The Camelot of collaboration

The case of VAX Notes

*Before knowledge management, there was a company in which a collaboration technology transformed how its employees worked in a way that today's CKOs can only dream of. **Patti Anklam** describes the technology and the environment it enabled, one in which employees across the world relied on the existence of communities for business, professional and personal support.*

Imagine. You work in a global high-tech company with more than 100,000 people. Research and product development organisations are distributed around the world, as are the sales, marketing, and technical support groups that interface with customers. There are many complex products at varying stages in their life cycles. You have been in the company for a month, and a customer has just asked you a question about the technical capabilities of a product you haven't even heard of. You promise the customer an answer by the next day. You are 95 per cent certain you will have the answer.

This scenario has been discovered, revealed and addressed by many vendors working in the knowledge management arena – and for good reason. The ability to find a subject matter expert quickly and get the answer to a question or assistance in solving a problem, is a key KM priority. It saves time (and money), enhances customer relationships and ensures that knowledge transfer happens to the right person at the right time. And yet we also know that tools are not the whole answer. Even the best tools will not give you a return on investment unless the employees of the company are committed to helping one another.

Employees of Digital Equipment Corporation worked in an environment that got this combination of technology and culture about right, back in the 1980s. The technology was a simple collaboration tool called Notes[1] that ran on Digital's worldwide network, supported by the company's VAX/VMS[2] software development tools group. Among the people who worked at Digital during that time, the nostalgia for that tool and the culture it enabled (and that enabled its success) assumes Camelot-esque proportions. Ask them what they want in a knowledge management system and they simply say, 'Give us VAX Notes!'

This article looks at the success factors – the technological infrastructure and cultural conditions, the adoption patterns, and the tipping points – for VAX Notes.

The tool

VAX Notes worked in the same way that many modern conferencing/discussion databases work, but was (oddly) more powerful and feature-rich than many of threaded discussion databases you see today, even though the design centre for the tool was a monospaced, 'dumb' terminal. (Even with the advent of windows on mainframe computers, the 'window' was an enhanced dumb terminal screen.) The flat screen layout was very simple, but it provided an enormous amount of context in a very consistent configuration.

Conference communities

The term 'community of practice' hadn't been coined at the time, and the distinctions we now make about types of community were not in our lexicon in the mid-1980s. If you perused the master list of conferences registered in Digital at the time you would find:

- Communities of purpose;
- Communities of practice;
- Communities of interest.

By far the greatest leverage for VAX Notes came with its use in supporting the business of the company. Communities of purpose – development teams, quality circles, researchers – integrated one or more Notes databases into the fabric of the organisational life and process of their teams. Field people, geographically distributed technical personnel who were the earliest adopters of the technology, relied on the conferences supported by the development teams: VMS, Unix, Networking. Many teams would use the conferences as a way to capture and record bug reports and responses, to solicit requirements for new products, and so on. By deliberate sequencing, ordering, re-ordering, indexing, tracking and monitoring Notes, the emerging knowledge about a product under development was maintained and made accessible to the company at large.

