Wiki: An Enterprise Knowledge Management, Collaboration and Transfer Platform

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Problem Statement

Teams within companies are coming to the realization that they keep solving the same problems over and over again. Whether it is a matter of time and timing of changing market preferences that cause companies to re-evaluate business plans, or if it is the simple ebb and flow of talent from and within the organization, the insidious cost of re-work erodes long term value. In fact, it is probably impossible to calculate the lost value of opportunity costs both in terms of time and capital invested in project restarts. With the increasing shift of modern economies from agricultural and manufacturing to service based businesses, from factory workers to the rise of the knowledge worker, the economic engines of growth will be in those companies that can effectively and most efficiently capture and transfer institutional knowledge.

Root Cause Analysis

While the quality of project documentation varies greatly from one project team to the next, most enterprise available systems today do not provide the means to search repositories let alone archive the work and by-products of any project regardless of size. Even in highly regulated industries such as medical device or pharmaceutical companies where there are rigorous procedures, training and quality systems, and subject matter experts in place, the problems of effectively capturing and transferring knowledge is just as prevalent. Even if correctly codified, classified, peer-reviewed, and approved, a document at the end of the day is nothing more than a largely indiscriminate string of bits on a disk drive. A disk drive that is ideally networked and backed up! Lost are the state-to-state transition rationale and context. At the end of a project restart the worst possible outcome is the epiphany “That’s why we decided not to go forward with the project!” In other words, so called “Lessons Learned” are not.

In large enterprises spanning multiple locations often in different geographies and time zones, largely autonomous business units operate with little oversight or coordination. Beyond the fact that many basic operational support functions are largely duplicated, rarely are consistent interpretation and implementation of institutional procedures in execution. In businesses that are heavily reliant on the output of R&D to produce tomorrow’s revenue generating assets, the problem of knowledge management, collaboration, and transfer is especially critical. Duplicative efforts again can waste precious resources that might be better focused elsewhere.

Setting procedures and technical limitations aside for the moment, organizations face an even greater challenge in the retention and transfer of institutional knowledge that rests largely in a highly competent and mobile form: Its people. Indeed you cannot have something called an "organization" without something or in this case, someone to be organized! Succession plans, largely utilized at the highest levels of the organizational chart, rarely are employed where they are needed most – the Subject Matter Expert (SME) level. Through a combination of retirement, downsizing, attrition, accidents or even competitive poaching, the loss of a knowledge worker is the single largest contributor to "rework" in most of today's businesses.

Requirements of an ES KM/KT System

A knowledge management system (abbreviated here on as KMS) must first and foremost be organized around the needs of its knowledge workers. They are the center of the veritable galaxy in which it must at all times orbit. The KMS should be an enabling tool that becomes embedded in the daily life of the knowledge worker to the extent that it is no longer noticeable. In fact I would argue that over time, its use and methods become culturally part of the identity and institutional vernacular of the organization.

Critical to its uptake, the KMS should enable for "Just-In Time" knowledge capture, often in the form of brainstorming sessions. It should not be burdensome or rigid, or in anyway to the extent possible, influence or structure the raw information during capture. It should be accessible without the need for either excessive training, offering a scalable user interface to support knowledge workers of all levels. For organizations that commit to the long-term classification, archival and potential taxonomy needs, I would recommend having a trained staff composed of a mix of ethnographers and library science professionals, for full-text search support does not obviate in anyway the need to capture and provide contextual structure.

A KMS should support both the content and a flexible meta-content environment where knowledge-based work products and their production can be tracked and discussed. The importance of this capability cannot be overstated: The meta-information as added by the knowledge workers is critical in not only the future discovery and recovery of a given element, but also the rationale as captured for any decisions made as a result of its production.

Functionally, the KMS will need to have a layered security model, so that elements can be protected and authorship can be determined. If at all possible it should integrate seamlessly with an existing authorization framework, such as a single-sign-on (SSO) system like LDAP or X.500. It should also have a versioning control element that tracks both changes and authorship of the elements.

Finally, the KMS must be able to capture and make available the rich multimedia content, especially the precursors to the final work products which can include audio and video recordings of meetings, research, documents, spreadsheets, presentations et al. Given the ever-lowering cost of reliable, online available mass storage and the coming of so-called "cloud computing" environments, high-fidelity resolution of all work products and meta-work products need not be sacrificed due to cost constraints.

A Wiki as a KMS Portal and Platform

A wiki is a "collection of Web pages designed to enable anyone with access to contribute or modify content, using a simplified markup language"[1]. It is accessed using an Internet web-browser such as Firefox or Microsoft Internet Explorer and is therefore considered to support a "thin-client" interface.

An enterprise will normally host the wiki server software on its own internal information systems in order to maintain confidentiality, availability, and integrity of the repository. Access to the wiki can leverage existing authentication mechanisms and can be as restricted or widely available as remote employee access policies allow.

