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12 Steps to Successful Knowledge Management Implementation

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Abstract: Knowledge management initiatives often fail to live up to expectations and many result in failure. Unfortunately, many knowledge management initiatives fail because they have been introduced, simply because knowledge management has been recognised by senior management as a "good thing" and something their competitors are undertaking. This can lead to a knowledge manager being appointed without any clear direction and knowledge management initiatives being undertaken without any clear purpose or measurable target criteria.

To overcome these problems, a twelve step methodology for knowledge management implementation is presented, illustrated with a series of small case studies. Starting from a problem audit, subsequent steps ensure a baseline measure for improvement is identified, and a comprehensive, costed solution to a recognised problem is designed which is capable of gaining buy-in from both management and the system users. The system is designed with user involvement and must consider the operation of the proposed system as well as the implementation. Subsequent to the implementation, a review process involving the identification of measurable cost-benefits can become the basis for future expansion and roll-out of knowledge management and can become the first steps in the building of a comprehensive knowledge environment.

The case studies illustrate the value of each step in the methodology with examples of good and bad practice drawn from the author's previously published experiences. This paper brings the lessons from these case studies together to form the twelve step methodology which ensures knowledge management is implemented using sound business principles of cost-benefit analysis and return on investment, and established engineering principles of breaking larger projects into smaller projects carried out incrementally with testing carried out at each stage. It is recommended that companies follow these principles and the proposed twelve step methodology in order to achieve successful knowledge management implementation in their own environment.

Keywords: systems implementation, success, failure, business case, software engineering

1.   Introduction

Many knowledge management initiatives are currently being implemented, but these often fail to live up to expectations (storey and Barnet, 2000). For example, a Community of Practice supported by an on-line discussion forum may start well as the community send postings to their new tool to try it out, but after a while the number of postings starts to reduce as the novelty wears off and people start to assess the value they are getting from the tool. In many cases the tool will eventually fall into disuse as fewer and fewer people even bother to look at it, let alone make a contribution. This is not a major disaster if the company had only invested in a simple, bought-in discussion forum, but other initiatives may have taken many man-hours to develop or could have involved software purchases so, if the initiative is abandoned, a costly mistake has been made.

This can give knowledge management a bad name. Indeed managers can regard it as no more than a passing fad (Boaden 1996). The problem is exacerbated by the hype surrounding knowledge management. It is described as "essential" with "obvious" benefits and necessary step to gain competitive advantage. Indeed, it is not uncommon to find a zealous enthusiasm for knowledge management that seems more appropriate for a religious belief than for a business initiative.

Common sense dictates that knowledge management must be worth considering as many companies recognise the importance of knowledge as an asset. However, to avoid it becoming a "passing fad" companies and managers must be realistic about what may be achieved. Like everything else, any knowledge management initiative must be supported by a sound business case and its contribution

towards the business aims must be recognised and measured in order for the initiative to take its rightful place amongst the company's priorities.

2.   The problem scenario

No one knowledge management system will solve all knowledge management problems. An electronic document management system could be considered to be a knowledge management tool and it may well help store, find and retrieve information, but it will not solve all knowledge problems For example, it is unlikely to stop knowledge leaving the company when an employee retires. Instead, a range of strategies, tools and processes will be required, and each one of these will have its own problems of implementation and acceptance by a sometimes very sceptical workforce.

Unfortunately, this nature of knowledge management is not well understood by organisations. An all-too-common scenario is for senior management to be caught up in the hype surrounding some knowledge management advertising and then, realising that "knowledge is our greatest asset", they decide that knowledge management is important and must be implemented. The normal first reaction is then to appoint a knowledge manager to make sure it is done. The knowledge manager is given little direction other than to "do knowledge management" and often, if they have been appointed from within the company, they have no expertise in knowledge management either. In such circumstances, the newly appointed knowledge manager searches round for a knowledge initiative to be his or her flagship, and this is likely to be the introduction of some package such as an electronic document management system. However, without any well defined need for such a tool, its success is likely to be patchy. In some business areas it may be very successful and enthusiastically taken up, but in other areas the use of the system may be minimal. If the previous document management system was working well, there will be no incentive to change it.