Figure 1 VAX NOTES Screen Layout

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                    <<< humane::Stories >>>
          -<  * Writing and publishing internal case studies * >-
===============================================================================
=
37.0 pitfalls and pratfalls                                       26 replies
ANKLAM@ISAK "Patti, 555-5358, cherchez le \par"   2 lines  19-May-1988 08:26:36
-------------------------------------------------------------------------------
-
    How about a discussion of what some of the pitfalls are in writing
    case studies?
```

Conferences were available for people in specific professional communities within the company: writers, marketing professionals, financial analysts, product managers and so on, all had their own conferences. These Notes conferences, which spanned geographical and organisational boundaries, provided a venue for announcements about events, discussions about changes in process, socialisation of new ideas, informal job postings, etc.

The work-related communities far outnumbered[3] the communities supporting 'water cooler' conversations. These latter communities of interest ranged from areas of deep technological specialisation (the 'Chips' conference) to broad social concerns (the 'Digital' conference). In between, there was room for discussion of professional ('Linguistics') and personal ('Cats', 'Home improvements', 'Ballroom dancing', etc) topics, topics about life in the workplace, word games and rumours.

The tolerance of personal interest topics was not universal. There were many managers who tried to curtail or to stop Notes activity outright, especially when there were the infrequent but highly visible abuses of company time and resources, or evidence of personal attacks in the files. However, the existence and ultimately the support of personal conferences within the environment reinforced the sense of community across the company and had a tipping effect on the acceptance of collaboration tools in the workplace.

Technology environment

VAX Notes evolved in a corporate computing environment that presaged our current heavily inter-networked world.

- Ubiquity and integration with the work environment – the tool was accessible to all users in the company and conferences were accessible worldwide, 24 hours a day. Almost everyone in the company worked on a system with access to Notes. As it evolved, VAX Notes was integrated with other productivity tools developed for the VAX platform and these tools interacted in very useful ways. For example, you could use an e-mail command to forward a note from a conference to another

user or to a distribution list, adding information to augment the note. The recipient would receive the note with its identifying characteristics and know that it came from a conference, the topic and so on. To create or reply to a note, you could use a text editor so that you could compose a note carefully;

- Congruence with job roles and functions – we were a company of engineers, in an environment that fostered the development of home-grown solutions. VAX Notes was one of many tools that were developed by Digital to support its business that were later refined as products for customers. Many internal enhancements and utilities – for example, the ability to set alerts on Notes files so that you could receive all the new topics and replies in a single e-mail every morning – provided insights into our own engineering processes and software development environment;

- Congruence with corporate mission – the company was leading the world in making computing accessible and open. The corporate policy on the use of VAX Notes acknowledged the role of Notes in helping the company achieve this mission: "Our peer-to-peer, open computing environment reflects our corporate culture. We sell this concept to customers, and business and society are clearly moving towards this way of operating. We believe that what we sell to our customers will get better if we use it ourselves." In Microsoft parlance, we 'ate our own dog food' and we were proud of it.

The culture of Notes

Digital as a company was focused on innovation, technical excellence and a passion for technology. Despite occasional misuses (or misunderstandings) about activity in Notes conferences, conferences were nevertheless encouraged. 'Monitor Notes files' was not an unusual part of a job description. As I indicated earlier, the corporate policies and procedures manual even had a section on guidelines for using Notes conferences in the policy on employees' use of computing resources.

The norms for usage were generally well understood and adhered to:

- Announcement – the conference is announced, usually by e-mail to a community of interest, purpose or practice, and also listed in various places, including a corporate-wide list of conferences. If the conference was set up for a team or as part of a community of interest distribution list, information about the location and access to the conference was always published as part of the community's documentation. People would also post notices of new conferences in existing conferences that had members who might be interested in the new topic;

- Moderation – corporate policy required that each conference have a moderator. Moderators were themselves a community of practice, and had a conference of their own to share experiences, ask questions and query corporate policy with respect to the set up and use of Notes. They were responsible for ensuring that corporate resources were not misused, that notes with inappropriate language or content were deleted, and that abusers of the conferences were either locked out

- or reprimanded. Moderators also played a pivotal role as connectors – another factor in tipping the company to the right culture;
- Different conferences had different tolerances for 'flaming' – many people who were tiresomely complaining or ranting were referred (by fellow 'Noters') to the 'soapbox' conference!
- People acquired reputations based on their association with specific Notes files. Long before chatrooms enabled the interaction of avatars and persona, individuals in the company could converse, lecture, answer questions patiently, and in general become very familiar characters to thousands of people, almost anonymously.

