

IMPLEMENTING KNOWLEDGE MANAGEMENT IN BNFL - A CASE STUDY

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Abstract

This paper describes the work that has been done within BNFL Environmental Services over the past 18 months to develop and implement a Knowledge Management framework within the business. The paper provides an overview of the approach used, lessons learnt and achievements to date. The conclusion is that the approach has delivered a framework that is scaleable and repeatable in alignment with the business strategy and that the required change in behaviour has started. The BNFL Environmental Services KM Team is now focussing its efforts on revising the framework for application in the new British Nuclear Group Project Services business. The short term goals are to embed Knowledge Management in business processes and to facilitate the creation of dynamic communities that will support the formation of the new business.

Introduction

In November 2002, BNFL Environmental Services¹ executive signed off a two year programme of work to implement Knowledge Management within the business group. This was driven by the need for the business to be equipped to meet the challenges of the forthcoming commercialisation of the UK civil nuclear sector.

From the outset the vision for Knowledge Management was to develop a framework that was scaleable, repeatable and aligned with the business strategy, ensuring that Knowledge Management activities would be robust to internal and external changes. The seeding of the Knowledge Management activity had to be kept simple to ensure effectiveness.

It was also decided that Knowledge Management should be owned by the business, i.e. there would be no centralised Knowledge Management function. This ensures that the business changes from a position where it has knowledge but doesn't use it effectively to one where it knows what that knowledge is and actively uses it to deliver business benefit.

¹ BNFL Environmental Services is the waste management and decommissioning business within what used to be British Nuclear Fuels Ltd. (BNFL). BNFL went through significant reorganisation in 2004 what used to be BNFL Environmental Services is part of British Nuclear Group.

Knowledge Management Framework

The Knowledge Management framework is based around the good practice that BP developed, documented in "Learning to Fly"². This approach can be best understood with reference to figures 1 and 2.

Figure 1 shows the Knowledge Management framework when seen from the "business perspective". Whenever a task is undertaken there is an opportunity to learn before, during and after. This learning can be facilitated through the use of Peer Assists, After Action Reviews and Retrospects. The Knowledge Facilitators (Knowledge Activists) are responsible for ensuring that learning is applied to the right project at the right time and for the right reasons.