When both the knowledge manager and his or her knowledge initiative have been in place for a while the knowledge management system will be reviewed by senior management. They will look at the patchy take up of the system introduced, they will look at the many knowledge management problems that continue to exist, they will look at the difference, if any, to the productivity resulting from the initiative and above all they will look at the costs incurred so far. In all probability they will be disappointed. The initiative does not seem to have produced dramatic results and in many cases it will be hard to identify any clear benefit at all. Furthermore, by this time the initial enthusiasm from senior management will have passed as their focus moves on to other ideas. The end result is that any further knowledge management initiatives are cancelled and the knowledge manager is moved on to another post.

Overall a knowledge management system will fail unless it can produce tangible and measurable benefits. Any religious zeal for knowledge management cannot be sustained without something to show for it. Unless it can produce very visible benefits it will fail to get the necessary buy-in from either the management or the employees who use it, and without the buy-in, the long term future of an initiative will inevitably be curtailed. However, part of the problem is collecting any meaningful benefit from a knowledge management initiative. If, for example, a knowledge tool is introduced to increase communication within a company, there is no obvious measure of the benefits of such an initiative.

3.   A twelve step methodology for knowledge management implementation

This paper reports a series of case studies across a number of different companies. The lessons from these experiences are combined to create a twelve step methodology for introducing knowledge management into an organisation. This represents an update of ideas first introduced in 2007 (Dawson 2007) which are now expanded with more steps and more detail.

3.1   Step 1: Undertake a problem audit to identify a recognised problem
Creating a comprehensive knowledge environment could involve changing virtually every process in an organisation and potentially the whole working culture. This will require a huge business case and an immensely powerful knowledge manager to see the programme through. In most cases this is unrealistic. As with most big problems it is best to undertake it one bit at a time. For this reason it is best to start by targeting a problem in the company that is manageable in size but also widely recognised by all staff concerned.

Addressing a recognised problem is important as it provides the incentive for employees to implement the knowledge management solution and make it work (Balafas et al., 2004). This is illustrated by a case study carried out at the Danwood Group in the UK (Dawson and Balafas, 2008). A knowledge audit was carried out to find potential business improvements. The analysis showed an overlap of knowledge between two different IT systems at the company, and this led to the proposal that the systems be merged. However, while the company agreed in principle, the proposed work was never carried out. The reason was that the company didn't believe they had a significant problem with the two systems working independently, so the task to merge the systems was given the lowest priority, and as is the normally the case, lowest priority tasks in a busy company rarely, if ever, get done. Later initiatives made a point of starting with a problem audit to find what problems were taxing the workforce. Starting with initiatives to solve these problems had the advantage of immediately gaining buy-in from both the management and users of the systems.

3.2   Step 2: Find out how bad the problem is

Quantifying a problem in cost terms is an important step that is often overlooked. If there is a problem then there will be a cost as a result. For example, in a case study at Rolls-Royce it was found that some hundreds of engineers spent on average about an hour a day looking for certain types of information (Ubhi et al., 2004). This was equivalent to five and a quarter million GB pounds a year. Even if this search time was reduced by only a few minutes the accumulated cost saving over a year would be considerable. Even this figure was not the full cost of the problem as there was also the possibility of errors made as a result of information not being found at all. However, even without this additional cost the calculated figures gave a useful baseline upon which a return on investment for any new initiative can be measured.

The figures also help gain buy-in from the senior management responsible for the funding of any initiative to solve the problem. Quantifying the costs of the particular existing problem in the company enabled a business case to be made for a knowledge management initiative and, at the same time gave the opportunity for measurable improvements.