As a knowledge base for the company, this structure made it possible for anyone seeking information or wishing to create a knowledge community for the company to:

- Determine very quickly (by checking the EasyNotes list) if there was an existing community that was acquiring and developing knowledge on a given topic;
- Access and review the notes in the conference to reach the 'conventional wisdom' level of understanding on the topic, and also to get a sense of the leaders of the community;
- Choose to participate, either by posting or replying to topics, or merely 'lurking' on a regular basis to keep up with the subject matter. You had to be careful, of course. The successful conferences (long-lived, with a consistently high level of activity on a daily basis) were peer moderated. If you asked a question before looking to see if it had been asked and answered, you were subject to a quick and humbling reprimand from a community of your peers.

When you found the right conference and provided the right context for an answer, you would almost always get a response.

Failing to find a relevant conference, a person might go to either the 'Digital' conference or the 'Askenet' conference to ask their question, or to find people who might be interested in creating a new community, and then go on to create a conference, socialise it and create new knowledge for the company.

Notes was a vital part of the company, and the communities of interest on personal topics were tolerated because of the enormous advantage the interplay of idea and information in the business-focused conferences gave the corporation.

The tipping points

What made VAX Notes work? What was the relationship between the technology and the culture? Was it the culture that drove the development, use and expansion of the technology from a 'midnight' project to an institutionalised worldwide forum? Or was it the case that the technology was 'just right'? When people say they want VAX Notes for a collaboration tool, are they really longing for the tool, or is it the culture they miss?

I do not doubt that what we see here is a mutually reinforcing virtuous circle. As more people used the Notes conferences, the more useful the content became, and the more useful the content became, the more people used the Notes conferences. The technology was just right for that environment at that time.

I have also been pondering whether there was a tipping point, or any special factors or combinations of technology and culture that spread the use of this tool across the company at all levels (I know a very senior executive who admits to being a compulsive 'lurker' and never a contributor to a number of conferences). What are the constructive lessons that will help knowledge management leaders nudge their nascent collaboration efforts over the cultural barrier towards true collaboration?

Mavens

Malcolm Gladwell describes mavens, connectors and salesmen as the three types of people who influence social epidemics. He asserts that in large-scale social or cultural change, it takes a small number of people in the community to influence or have an impact on all the others. Mavens are accumulators of knowledge – they love to know things about a topic and to share them. In our Notes culture, the personalities who were mainstay contributors of many conferences were very effective at ensuring that knowledge about Notes – new Notes files, important topics that were being discussed in Notes, and the culture of Notes itself – was spread by word of mouth (or e-mail) across the company. These champions of collaboration were the people who truly believed that Notes was the foundation of the culture, and were the guardians of the associated norms and values. Mavens in Digital were famous for having Notes 'parties' – summoning all users of a particular conference to meet for drinks, dinner, or even picnics.

Connectors

Connectors are people who know people, and can direct an inquiry or pass information across their social networks. Notes conference moderators played this role and were instrumental in making sure that topics posted in one conference were directed to another, or directed to the right person. Their perspective enabled them to be true boundary spanners between marketing and engineering organisations, across Europe and the USA and so on. (A lot of mavens were connectors, too.)

Stickiness

Another concept that Gladwell socialises is that of 'stickiness'. He maintains that for an idea or message to take hold in a culture, to be accepted and embraced by a large population, it must above all be relevant to people's lives. Regardless of your role in an organisation or hierarchical position, there was a Notes conference that was relevant. Once an employee identified a relevant conference, it was a simple matter to get over the learning curve, past the technology acceptance, to get to the content. And the content was rich. Once into the idea of Notes, it stuck.

Commitment

The Notes conferences that were supported by the major engineering organisations were responsible to their internal communities of users. The VMS Notes conference, for instance, supported thousands of users, software developers, software support specialists and field technicians worldwide. The VMS development group was committed to responding to questions. A software specialist who was working in Europe at the time explained: "Before the Notes conference, we had to go through a hotline to get answers to technical questions. The people on the hotline would have to find the expert on the topic, get an answer, and get it back. Because of the time zone difference, it could be a matter of days. Also, the hotline people were not always technical people, so it was hard to get a good answer. But when the Notes conferences started, we were able to post questions and get answers directly from the experts, usually the next day."