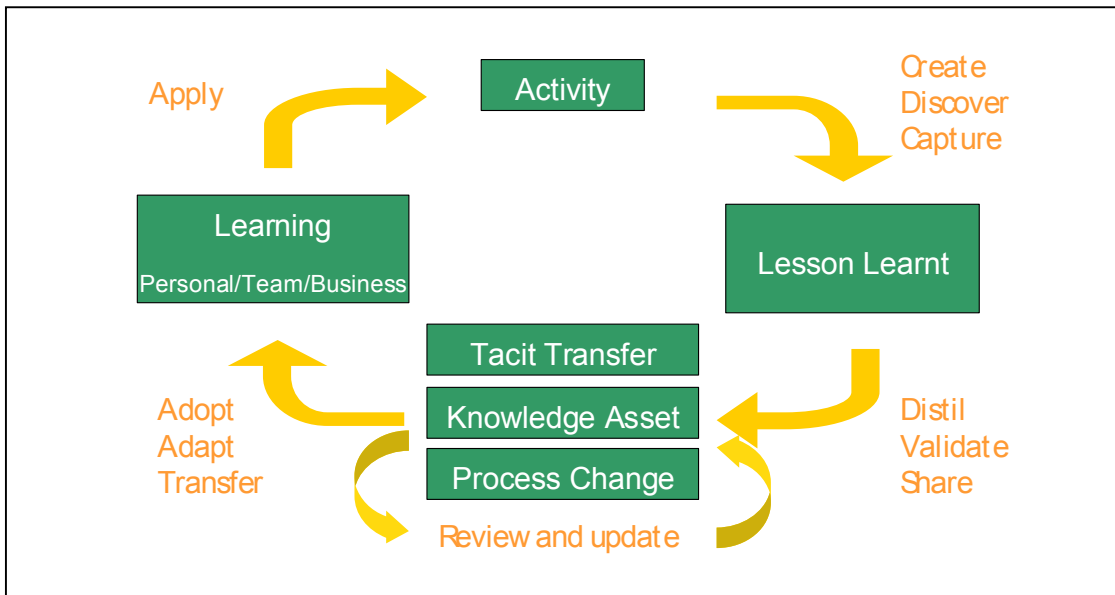


Figure 1

Learning can be stored, retrieved and developed within the "Knowledge Bank" – the IT based infrastructure to support knowledge exchange, retrieval, search and storage. One of the key features of the knowledge bank is that every area is owned by a Knowledge Co-ordinator. The Knowledge Co-ordinators and Facilitators are responsible for managing the knowledge through the lifecycle illustrated in figure 2. Both the Knowledge Co-ordinators and Knowledge Facilitators work to "KM Action Plans" which ensure the Knowledge Management activities focus on key areas relevant to strategic business activities and priorities.

² Collison, Parcell, pub. Capstone 2001

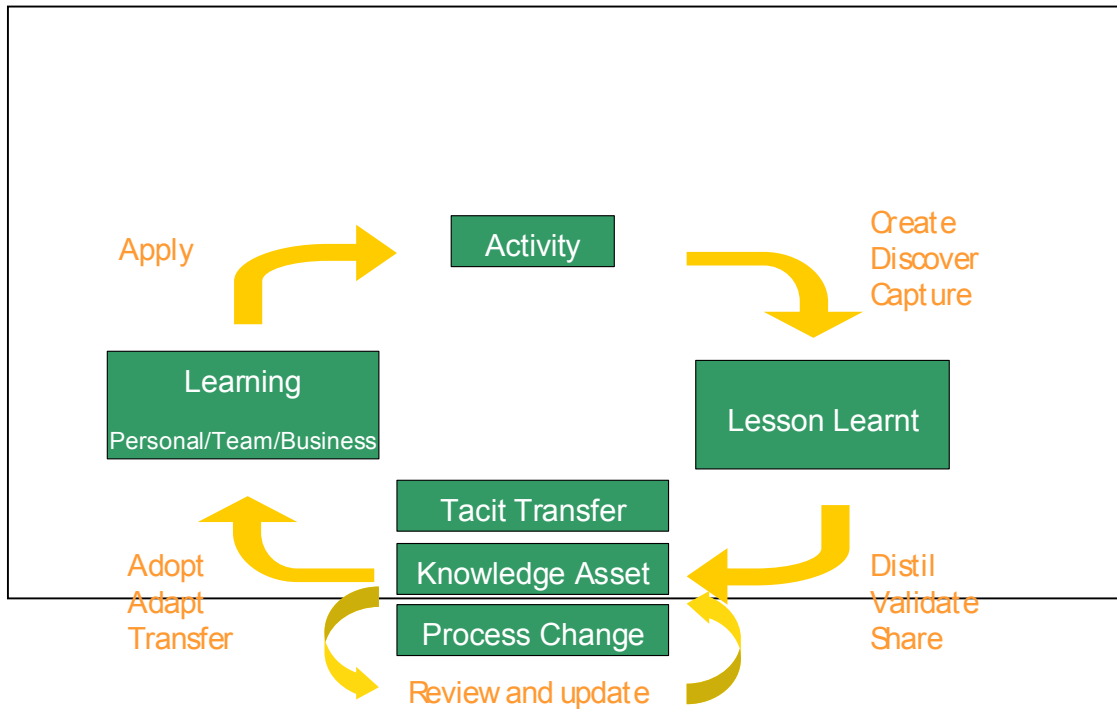


Figure 2

The Knowledge Management framework was first implemented around the Nuclear Waste Management capability. It took nine months to implement the framework, the key lessons learnt were:

- For business processes that are not well defined or are likely to change don't spend valuable time carrying out knowledge mapping exercises up front. The Nuclear Waste Management capability was not a well defined business process; each site and each waste stream had slightly different requirements and issues. A brief activity mapping exercise highlighted the key knowledge hubs. This was immensely helpful to structure the capture of knowledge and provide the valuable context for reuse. However the structure was kept at a high level and was recognised as being dynamic enabling the structure to adapt as the knowledge started to be captured, developed and reapplied.
- Implementation needs to constantly refer to the knowledge lifecycle to ensure that knowledge is captured, developed and reapplied, Figure 2. We initially found that capturing recently acquired learning was easy, however getting the business to reapply was a challenge.
- Effective reuse requires determined people who want to accelerate to their goal without reinventing. They have to have the confidence to use good practice directly from others without feeling that they have cheated. There needs to be a leadership drive and behaviour that demands to know if employees have exhausted all routes of finding something that has been done before and reusing it prior to sanctioning complete new builds. Clearly defined roles and accountabilities are essential to support healthy and sustainable knowledge exchange.
- Knowledge Management is rarely a high priority for individuals and projects, you have to work out ways of implementing by fitting in with the daily work that must be carried out - do not convince yourself that people will be able to find the time if it is obvious that they are too busy

- Getting the right support is key - implementing Knowledge Management within BNFL requires the business to change the way it thinks and works, you need to get people at the highest level to give permission and provide the leadership and drive
- Having a robust Knowledge Management framework based on good practice, and making sure that you continually improve it means you can roll out into other business areas more quickly and easily over time.

Achievements

Over the past six months since the completion of the first wave of implementation we have achieved the following:

- Sharing Learning

We quickly learnt that the real business benefit comes through the reapplication of knowledge. This is most easily achieved by working with projects at the very beginning of the project lifecycle when the project team is most receptive to new ideas and using other peoples knowledge. The most successful tool that we have used for sharing knowledge is the "Peer Assist" workshop. The workshop aims to bring to the project team peers that have done similar work before from across the business and outside.

Creative thinking around who is a peer can help generate significant step changes in improvement. The aim should be to breakdown siloed thinking and to give the project team the opportunity to meet with peers that may be achieving higher performance in their specific areas.

Additional sharing can be achieved by having members of the project team attending "Retrospects" (learning capture workshops) for similar projects as the knowledge customer. We have learnt that by actively facilitating the sharing of learning at the beginning of a project, not only does the project start further up the learning curve but it also starts with a project culture where sharing and reuse of knowledge is seen to be essential to the success of the project. This change in culture continues to benefit the project throughout the project lifecycle. These benefits can be seen in the example of the work done with the Trawsfynydd Active Waste Vault Project.

Trawsfynydd Active Waste Vault Project

"The Active Waste Vaults Project at Trawsfynydd Decommissioning Site has just started and has the challenge of designing the retrieval, processing, and packaging of various waste types. The station and the end customer require the vaults cleared in the fastest time possible by the safest and most cost effective route.

Peer Assists, have allowed us to reduce technical and commercial risks associated with the project. The Peer Assists focused on the reuse of key know how, experience and good practice accumulated in different parts of the company and specialist contractors.

The project team has been effective in engaging the supply chain in a knowledge exchange where the right skills and knowledge have been identified for the project. Subsequently, the negotiation to acquire these resources for favourable prices has been negotiated through an excellent partnering framework agreement. Peer Assists and Retrospects have shown the project team where it is vital to buy services in and where they can utilise skills, know how and experience of individuals, groups and companies most effectively.

The cost of the project will be significantly lower than anticipated through the better agreements across the supply chain. The project can be accelerated through the reuse of designs with only minor changes. The project can take advantage of innovative thinking from experienced people who have experience of de-bottlenecking and can help to define workable alternative routes and "off the shelf" technical solutions to address challenges.

Understanding the value of utilising this existing knowledge has established a fair market price and willing partners who want to get the job done with "fit for purpose" solutions! This is a great start to a project."

Antonio Martinavarro, Systems Engineer, ILW & LLW Processing Team

• Capturing Learning

From the outset the KM Framework required that as tasks were completed, learning was captured for future reuse. The tools that were used to capture learning included; 'After Action Reviews' and 'Retrospects'. These tools in essence ask project teams to review what was meant to happen, what actually happened and from this define what they learnt. The learning is then captured in the form of simple, specific, actionable lessons learnt. The lessons learnt are then stored on the Knowledge Bank.

The taxonomy under which the lessons learnt are stored is a high level taxonomy defined by the engineers within the business. Each section within the taxonomy is managed by a Knowledge Co-ordinator and the lessons learnt are reviewed before being published on the Knowledge Bank. The Knowledge Bank is rapidly growing in size and the current focus is for the Knowledge Co-ordinators to start reviewing the lessons learnt and develop them into Good Practice Documents, Must Do Documents or escalate as organisational change issues.

