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Pursuing the Peak of Excellence: Wiki as a Knowledge Base

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Wiki as a Knowledge Base

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ABSTRACT

The pursuit of excellent communication is a path not easily navigated. Challenges arise at every turn, and the greatest obstacle of all is ensuring availability and accuracy of information. Help Desk representatives are the first point of contact for customers placing technology requests and they must have a broad range of knowledge about services provided by the department. A large amount of time is spent in training staff members to achieve the desired level of expertise. At Valparaiso University these staff members are students, adding to the complexity of information sharing as these staff members are only employed for a few years before graduating and entering "the real world." Having a knowledge base is one way to reduce the amount of time needed to train staff members, as information is easily accessible. The Valparaiso University IT Help Desk has been on an ongoing journey to find a knowledge base and after investigating different solutions we have settled on a wiki. At SIGUCCS'07 we described the process of selecting our solution and our anticipated use of the wiki. By October 2008 we will have had over one year of using the wiki, including populating data, keeping it up-to-date, and training staff on its use. Come and look at the journey we have traveled thus far and explore with us the growing potential of this tool as the map of the terrain grows larger with each passing week.

Categories and Subject Descriptors

H.5.3 [**Information Interfaces and Presentation**]: Group and Organization Interfaces – *collaborative computing, computer-supported cooperative work, web-based interaction.*

General Terms

Management, Documentation, Standardization

Keywords

Collaboration, Communication, Help Desk, Information, Knowledge Base, Technical Support, Training, Wiki

1. INTRODUCTION

Staff at Information Technology (IT) Help Desks need to be able to quickly access information and relay this knowledge back to their customers. How this is done can vary greatly between organizations, sometimes even within departments. Regardless of the nuances specific to any Help Desk, all of them have three primary needs in order to support their customers: personnel training, access to system-specific information, and quick access to general technology information. All three of these support needs can be facilitated through the use of a wiki.

2. THE OFFICE OF INFORMATION TECHNOLOGY AT VALPARAISO UNIVERSITY

Valparaiso University is a private, coed, four-year residential Lutheran institution located in northwest Indiana. The Office of Information Technology (IT) serves approximately 3,000 undergraduates, 900 graduate and School of Law students, 350 faculty and 625 staff members, as well as Valparaiso University retirees and community members. This is a total customer base of more than 5,000.

The IT department currently has 33 FTE staff members, and 85 students enrolled in the IT Fellows program. Of the 85 student employees, 66% utilize the wiki on a regular basis as part of their assigned duties as freshman trainees, Help Desk staff, or Technical Support staff. These students account for the majority of first and second level customer support interactions with our campus community.

3. HELP DESK AND TECHNICAL SUPPORT STAFF

3.1 Full-time Staff

The Coordinator of Help Desk and Technical Support Services reports to the Director of Networking and User Services and is responsible for the overall strategic planning and execution of Help Desk and Technical Support functions. This individual works with senior management in the IT department and collaborates with them to set the tone and vision for our work. The coordinator also assists with budgeting and is the primary voice for both areas when the department is setting future goals.

Each of the Help Desk and Technical Support areas has at least one dedicated full-time staff member.

3.1.1 Help Desk

The Assistant Coordinator of Help Desk Services is mainly responsible for day-to-day activities at the Help Desk and handles

scheduling, administrative duties such as processing paperwork and timecards, training incoming staff members, administering the service request system for the department (FrontRange Solutions' Helpdesk Expert Automation Tool [HEAT]), discipline, and overseeing the student employees on duty. This individual also facilitates customer service by answering phones, processing emails, and completing work on service requests.

3.1.2 Technical Support

The Assistant Coordinator of Technical Support Services is responsible for the day-to-day activities related to all hardware and desktop support for campus. The Technical Support Specialist is primarily responsible for desktop support, machine installations, machine images, and daily repair requests. The Lab and Classroom Support Specialist oversees classroom and audio/visual support and installations and handles the administrative duties for the student employees.

3.2 Student Staff

3.2.1 Help Desk

The first level of Help Desk student employees are the Help Desk Specialists. These students are responsible for monitoring activity in the public computer lab near the Help Desk area. They assist walk-in customers, answer phone calls, and review unresolved service requests to obtain further information.

The second level student employees are the Help Desk Managers. These students have the authority to delegate tasks, process incoming email and automated service requests (entered via our online request system), escalate customer issues, and contact other full-time staff for further assistance, quality control for call tickets, and special projects. Help Desk Managers also assist in the training and mentoring aspects of working at the Help Desk and participate in management functions such as strategic planning and scheduling.