3.3   Step 3: Find a knowledge management solution in the context of the problem

A knowledge management initiative needs to be put in the context of the recognised problem identified. For example, if an electronic document management system is proposed, it needs to be implemented so that it resolves the problem considered. A wider implementation should only be undertaken in the first instance if it can be implemented easily and cost-effectively. If this is not the case the wider implementation should wait to Step 11.

To solve the identified knowledge management problem, a solution may be chosen that does not involve standard knowledge management tools. This is illustrated by the case study of a Swedish company that designed bags who then outsourced the making of the bags to a company in India. The problem was one of knowledge transfer. It usually took several iterations of designs being drawn and sent out to India and prototypes being sent back to Sweden, before an acceptable model was produced for mass production. The knowledge management solution in this case was for the designers to produce a virtual reality model for the producers to copy and make. The virtual reality software is not normally considered a knowledge management tool, but in this case it was introduced to enhance knowledge transfer, and indeed it was very successful in doing so, not only reducing the time taken to get a satisfactory production model but also helping designers in their work.

3.4   Step 4: Check the cost of the proposed solution.

Once a knowledge management solution has been proposed for a particular problem, the cost of implementing the solution can be calculated so that it can be compared with the costs incurred by doing nothing, ie. the costs calculated in Step 2. Once these costs are calculated, a return on investment can be calculated and a proper business case made for the proposed action. Before progressing with any knowledge management initiative it is essential to establish a proper business case, just as it should be for any business development. A religious zeal for knowledge management may be very good for motivating people, but it is no substitute for a well costed business case. In the Rolls-Royce example (Ubhi et al., 2004) described in Step 2 it was straightforward to justify the allocation of resources to get a signposting tool developed for identifying and locating knowledge in the company once the costs that would be incurred were compared with the costs of lost time through searching for information.

Note that for producing the return on investment and the business case for the proposed knowledge management tool, the focus should be restricted to the benefits associated with overcoming the problem in Step 1 so that the costs of Step 2 and Step 4 can be directly compared. The knowledge management tool may well have much wider benefits but these must be ignored for the purposes of presenting the business case for the knowledge management initiative. For example, at AstraZeneca a problem was identified of time lost in meetings through attendees not being fully prepared and uninformed decisions being made. Based on the cost savings of more efficient face-to-face meetings, a case was made for the introduction of a knowledge tool consisting of a combination of a threaded discussion forum and knowledge object storage (Jashapara and Adellmann, 2003). The fact that other benefits could also be attributed to the scheme, such as the development of a more positive knowledge sharing culture, could not feature as part of the business case as such benefits could not be quantified and the extent of the benefits could not be judged before the scheme was introduced. Any attempt to use these intangible benefits in the business case would immediately make the argument speculative and inevitably reduces the credibility of the case. A case based on a demonstratable calculated return on investment is much more likely to receive approval.

3.5   Step 5: Check the value for each individual

A new knowledge management initiative must have financial benefits to a company, but it must also give value to each individual employee that must make it work. If a system does not give any return to the people that are needed to contribute to the system, the contributions are not likely to be forthcoming. This is illustrated in a case study at a large company supplying computer hardware and software solutions configured to customer needs. The company in question had a large team of over 100 analysts who would work with the customers to define the ideal configuration to meet their needs (Dawson and Richardson, 2007). The more experienced analysts built up a great deal of knowledge and experience on creating these configurations, and it was recognised that this knowledge would be of great value to other analysts. A business case was made for a knowledge management tool to record the solutions that each analyst produced so that this knowledge could be accessed by any of the analyst team later. The time it could save less experienced analysts easily enabled the cost of the new development to be justified.

However, further analysis of the proposal to examine the proposed system from the point of view of the individuals concerned was undertaken before going ahead with the implementation. It was quickly seen that the experienced analysts who were to be the main providers of knowledge had the least to gain from the system. Although they were willing to contribute in principle, this willingness had limits in terms of the time they were prepared to do so. It was clear that without some form of significant incentive scheme the system would soon be ignored by the people on whom it depended the most. In the end the system was abandoned in favour of a much simpler system that would not take as much of the experienced analysts time. (Dawson and Richardson, 2007)

3.6   Step 6: Get buy-in from management and individuals based on the business case for the identified problem alone

As well as ensuring there is value for every stakeholder, it is important that each one agrees they need any proposed new system. The knowledge management initiative must be "sold" to both management and users. An illustration of this is given by another case study at Rolls-Royce. By involving the users in focus discussion groups to define the problem of communicating within and between company sites an intranet solution was proposed that all users wanted to see implemented (Ubhi et al., 2003). The management were also consulted and were given the business case to obtain their buy-in. As a result all stakeholders wanted to see the proposed intranet in place and this contributed to the successful acceptance of the knowledge management tool.

A contrasting case study is the development of a large military administration system. Here, the buy-in was obtained from the senior management but not from the individual users of the system. Further details of this case study are given in the next step.

3.7   Step 7: Involve the users in the solution

It is not sufficient to simply put an argument for a new system to the users to obtain buy-in, it is well known that to gain users' true loyalty to a new system, they should be involved in the requirements process and design of the new system (Dawson and Al-Zaid, 2000). Indeed user participation in IT systems development is one of the key practices in methodologies such as extreme Programming

(Beck, 1999). This will therefore also be true for any new knowledge management system, especially if it is IT based.

This is illustrated by the case study of a large military administration system mentioned in the last section (Dawson and Ubhi, 2009). In this case study, a £200 million administration system was introduced for all branches of the UK military to replace a multitude of existing outdated systems. The new system was designed to be a knowledge management tool as well as an information system with the "empowerment" of end users who would become much more directly involved with the interaction with the system. The system was delivered within budget, close to the scheduled delivery and with the functionality specified.

At first sight the military system should have been considered a great success, but unfortunately it was very badly received by the users. Indeed, one senior RAF officer described the system as "the most-quoted reason for malcontent in the armed forces" (Dawson and Ubhi, 2009). The problem was that the end users were not consulted at any stage. The first many users knew about the system was when it was implemented. This gave two major problems. Firstly, the lack of consultation meant that usability issues could not be properly considered and this resulted in the users finding the system difficult to use. Secondly, having the system unexpectedly imposed upon them, the users immediately reacted negatively towards the complete culture change required to operate the system. Instead of seeing the interaction as empowering, it was seen as time consuming and bureaucratic. In addition, the lack of appreciation of the user problems meant that the user training provided proved to be "woefully inadequate". The resulting many user errors meant that the system was blamed by the users for being unreliable and unworkable when, in fact, the system was actually working to its specification more reliably than any of the systems it replaced. The lack of involvement of the users in the design of the new system caused a system, that could have been a success, being seen as a complete disaster.

3.8 Step 8: Plan for systems operation as well as the implementation
The cost of operating and maintaining a system is usually a significant part of the through life costs of a system (Bradley and Dawson, 1995). This will also be true for knowledge management systems. Neglecting to plan for the operation of a system is likely to mean any initial success cannot be sustained. In the military administration case study described in the last section, the implementers failed to plan for adequate helpdesk support. This meant that when users had problems operating the system, they couldn't get the help they needed to resolve the problems. This generated more errors through erroneous use and yet more dissatisfaction with the system (Dawson and Ubhi, 2009).

A contrasting case study is the information finding case study at Rolls-Royce described in Steps 2 and 4 (Ubhi et al., 2004). The software for this system was developed by Masters students at Loughborough University. The fact that the students would not be available once the software had been delivered, meant that the company had to be meticulous in their planning for maintenance of the system by their own engineers. To keep the system maintainable even meant that the company requested that some of the more complex functionality of the first prototype should be taken out of the delivered system. The operation of the system was also carefully planned with the company opting to allocate a dedicated manager of the system to scrutinise updates to maintain the quality of the knowledge pointers the system provided. These precautions have contributed to the measurable success of the system achieved over the months and years after implementation.