This field specialist and his cohorts, along with a few specialised partner communities that were chartered with evangelising specific product areas, were the key adopters who started the trend and became dependent on the commitment of Notes conference owners. The VMS conference and others like it provided role models for the rest of the company, and set a very high standard for responsiveness in the conferences. You could expect an answer. You could also expect that your ideas, suggestions for improvements and innovations would be considered, and you received recognition for your contributions.

Results

Almost anyone who made a commitment to one or more Notes conferences will tell you a story of the value of having Notes: how connections that happened through Notes saved duplication of effort, improved time-to-market, solved a mission-critical customer problem, etc.

Personality

Every conference had a personality and the sum of those personalities was what the company was about. The 'Digital' conference in particular provided a central place of connection. This conference, established and moderated by one of the company's senior technical leaders, provided a forum for questions about the nature, governance, policies, trends, hopes and fears of the company at large. When the company first began talking about changing the payroll from weekly to bi-weekly, there was a firestorm on the conference. It is from there that Ken Olsen (Digital's founder and CEO until 1992) eventually found out that the savings the company would make were at the cost of the employees and that employees were not happy about it. Payroll continued to be weekly.

Other conferences could be counted on for a daily chuckle (the 'Jokes' conference), conversation about shifts in the stock market ('Marketing'), or the name of a good restaurant in Maynard ('Eats').

No, it wasn't a perfect world. Our strong technical culture also fostered an elitism that could dampen Notes participation. This was reflected in some conferences that didn't tolerate 'stupid questions' so many people who didn't take the time to word their questions carefully – or who were simply not good writers – were publicly embarrassed. Many people who could have made a contribution in a community held back or withdrew when the topics they posted received haughty or dismissive replies.

I have also alluded to the unevenness of management support. Some managers would put an employee on notice if the employee appeared to be spending too much time in Notes. Personal attacks and other abuses of the medium alarmed many managers, particularly when coupled with concerns about disk space and network bandwidth. In August 1989, Notes usage reached a crisis point, at which time the corporation seriously considered stopping Notes use altogether. The mavens and key moderators worked quickly to pull together a presentation about the importance of the business-oriented conferences and the value that the personal conferences brought to the community.

Lessons

It took several years for the Digital Notes culture to blossom, then tip. Here are my recommendations for thinking about building a collaborative technology-enabled culture:

- Keep the user interface for the tool simple;
- Add features as users ask for them;
- Give moderators a few tools for lightweight content management;
- Try as much as you can to have the same tool available to all communities in the enterprise;
- Provide central registries of business and personal topics.

Don't expect a lot of quality content too soon, and nurture a few communities to begin with:

- Draw to communities people who are committed to the care and nurture of the core competency and knowledge in the corporation. Find the mavens;
- Ensure that all conferences or notes have owners – sponsors and moderators. They will play the connector role and provide the commitment to be responsive to the needs of the community and of people who come to ask the community for help;
- Allow people to be human, to express and be themselves in the electronic environment. The social networks that form have a solid foundation of trust;
- Create policies that bless and temper the use of the collaborative technology;
- Embed the use of the tool into your daily work processes and job descriptions.

Coda

The decline of Digital Equipment Corporation was coincident with the decline of the availability of Notes conferencing. A vicious cycle? Perhaps we lost our collaboration

tool and stopped innovating, resulting in hard times; hard times cause people to withdraw, share less, hold back and keep their heads down (especially in the matter of displaying ignorance by asking questions), and the lack of continuous collaboration may have resulted in poorer corporate performance, which caused more hard times. It's tempting to declare that Digital died because it lost its Notes culture, but in truth the environment was much more complex. An alternate view is that Digital went into decline because of the Notes culture: it was so sure of itself and the power of its communities, it failed to see and/or acknowledge innovation happening beyond them. In the end, it was a matter of both technology and culture.

Near the end of the 1980s, Microsoft Windows became the dominant desktop platform for Digital's customers, and PCs became more prevalent in Digital itself. Employees were no longer using VMS. The use of VAX Notes slowed, then dwindled. A PC-based client became available that enabled users to access, read and write, and use VAX Notes from PC, but the conferences themselves still needed to be set up on a VMS system. VMS workstations, for users other than VMS developers, were replaced with PCs, and so the capability to set up and maintain conferences was lost. The PC tool was not integrated into the work environment, and because it was no longer possible to assume that everyone had access, VAX Notes was no longer a critical part of a company-wide communication infrastructure. The world wide web and the rapid growth of Digital's intranet, coupled with a worldwide roll-out of Microsoft Exchange, gutted the technology infrastructure for collaboration. The acquisition of Digital by Compaq and the integration with Compaq and Tandem provided new challenges in technology and cultural integration. New tools – Microsoft Exchange, Lotus Notes and others – might have overcome the loss of technology, but there was nothing to tip the culture[4].