3.2.2 Technical Support

Students working for Technical Support Services are designated as Technical Support Specialists and address second level call tickets regarding software, hardware, printing, connectivity, or audio/visual issues on campus. They also assist in executing the computer replacement plan for campus, lab imaging and maintenance, as well as software upgrades or installations around campus.

4. STAFF TRAINING

In order to deliver consistent quality service to customers, there needs to be a standard basis of knowledge among all staff. Once this base level of knowledge is established, it should continue to grow so that the quality of service delivered is perpetually improving. Although training student staff members should not be entirely wiki-based, supplementing your base level training with the wiki greatly enhances the effectiveness of your training programs and your staff productivity.

All Help Desk employees are expected to learn and retain information about all systems on campus, including email, network file storage, web services, data processing, telecommunications, courseware, and more. Since most IT student employees only work an average of 10-12 hours per week, the greatest challenge to their success is that they may not have daily interaction with all systems. Additionally, they are expected to troubleshoot for those customers having difficulties and log the activity in the HEAT database. Keeping track of the various procedures for troubleshooting and ensuring all staff have adequate information about these procedures is a challenge for full-time staff. What's more, the difficulty of retaining this information is inversely proportional to the hours worked by any given student.

4.1 Preliminary Training

The VU IT department utilizes an annual week-long training event, the IT Fellows Leadership Academy, for incoming freshman IT Fellows prior to the beginning of fall semester. This opportunity offers incoming students a strong base of soft skills, as well as an overview of VU-specific technology services. Departments utilizing internship-level employees, such as those working for the Help Desk or Technical Support, are given the opportunity to offer two days of specialized training prior to the beginning of the fall semester. During this training (commonly referred to as "Boot Camp"), Help Desk and Tech Support student staff receive in-depth information on Valpo systems, technical information, proper procedures for entering a call request into our HEAT database, troubleshooting practices, and Valpo and IT policies. Upon completion, all staff members should have a basic foundation to answer calls and assist the majority of customers. This large amount of specialized information would ideally be presented during a full week-long training program, but due to budgetary and other constraints, it must be condensed into two days.

4.2 Ongoing Training

During the course of the academic year, the Help Desk and Tech Support management teams provide opportunities to continue building knowledge through staff meetings, training sessions, and ongoing dialogue via a variety of methods (e.g., mailing lists, instant messaging, and one-on-one sessions). Through utilizing the wiki tool as an additional repository of information, staff can accumulate knowledge independently and build their skill set to handle unforeseen situations. For some, the wiki serves as a review of the material covered at Boot Camp. For others, the wiki allows them to assist their colleagues in building on the training they received, by continuing to add information to the wiki. With this feedback during the year from front line support staff, the Help Desk management team can modify our training methods and sessions to best suit our staff and offer the campus community the most highly trained and effective Help Desk support possible. Additionally, the wiki helps in improving information retention after meetings and training sessions. Handouts from these sessions can be misplaced or discarded, so having an easily accessible repository of information allows staff to review information when needed.

5. WHY WE NEEDED A WIKI

When the Help Desk receives technology questions (and non-technical questions such as where offices are, building hours, or other general campus information), staff can often respond to our customers from memory and without having to perform an extensive search. However, there are invariably times when a question comes to the Help Desk about a service, system, hardware configuration, or software application unfamiliar to the staff member taking the call. Although our call tracking system documents the specifics of a customer's problem, it isn't capable of retaining the full set of information about that type of problem.

The IT department had outgrown our existing call tracking system, which had an integrated knowledge base. This knowledge base was very difficult to navigate and update: the general feeling was that the system was not user friendly. During summer 2007, we performed a massive overhaul of our call tracking system. At the same time, we investigated alternatives for the knowledge base system. After evaluating budgetary and time constraints, we determined that a wiki would be the most effective solution for our needs.

6. HOW WE CHOSE OUR WIKI

6.1 What is a wiki?

A wiki is an unusual name for a certain type of web application that allows for many different people to act as authors in the rapid creation of web-based content. The word "wiki wiki" is from the Hawaiian language and means "quickly."

The wiki platform allows instant updates or additions of information by anyone using the system, so anyone can update information they come across and know to be out of date. The on-the-spot updates ensure real time evolution of the knowledge base. Wikis can be setup to be fully public such as the popular Wikipedia.org or can be setup for use by registered users only, as is the case with the VU Help Desk's wiki.

Wikis enable management staff to easily monitor recently updated or added pages, regardless of where they are in the overall structure of the knowledge base, and verify that the information is accurate. Each time an author edits or creates content within the wiki, the revision is logged and is able to be undone immediately if needed. This type of revision-based system enables not only a history of the content, but also a means to revert to a previous version when necessary. This collaborative environment encourages a free and simple exchange of ideas and knowledge while enforcing accountability, especially in an internal environment like an intranet.

