: Be patient with your early adopters, allow them to sculpt their Wiki in their way. They will know what works best for the information they work with and the team members they deal with. Be ready to help when they need it.

Be Enthusiastic: People will react to your enthusiasm and knowledge of the ‘Wiki-Way’. Encourage others to try new things or to look at how they currently collaborate and show them how this could work in the ‘Wiki-Way’.

Be Engaging: As people begin to find their way with Wiki use, be available to discuss or help with continued use. Show them examples from other Wiki's internally, so they can see what others are doing and adopt some of those practices themselves.

Have Fun: This is one of the most important characteristics. Wiki adoption will be different in each organisation. Grassroots & organic seems to be an emerging successful trend, so there will be an element of exploration and innovation involved. Enjoy this period, communicate and engage with your user community and you will reap the rewards.

There may be many other challenges you could face, but if you get the formula correct for your organisation, and then it is a great experience. Overall, a collaborative environment, where knowledge sharing and productivity has improved is a very welcome outcome of the Wiki adventure.

8.1 User Reaction

The user reaction to the 'OnePlace' pilot was positive overall. Many learned how to use it very quickly and were able to demonstrate to those they were working with. The response to question 8 of the survey (Interaction with 'OnePlace') showed how balanced a product Confluence is, and with the coming versions aiming to improve the user interface, these statistics should improve.

There was a particularly strong response to question 9 (Overall impressions of the pilot), with a very good indication that OnePlace would:

- Improve knowledge sharing on teams (90%)
- Enable more effective collaboration on large projects (85.1%)
- Improve document sharing on large projects (81.4%)
- Would be used by their team for collaboration (88.9%)

(Figures in brackets are the total of agree and strongly agree for each statement).

This is encouraging as the aims of this research included improved knowledge sharing and collaboration on enterprise projects through the use of a wiki portal.

8.2 *Future Work*

The wiki pilot described in this research took place over three months, to March 2008. One of the suggestions for future work would therefore be to revisit the user community in a year or eighteen months time. It would be interesting to see the adoption patterns going forward, and to examine for which processes enterprise wiki use has improved knowledge management in the organisation. The cultural and people focus of the project would become even more crucial as the number of users involved grows.

Other Web 2.0 tools such as RSS, Blogs and Social Bookmarking need to be examined to assess their potential for use within this organisation. There are no official use cases currently, and it would be important to investigate how they could improve some other processes such as communication and knowledge discovery across the organisation.

The research was focused on one single organisation, with the wiki portal being used by internal employees only. The potential for use as a collaboration environment with external partners, suppliers, customers and even competitors could be explored.

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Appendix A - User Survey

This was the survey which users who took part in the pilot responded to.



1. Background Information

This section gathers some background information (The survey responses are anonymous).

*1. What department of O&T do you work in?

Other (please specify)

2. What age group are you in?

Under 25

25 to 35

Over 35

2. Collaboration on Enterprise Projects at AIB

This section looks at measuring what elements effect collaboration when working on projects.

1. Please indicate if the following items effect collaboration when working on projects.

	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
Geographic Location of team members.	<input type="radio"/>				
Complex team structure (from many departments).	<input type="radio"/>				
Project scope (Enterprise, Division, Local etc.)	<input type="radio"/>				
Volume of documentation.	<input type="radio"/>				
Number of project participants.	<input type="radio"/>				

2. Project Communication & Documentation

	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
It is easy to keep up-to-date with what is happening on large projects.	<input type="radio"/>				
It is easy to find documents and other resources relating to the projects I work on.	<input type="radio"/>				
I save attachments locally to my workstation.	<input type="radio"/>				
Project folders are easy to navigate through.	<input type="radio"/>				

3. Collaboration tools - Please indicate the tools you use for collaboration on projects.

- Email
- Shared File Drives
- IBM Quickplace
- Other (please specify)
- Microsoft Sharepoint
- Internal Web site
- Local Wiki

4. Please include any comments which you would like to add in relation to collaboration between teams on projects or the tools we use for facilitating this.

3. OnePlace Enterprise Wiki Portal

These questions relate specifically to the pilot of the OnePlace wiki portal in O&T.

1. Web 2.0 - Please indicate whether you are familiar with the following terms?

	Yes	No
Wiki	<input type="checkbox"/>	<input type="checkbox"/>
Blog	<input type="checkbox"/>	<input type="checkbox"/>
RSS	<input type="checkbox"/>	<input type="checkbox"/>
Social Bookmarking	<input type="checkbox"/>	<input type="checkbox"/>
Social Networking	<input type="checkbox"/>	<input type="checkbox"/>
Tagging	<input type="checkbox"/>	<input type="checkbox"/>

2. Please rate the following elements of OnePlace according to your interaction with the portal (0 - poor, 5 - excellent).

	0	1	2	3	4	5
Appearance	<input type="checkbox"/>					
Ease of Use	<input type="checkbox"/>					
Navigation	<input type="checkbox"/>					
Search	<input type="checkbox"/>					
Overall Impression	<input type="checkbox"/>					

3. Please indicate your view on each of the following statements based on your experience of OnePlace.

	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
OnePlace would improve knowledge sharing on my team	<input type="checkbox"/>				
OnePlace would enable more effective collaboration on large projects	<input type="checkbox"/>				
OnePlace would improve document sharing on large projects	<input type="checkbox"/>				
My team would use OnePlace for collaboration	<input type="checkbox"/>				

4. Please include any comments about your initial opinion about OnePlace and any suggestions you may have about it's use in O&T.

Appendix B – Interview Questions (O&T Director)

OnePlace - Structured Interview.

Section 1: Collaboration & Culture

Q.1 Is collaboration important to your organisation? If Yes – Why?

Q.2 Have the collaboration needs of the organisation changed over the past decade?

Q.3 What is the significance of the language of our community? (“One”, “Common & Shared” etc.)

Q.4 Cultural Acceptance – In your opinion, is the culture in O&T accepting to new ideas and ways of working?

Section 2: Knowledge Management

Q.5 Do you know what the term knowledge management means?

Q.6 Is knowledge retention an important subject for a community which has many specialist resources?

Q.7 Organisational Learning can be described as knowledge use & reuse. How are we at transferring knowledge and making best use of our enterprise “know how”?

Section 3: Enterprise 2.0

Q.8 Do you know what a wiki is? Have you used or seen wikipedia (www.wikipedia.org) ?

Q.9 Social Computing in the enterprise - What is your view on social computing tools such as facebook and youtube being used in business?

Q.10 Innovation – *“Innovation does not have to be invention; it is about connecting what is possible to what is valuable to our customers.”* Dr. Anita Sands, Head of Innovation & Process Design at RBC Global Markets. Should we be more accepting of open source and ‘out-of-the-box’ solutions to provide our customers with the services they require?

Section 4: “OnePlace”

Q.11 Where do you see OnePlace contributing to the Organisation?

Q.12 What are the problems it may address?

Q.13 Has this project helped the Senior Management view of Web 2.0 tools like wiki?

Q.14 Should the organisation encourage more grassroots innovation?

Section 5: General Comment

Please include any comments which you feel would contribute to this research

based on your initial view and involvement with its progression: