

## “Engineering” KM 2.0: Disturbing the Status Quo

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### **An Information Impasse**

Consulting engineering is, by its very nature, a knowledge-based profession, relying on the experience and expertise of specially trained staff. Consulting engineers sell not only their technical skills, but also the knowledge gained over the span of a career. In a professional consulting engineering practice, intellectual capital, and the work product of engineers, is an important asset for the firm. It is critical that this knowledge – which includes practices like step by step processes, technical resources, and basis of design calculations - is captured for use by all staff, for the present and for the future.

R.V. Anderson Associates Limited (RVA) is a consulting engineering firm providing services to the public and private sectors through eight offices in Canada, and internationally. The firm is comprised of environmental and infrastructure specialists for water, wastewater, transportation and urban development. The company has over 200 employees, and is wholly owned by its principals and associates. The firm, like businesses all over the western world, is facing a number of challenges to do with the capture, retrieval and use of intellectual capital, which, for RVA, is the backbone of the consulting practice.

The firm is facing issues related to the “graying of the population,” a common problem for Canadian companies that is created by the aging baby boomer generation. Over the next five to ten years, RVA’s senior associates will begin to retire, and if the firm is to remain successful, finding a solution for effective training, mentoring, and transfer of knowledge to the new

generation of owners is imperative. The old ways of knowledge transfer are no longer sufficient, and it became apparent that new solutions were needed to take the company into the future.

Senior management recognizes that the generation of younger employees working for the firm learns differently and has alternative procedural methods for carrying out their work. At the same time, it recognizes that the specialized knowledge of RVA's engineers is the lifeblood of the company. Therefore, it became important to provide a mentoring bridge for transferring knowledge to the next group of leaders and owners. The transmission of this knowledge takes place across different forms, such as focus groups, inter-department collaboration and mentoring relationships between senior engineers and their junior counterparts.

It became apparent that resource sharing and open collaboration could be made easier by improving on ideas already in place at the firm, such as providing a central location for sharing digital information, and building further communication bridges between business units. This is particularly important because the company also operates in diverse geographical areas and is growing in terms of the number of staff. That, in conjunction with a growing practice, has created an opportunity to increase productivity through the implementation of further collaborative and information-sharing tools - which would mean some changes in business operations.

## **Crossing Gullies**

At the beginning of the process, it also became evident that, in order to address these needs, several things were required to happen in an almost simultaneous timeframe. Open sharing of information through a digital medium needed to be cultivated and encouraged, embracing a knowledge sharing culture. The ability to capture existing initiatives - such as storytelling, knowledge transfer between senior and junior technical staff - and the information shared through the mentoring and training program, without adding to workloads was important. Connecting the geographically separated offices with head office was also key to the success of the project.

The implementation team went in search of a technical solution that would bridge the geographical distances while addressing security issues. This solution needed to be sophisticated enough to embrace the new web 2.0 technologies, such as RSS feeds, wikis and blogging, to appeal to the incoming generation and yet still be user friendly. The solution also needed to be able to handle a multitude of varying file formats in all sizes and be flexible enough to grow and change as the initiative grew and developed.

## **Challenges – Preliminary “Engineering” Designs**

As with many projects of this nature, the implementation team was looking for a solution that was feasible both in terms of budget and resources required to maintain it. With support from senior staff, the opportunity for change was realized, and as the initiative moved forward,

the capabilities of a knowledge management system were communicated and used to sell the merits of a broad initiative such as this to all staff within the company.

The project was started with an eye towards ensuring that sufficient resources were in place to support the initiative as it went forward. This meant looking at existing assets like company's network and current software implementations to ensure that the new system was able to be integrated within them seamlessly. In addition, the team had to ensure that there were sufficient staff resources with the expertise to support and manage large database structures.

The result of all this was that the knowledge management team had to "do their homework" – through research, and also understanding current IT infrastructure - in order to develop a working solution that addressed both technical and operational needs.

## **Technology Solutions**

An immediate search and testing of knowledge management software solutions was undertaken by the implementation team with little success. Most systems were able to address parts of the RVA knowledge management puzzle, but not all. Some that came close were also out of the project budget range. Issues also developed around the integrity of existing databases being imported into new software.

A consultation on an entirely different matter by Maria Phipps of M.E. Phipps & Associates Inc. (a Canadian InMagic® Reseller) brought to light a next generation, research asset management software solution called InMagic® Presto!.

Upon investigation, Presto! was Web 2.0 friendly with the ability to integrate RSS feeds and alerts, wikis, and blogs, and the ability to integrate federated searching. With its SQL platform, .net and XML foundation, it would be possible to integrate and interoperate Presto! with RVA's existing information technology infrastructure. More importantly, Presto! was easy to use, intuitive and would require minimal support. As a next generation software it would also, in theory, grow and develop as the company initiative did.

The Presto! software was able to be customized to accommodate some of the quirkiest items of the RVA deployment, such as integrated CRM management and other business development initiatives. In this way the team could use one software solution for all its needs. InMagic Presto! also offered the capability of expanding into project portals or external database feeds and had the supporting security structure to allow for a variety of users and use situations.

An additional benefit of the Presto! system was the multitude of ways users can retrieve information: a quick search feature similar to internet search engines, individual database searches or a collection of folders which organize information across the system regardless of where it is originally held. This meant that the gap between a basic user and an advanced user would be bridged. Anyone could use the system in an intuitive manner regardless of their comfort level.

The cost of the software, development, and implementation was also well within the prescribed budget, which was a relief to the entire information and knowledge management team.

## **The Solution – Communications**

With a technical solution in hand, the next step was to identify a communications and buy-in solution for the staff and associates.

The initiative was branded aNet 2.0 (aNet standing for Anderson Net) as it would be replacing the company intranet and existing silo databases, and because it embraces web 2.0 technologies. A visible brand was important as it gave employees a reference point and established a difference between previous information management projects.

The aNet project team conducted road trip presentations to RVA's branch locations to communicate the goals of the initiative, and to garner feedback from remote users. This gave the team the ability to see how the system might be employed from a user perspective, investigate network connections first hand and identify what the branch offices were looking for and where any trouble spots might reside. Similar presentations were held at RVA's head office, and the positive result of these road trips and presentations provided the direction for the project plan to proceed with aNet 2.0

A targeted pre and post launch communication plan was developed to engage users and demonstrate the capabilities of the new system. The plan integrated a number of elements aimed at creating a "fun" user experience, including interactive search contests with prizes

## **Challenges – Derailing the Status Quo**

During implementation of the system, the knowledge and information team realized that it might further demonstrate the system's benefits through a series of one-on-one demonstrations of the system's capabilities, such as the one-stop-shop approach to indexing project and proposal information which would make RVA's project managers' lives easier. Another strategy was to tailor the aNet 2.0 homepage for specific company initiatives, like a sustainable design-focused resource list.

A surprising challenge also surfaced at the start of the implementation phase. When the first beta of aNet 2.0 was demonstrated to the technical engineering staff, it became apparent that what they had asked for, and what had been developed, were somewhat different from one another.

The implementation team had provided a system based on existing business categories such as discipline and location. However, the engineering staff were seeking retrieval parameters that made intuitive sense in terms of their actual usage, such as cost estimating; regulations and

standards, that weren't presented in terms of an overall database record that contained too much information.

With that, the project had to be revisited and revised in order to better meet the needs of the end users – the result of which added another four months to the original project timeline. The positive outcome from this was an acknowledgement from both the corporate and technical staff that it can sometimes be difficult to translate the communicated goals of a knowledge management initiative into complex software solutions. The mutual understanding of this fact has allowed the team to push forward with an understanding of each community's goals.

In addition, as with all new next generation software implementations, the typical growing pains were experienced as the project developed beyond the initial scope of the software, bugs were found and fixed and new needs were identified and solutions developed.

## **Footbridges to Success**

Communication barriers have been demolished and virtual bridges have been created between head office and the seven branch locations. All of RVA's business units are now working as one cohesive unit thanks to new tools that have been put in place, and staff are willing to embrace new technologies and change. The establishment of a digital forum and community meeting place has resulted in easier, streamlined windows of communication and resource sharing across the company.

Communities of Practice were established with active representation from all business units. These groups are helping to maintain the bridges established between the different sections and are providing valuable feedback for future initiatives.

The project has been a huge success, with all staff seeing the benefit of the system on a company-wide level. Technical resources and valuable engineering tools are being captured and shared that otherwise would have been a bit more difficult to share and use has, in turn, expedited the design process, resulting in increased company efficiency. Currently, aNet 2.0 has been identified as the final destination for many initiatives and staff have been very creative in imagining new ways of making the data accessible for business development across the company.

Ultimately, the implementation team was successful in creating a top notch knowledge and information system which is addressing the current needs of RVA and has web 2.0 and 3.0 capabilities to take the firm into the future.

The foundation has been created for a knowledge-based culture within the firm. Further building on this foundation is progressing surely and consistently.

## **A New Route... to Newfangled Knowledge**

In managing to capture RVA's critical knowledge and information assets, the implementation team learned some tough lessons, about business in general and knowledge management initiatives in specific: Understand your target users and tailor the system according to their needs. Work with the staff you support to develop a solution. At the end of the day, this isn't "your" initiative, it's "theirs". Things won't always go the way you anticipated, but that fact can be overcome by ensuring that everyone understands the goals of your initiative and the nature of the software involved. Implement technical solutions that are supported by good business practices, like we did.

For the RVA project implementation team, the most important lesson learned from aNet 2.0 are those of a philosophical and psychological nature: Companies are social "groupings"; and the status quo is not always what you think it is. The key to harnessing the positive power of change is to realize that people need to understand "the big picture" and know how it fits into their goals and the goals of the company.

It is important to work hard to create understanding between implementation teams and the people that the system is being developed for, and to remember that – as was the case with RVA – users will make it bigger, and much, much better, than you had anticipated.

So have a strategic plan for that too.