Nearly all wikis provide markup syntax to enable non-technical users to quickly format the content they wish to publish without having to learn HTML. This capability is a standard part of the wiki software and doesn't require any software other than a capable web browser.

These features enable universal access to a powerful content publishing platform that is easy to use and accessible from anywhere.

6.2 MediaWiki™

Having a familiar and common wiki publishing platform that has proven itself over the years is crucial for long-term maintainability and support. MediaWiki™ [1] is the most popular wiki software available today. It is not only free, but it is also the same software powering the most popular wiki-based site, Wikipedia®, along with countless other wiki sites. Because of its popularity and open source nature it is continually developed and improved upon and there are many resources available for supporting and customizing the software. MediaWiki™ is built upon three well-known and free software technologies: the Apache web server, the PHP programming language, and the MySQL database application. This stack of software is widely used and heavily utilized in our organization, making MediaWiki™ a consistent and well-supported application for our needs.

The Help Desk management team worked with the UNIX administrator to determine a reasonable and realistic implementation schedule for rolling out the wiki. The implementation of MediaWiki™ was very simple, and required only a few minor customizations in order for it to be operational on our systems.

7. POPULATING THE WIKI

Once the wiki was operational we had a very limited time frame to transfer information from our previous knowledge base. It needed to be operational in time for our weeklong leadership training academy before the start of the 2007-08 academic year. We used the talents and skills of our summer student employees to assist in transferring information from one system to the other.

Because the previous knowledge base was so out of date and difficult to use, over 50% of the information contained within was inaccurate or out-of-date. Therefore, there was not an overabundance of information to be moved and we were able to accomplish this in our limited time frame.

8. TRAINING STAFF TO USE THE WIKI

The process of training the student staff to use and update the wiki was much less complicated than we anticipated. Most of our staff were already familiar with Wikipedia™, and knew how to find information in a wiki. Teaching them to update the system was helped through use of incentives and competitions to see who could make the quickest or most frequent updates.

Help Desk Managers worked with newer staff members on learning how to search the wiki, update content, and add new pages. When staff members had questions, a common response was, "Is it in the wiki?" Staff quickly learned that they should first attempt to find information themselves before escalating their question to a higher level staff member.

8.1 Unexpected Staff Buy-In

From the initial launch of the wiki knowledge base there was the latent fear that full-time staff may not have the time to fully participate in updating information, adding content, or reviewing pages. The actual staff involvement was surprisingly high. Initial feedback from staff was exceptionally positive regarding both the usability of the wiki as a support tool as well as the impact of the wiki on completeness and accuracy of HEAT tickets.

Each member of the Technical Support Staff began adding content to the wiki immediately after receiving training. To facilitate the editing and look of the content, one staff member was designated to format wiki content with the others taking part in content creation and review.

As the Technical Support staff authored content to be used for troubleshooting, they also volunteered content about printing basics, Novell theory, and other relevant topics. Instead of simply noting error messages and how to solve the corresponding issues or how to correctly assign the tickets, wiki content was intentionally designed to facilitate the learning aspect of the IT Fellows program. This goal is to do more than just answer the question for which a student employee may search, but to also teach them skills such as problem solving, critical thinking, etc.

9. ENSURING ACCURACY OF INFORMATION

To facilitate the accuracy and organization of the information being added to the wiki, the Help Desk designated one of the

student managers to take ownership of wiki management. He focused largely on developing good organizational schemes for the information so that it was easily accessible and logically organized. This allowed for content experts to add pages without necessarily needing to figure out where the information would be the best fit.

In some cases information regarding the same topic would be spread throughout multiple pages. Consolidating information by category and then placing the appropriate links kept pages from becoming a mosaic of sporadic information and improved the search ability of the wiki.

10. WIKI USAGE BEYOND FIRST AND SECOND LEVEL SUPPORT

In addition to facilitating information exchange between support levels to enhance the customer experience, the wiki is also being used for some process documentation. Technical Support Services has begun using the wiki as a tool for maintaining accurate checklists to ensure that various processes (such as image creation, machine re-imaging, etc.) are being handled accurately each time. For example, machine imaging wipes the hard drive clean in favor of the new image. As a result, once the process of re-imaging a machine has begun it is impossible to retrieve data, bookmarks, and/or software preferences that a user may have set up. The wiki allows staff in the office to easily update the checklist while allowing staff in the field to very easily access the same checklist and ensure that everything is in order prior to re-imaging the machine.