British Nuclear Group
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LCM Waste Management Winning Work Project Delivery Knowledge Management Procurement For Projects
Design & Safety Change Password **KNOWLEDGE BANK**

Characterisation & Sampling > Identify Waste

WASTE MANAGEMENT
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General
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Design, Specify & Implement
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Store and Transport

Key Documents

Lessons Learnt
View Most Recent Add New Document
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Number of documents returned = 24

Theme	Title	Author (s)	Date	Status	Site
Characterisation & Sampling	Coring Methodology	Bill Westall	28-May-2004 12:07:11	✓	TRAWSFYNYDD
Characterisation & Sampling	Cutting Up Cores	Bill Westall	27-May-2004 13:27:04	✓	TRAWSFYNYDD
Characterisation & Sampling	Rehearse, rehearse, rehearse	Bill Westall	27-May-2004 13:26:11	✓	TRAWSFYNYDD
Characterisation & Sampling	Measuring Boilers	Bill Westall	27-May-2004 13:24:09	✓	CHAPELCROSS
Characterisation & Sampling	Sampling CheckList	Bill Westall	27-May-2004 13:22:45	✓	TRAWSFYNYDD
Characterisation & Sampling	Distribution of activity into concrete	Bill Westall	27-May-2004 13:22:23	✓	TRAWSFYNYDD
Characterisation & Sampling	Unusual Construction features	Bill Westall	27-May-2004 13:21:52	✓	TRAWSFYNYDD
Characterisation & Sampling	Sampling Map	Bill Westall	27-May-2004 13:21:34	✓	TRAWSFYNYDD

Inbox

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- Developing Good Practice

The Peer Assists, After Action Reviews and Retrospects that we have carried out have captured key knowledge and often this represents current good practice within the business. This good practice is starting to be compiled into resources that will be used and developed in the future. This organic growth ensures that the good practice is up to date, relevant and based on real experiences. We have also carried out learning events specifically to generate good practice. These events focus on one particular issue and pull together knowledgeable people to discuss and agree on the current good practice. Like the Peer Assists, the Learning Events benefit from creatively thinking about who to invite thereby breaking down silos and introducing new benchmarks in performance. The focus now is to integrate the good practice with the lessons learnt and to increase the publicity around the good practice to ensure maximum reuse.

Examples of Good Practice Developed to Date.

- 1) Commercial Framework Agreement - a contract agreement that allows the team to work cohesively, based on a highly successful waste processing project.
- 2) Tier 2 Bidding - good practice as defined by the BNFL Tier 1 Procurement Team.
- 3) Bid Production - good practice on the production of bids based on the collation of lessons learnt from current bidding.
- 4) Grout Formulation - good practice on the application grout formulation currently being used in other encapsulation projects.
- 5) Grouting of ILW Thermal Insulation - good practice from Windscale Advance Gas Cooled Reactor Decommissioning.
- 6) Handling - good practice on moving / lifting 3 cubic meter boxes and drum handling.
- 7) Compaction and Minimisation of voids - good practice on the use of box liners, wire baskets, concrete liners and overpacks.

Has it been worth it?

Over the past 18 months BNFL Environmental Services has gone from a position where Knowledge Management was at best ad-hoc and ill-defined and at worst non-existent. For Nuclear Waste Management Knowledge Management is now being pushed as one of the things that every engineer should be aware of, make use of and get involved in.

The benefits are starting to be realised. We have learnt many lessons on implementing a business change programme and we have managed to achieve our vision of a scaleable, repeatable framework aligned with business strategy.

The challenge now is to optimise ongoing management and drive the organisational and cultural change. This is a significant challenge, but one we are confident that we can meet based on our experience to date and the sound foundations we have built.

Next Steps

The BNFL Environmental Services KM Team is now focussing its efforts on developing the knowledge management framework for British Nuclear Group Project Services, which will become operational in April 2005. The framework has been reviewed and it is recognised that there are further elements that need to be introduced to provide a robust framework that will meet the needs of the new business. For the short term the focus is on embedding Knowledge Management in the new business processes and facilitating the creation of dynamic communities that will support the formation of the new business.