3.9 Step 9: Implement the solution
This step involves the commitment of resources, but if the previous steps have been carried out properly, the implementation should have few, if any, problems of acceptance by the users and should give the required value and return on investment.

3.10 Step 10: Evaluate the actual savings made
Estimates of cost savings from a knowledge management or any other initiative may be essential to make a business case for change, but it is important to follow up the initiative with actual measurements if credible claims of success are to be made. Estimates can be inaccurate. If the cost justification is made on a worst case scenario, the actual cost savings may even be much greater than that estimated. The follow-up step is often neglected, perhaps because it requires some effort when the designers and developers have moved on to other projects, yet it is the best opportunity for self promotion for the knowledge management initiative's instigators. In the Rolls-Royce case study

described in Steps 2, 4 and 8, an evaluation was indeed carried out after six months of use and the predicted success had been achieved. The importance of this step is that a proven, costed benefit for the knowledge management initiative can now be demonstrated. Such benefits no longer need to be described as "obvious" and "essential" as such hype can be replaced by properly accounted fact.

3.11 Step 11: Use the evidence of success to achieve a wider rollout of existing knowledge management solutions and to get buy-in for new initiatives

Establishing a measured success for a knowledge management initiative can help achieve a wider roll out of the solution provided. The initial knowledge management solution was justified for a particular problem and only implemented as far as was required for that problem, but it will often have far wider potential application. The success can also be used to encourage the company to pursue other knowledge management initiatives and through the successes of these initiatives yet more can be pursued. In this incremental manner the company can be gradually moved to a full knowledge management programme that, over time, can mean extensive changes to the company working methods and culture. For example, in yet another case study at Rolls-Royce, a number of knowledge presentation tools were developed to facilitate decision making (Dawson and de Chazal, 2004). This project started in a pilot project in one part of one division of the company but the demonstrated success of some of the tools has led to the company rolling out the tools across the whole of the company. Furthermore the success of this project led directly to the company initiating the knowledge management projects described in Steps 2 and 6.

3.12 Step 12: Use smaller knowledge management projects to build bigger projects

An integrated set of tools that gather and exchange knowledge between them to create a knowledge environment where all relevant knowledge is always available must be the aspiration of any company, yet the complexity of such a large system would make it difficult to justify even after a number of successful knowledge management initiatives. However, with some planning large projects can be broken down into smaller projects that can each be implemented with the first 11 steps of this knowledge management implementation methodology. In this way the company can work towards the larger integrated system to which it aspires.

Loughborough University's work with AstraZeneca illustrates this amalgamation of projects. Separate projects to implement knowledge objects to store decisions, to categorise and relate the knowledge, to search for knowledge and to devise a real time recording of meeting decisions has led to the possibility of a dynamic system capable of interrupting a meeting with just-in-time knowledge to inform them of related decisions that have previously been taken at the company. It could even be extended to reveal knowledge from outside the company using the Internet. Such a complex system would not have been possible as a starting point, but the development of many of the components of the system, each justified as a problem solution in its own right, has now led to research into producing the overall integrated system described.

4. Conclusions

This paper has shown that it is important to keep the promises of the hype surrounding knowledge management in perspective. Knowledge management is not a religion, and requires more than a religious belief in its benefits for any initiative to be effective. To achieve a successful implementation of knowledge management requires a sound business case based on proper planning and costing with a forecast of a return on investment that must be acceptable to the business needs at both company and individual level. This business case must also be coupled with a proper engineering development plan based on well thought out implementation methodology that gives an incremental delivery of any full knowledge management programme where each component is separately justified, tested and evaluated before the next component is added. Without this, many initiatives will fail and there is indeed a danger that knowledge management will be considered to be little more than a passing fad! This paper has described a twelve step methodology to guide companies to achieve the required combination of business and engineering principles that should lead to successful knowledge management implementation.

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