Implementations can support structured[2] or unstructured elements as well as workflow engines. This can enable our requirement that the KMS tool support unfettered entry of ideas or information from in-person collaboration opportunities such as brainstorming sessions. The basic support for HTML and the power of the Uniform Resource Locator (URL) means that literally any external content can be linked and therefore made available to the knowledge worker in its original native format. This is important in that the wiki does not require any transformation of content which would not only be burdensome, but may in some cases, be counter to regulations regarding document authenticity such as those of the Title 21 CFR Part 11 from the Code of Federal Regulations outlining the guidelines on electronic records and electronic

signatures[3].

Depending on the server software selected, a wiki can support the primary content as well as the collaborative content needs of the organization. The *MediaWiki*[4], which was originally designed to support the well-known WikiPedia.org site, provides a "Discussion"[5] capability. In fact it was designed specifically to address this concern:

> "One of Wikipedia's earliest problems had been the separation of encyclopedic content from pages pertaining to maintenance and communal discussion, as well as personal pages about encyclopedia editors."[6]

The support for meta-data is largely unparalleled since any content can be linked to from any other page, which means that an *unlimited* number of customized indices and compilations can be formed within the wiki itself.

Security can be enabled through the use of access control lists[7] and will depend on the server software selected and the policy needs of the organization. This is an important component as not all audiences should be privy to any given element, which is often the case in R&D organizations or where sensitive information may be stored.

Lastly, the collaborative nature of web-enabled applications means that knowledge workers in any location, geography, or time zone have the ability to find and contribute to the repository. This supports a "time-shifting" paradigm whereby work production can be enabled at a time and place that is convenient to the knowledge worker.

Wiki Server Options

Wiki server software is available for nearly every computing platform in every popular computer language, including the ability to run on an individual's local computer (see *Instiki*[8]) to server farms hosting thousands of individual wiki spaces.

Most wiki server software is available for free, under the Open Source model, but there are a growing number of high quality commercially supported servers such as Atlassians *Confluence*[9] server. For a fairly comprehensive feature comparison of wiki software, see http://en.wikipedia.org/wiki/Comparison_of_wiki_software

Gaps

As with any enterprise system initiative, the implementation of a wiki server in and of itself will not assure its uptake and incorporation into the daily workflow of the organizations knowledge workers. Mere mandate alone will likely cause a reticence on the part of subject matter experts similar in nature to the slow adoption or outright refusals of sales force personnel who tend to jealously guard their client contact information[10]. Each team will need a visible champion who can lead by example in the use cases the wiki will support.

Other criticisms of wiki server technology include the fact that few implementations support working off-line. The argument is a popular sentiment among those fans of Marshall McLuhan's "The medium is the message"[11] aphorism. I think for our purposes though, it largely misses the mark in terms of being a credible complaint as there are a number of html content preparation tools[12] as well as other tools for every content type that are much better suited to this function. If any criticism can be lodged against the requirement to have network access to the wiki server, not only is the 'availability' issue one that can be easily solved, but many wikis can in fact be downloaded and hosted locally as has been mentioned above.

Summary

With the continued evolution of commerce and economies shifting from agrarian and industrial eras into what is now commonly referred to as "the information revolution" the role and status of the knowledge worker will continue to rise in prominence and importance. Polices for capturing and transferring knowledge in most institutions have been largely overlooked as the needs for succession planning have been primarily focused on the "C-suite" of executives only. This creates a gap in continuity at the subject matter expert level, which in turn can lead to a significant amount of re-work sapping organizations of precious resources and truly value added opportunities that impact both top-line growth and bottom-line costs.

Effective knowledge management, collaboration, and transfer can be enabled through the use of wiki technology. The thin-client nature and support for both structured and unstructured content as well as the rich multimedia linking and embedding capabilities make it a very compelling KMS platform. Given the low barriers

to acquisition and deployment costs combined with the minimal end user training required, the use of wiki technology is an excellent first step to enabling an organization to capture and transfer its most precious asset: knowledge.

References

[1] http://en.wikipedia.org/wiki/Wiki
[2] http://en.wikipedia.org/wiki/Structured_wiki
[3] http://en.wikipedia.org/wiki/Title_21_CFR_Part_11
[4] http://en.wikipedia.org/wiki/MediaWiki
[5] http://en.wikipedia.org/wiki/Mediawiki#Organization
[6] Ibid.
[7] http://en.wikipedia.org/wiki/Mediawiki#Access_and_groups
[8] http://www.instiki.org/show/HomePage
[9] http://www.atlassian.com/software/confluence/
[10] http://www.crmlandmark.com/crmjourney_sfa.htm
[11] http://en.wikipedia.org/wiki/The_medium_is_the_message
[12] http://en.wikipedia.org/wiki/Html_editor