References

1. The tool's origins were in Plato Notes, brought to Digital by Len Kawell (who later co-worked with Ray Ozzie on Lotus Notes). As Knotes and then Notes-11, it went through a continuous iterative development both as a 'midnight' project and later as an official Digital product

2. The VAX computer architecture was co-designed with its flagship operating system VAX/VMS in the mid-1970s by Digital Equipment Corporation. From a mini-computer base, it became an enterprise computing platform for the development of production applications and time-sharing

3. An analysis in August 1989 put the total at 10,355 total conferences (9,965 business-related, 390 dedicated to employee interests)

4. The most successful technology-enabled collaborative community that survived and continued to thrive after the loss of Notes was a Microsoft Exchange-based community of purpose for the development of Microsoft Exchange consultants. It shared some of the key attributes of the initial Notes community, in that it was using a technology that Compaq uses to solve its customer's problems

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Sidebars:

The basics of VAX Notes

Creating conferences

To create a Notes conference, you needed to know someone who had a server running the software, as well as available disk space. (Or you needed a VAX/VMS system, which could be a desktop workstation, as well as disk space, and you obtained a copy of the software over the network.) Conferences had simple names (early versions ran on systems with eight-character maximum filenames, so they were necessarily short). They could also have tag-lines that provided an additional bit of context about the conference. The first 'note' in a conference announced the conference's purpose and how it was to be moderated. Conferences could be designed for members-only restricted access or could be available to anyone. One person would post a topic and others could reply to that topic. Others could reply to that reply, and so on.

Moderators set the tone for and provided shape to the conferences. Conference creators could stage notes, topics and replies in advance. As the conversations progress, they could delete, rearrange, or re-number topics so that conferences set up for specific tasks could become highly structured to better support browsing. They also provided rules of engagement, determined topics that were not relevant or pointed people to different conferences where a question might be more appropriate.

Participating in conferences

To participate in a conference, you first had to locate it. What you didn't know by word of mouth (or e-mail), you could find in the vast 'Easynet' Notes conference listings, which was the master list of all conferences in the corporation. This listing was not automatically generated, but it was the organisational norm to add your conference name to it. There was also a Notes 'maven' (see Malcolm Gladwell, *The Tipping Point*, Little, Brown and Co., 2000) who kept it up-to-date in his own time.

You then typed the command 'Notes' on your keyboard (no windows, remember?) to open up your list of 'favourites' (we didn't have this term back then, either) and added the new conference to your list. You opened it, and voilà, you would see displayed the first-in-sequence note that you hadn't yet seen.

Threads were limited to topics and single-order numbered replies. Hence it was possible to track and reference specific postings. For example, 'see note 112.13 for more

information about this response', but threads went no deeper. The beginning of each new topic indicated its number and the number of replies to the topic. You could also see at a glance how long the topic contents were.

Your topic or your reply included your e-mail address and whatever personal information you chose to display (this was actually set by a parameter in the VAX Mail software, which was tightly integrated with Notes). These were often fanciful, humorous and altogether humanising.

Navigation was by next, last, next unseen, and so on. Conferences could be searched using a full text search.

It took less than five minutes to get through the basics. After that, any employee could post a question that would be read and responded to by colleagues around the world. All this was possible in 1985.

Closure

Conferences were rarely deleted. Officially, they could be marked as archived and set to read-only mode, usually with a pointer to alternate conferences where the conversations were being continued. More often they fell into disuse when a leader moved on to another job, or a technology became obsolete. But all were saved. This provided a great corporate memory resource to tap prior knowledge about decisions, product ideas and the life cycle of technology.

Altogether, NOTES provided a very simple tool that could be used in a very *ad hoc* way or in a very structured way. That is, it met the needs of different types of communities.

Epilogue

In 1995, when the internet was still in its infancy, a small group of engineers at Digital took the experiences and lessons learned from ten years of using VAX Notes, and utilised them as a touchstone to develop a web-based collaboration/knowledge management tool called Workgroup Web Forum. It was the first tool of its kind to use the internet.

In April 1999, shortly after Compaq Computer Corporation purchased Digital, SiteScape, (www.sitescape.com) then a leading reseller of AltaVista products, purchased the software and re-named it SiteScape Forum. The original team of engineers who designed, developed and supported the forum also joined the company at the same time.

Today, SiteScape Forum is at release version 6.0 and enjoys a worldwide customer base clustered in a variety of industries, including energy, construction, high tech, automotive, trade associations, education, health care, legal and government. These customers use the forum as a collaboration tool for knowledge management and as an e-learning environment.

Heidi Gabrielson, director of marketing, SiteScape.