11. BENEFITS WE HAVE SEEN

One main benefit we've seen is that the wiki environment allows staff to quickly search and locate current information about a customer's described situation, such as history about how a particular system is utilized within the organization, or a list of the information necessary for logging that specific type of request. The wiki also offers possible troubleshooting tips for staff to try. If a customer works with one staff member, and calls back later, the next staff member can use the wiki in conjunction with the call tracking system to familiarize him- or herself with the situation and respond accordingly. As a result, the customer is afforded reduced turnaround time with knowledgeable staff on multiple contacts without waiting for the person who helped before, or returning when a particular staff member is available. Every staff member's individual knowledge can be used to build a collective whole greater than the sum of its parts and assist colleagues in a cohesive manner to provide the best support possible to the customer.

11.1 Statistical Usage

One of the benefits of the MediaWiki™ platform are the special pages that return data about wiki usage. One such page is the statistics page. As of July 7, 2008 there have been a total of 17,713 page views, and 2,785 page edits since the wiki was set up. That comes to 10.09 average edits per page, and 6.36 views per edit. The most viewed pages are also ranked below.

1. Main Page [4,070]
2. Help Desk [568]
3. Policies [567]
4. Tech Support [565]
5. Cisco Clean Access [520]
6. General [506]
7. Systems [434]
8. HEAT [406]
9. MIS [351]
10. Network [344]

12. CHALLENGES RESULTING FROM WIKI USE

Usage of our wiki has not been without the occasional obstacle blocking the path. One example is that using the wiki still requires staff to put forth the effort of searching for the situation they are handling. Many staff members still find it easier to just ask the person sitting next to them for information, rather than taking the initiative to find the answer in the wiki first. Another challenge is that of reminding staff members to continually add new information to the wiki. The collective knowledge of IT staff members (both student and otherwise) is far more than the sum of information contained within our wiki. Staff may get busy and feel they don't have the necessary time for adding new information, or may feel intimidated by the idea of having to learn a new method of documenting and formatting knowledge for their colleagues.

"The only real thing I have 'against' it, for lack of a better term, is that I (as well as some of my coworkers) generally tend to ask you or a manager when we have a question. It's just faster and more convenient than looking it up in the wiki, you know? I think it is very easy for people to notice something isn't in the wiki, find the answer from a full-time staff member, and then just forget to put it in the wiki." –Chris Zaplatosch, Help Desk Specialist

13. FEEDBACK

The full-time staff members are pleased with the implementation and growth of our wiki. The biggest positive they have seen is the improvement in service ticket quality as well as the reduced need for interrupting full-time staff to ask questions.

"I'm glad you asked, because I've got to say that the ROI on this thing is phenomenal. I don't think it's simply a coincidence that once the Help Desk Fellows were able to contribute, edit and correct the tier 1 information and troubleshooting guides we saw a sharp increase in the quality of tickets that were assigned to us. You have done an absolutely wonderful job managing and directing the wiki and have really taken it to the next level. Every time I look in it, I am amazed at what it's become." –Dave Sierkowski, Systems Administrator

Our student staff also appreciate having a tool that is easy to access and use, and can grow with the ever-increasing amount of knowledge they are given and expected to learn and retain.

"I think a wiki is an outstanding tool for any Help Desk. If every Help Desk employee utilized the wiki to its fullest (both in checking it and updating it), then I think we would have very few questions that were asked more than once. A wiki is not only a valuable information resource, it also an incredibly dynamic one. Giving all users access to change a support source helps it to be as up-to-date as possible, because anyone can remove outdated information and add new information at will." –Kris Willmert, Help Desk Manager

The student staff members also appreciate the ability to provide good quality support during evening and weekend hours when full-time staff are less available to answer questions and provide assistance.

"The wiki has become the pinnacle source of information at the Help Desk. A large amount of information is stored on the wiki,

everything from how to fix a common CCA problem to classroom technology troubleshooting. When I worked weekends and evenings (after the majority of the staff had gone home), the wiki provided information on how to fix problems that would otherwise require asking a full-time staff member. This saved time, as a phone call would not have to be placed to the appropriate full-time staff member, and the customer was able to have their computer up and running much sooner, thus increasing overall customer satisfaction.

"Updating the wiki was simple. Once the basic commands were mastered, it was as easy as updating my personal blog. There was a period of time where Help Desk staff were having competitions to see who could update the most on the wiki." –Kirsten Swanson, Help Desk Specialist

14. WHERE DO WE GO FROM HERE?

The return on investment for the wiki knowledge base has been high and the success of this endeavor has been noticed throughout the IT department and our customer base. As IT continues to develop the wiki as a support tool in its current form, it is possible that other uses will come to light for this highly extensible and robust platform.

15. ACKNOWLEDGMENTS

16. REFERENCES

[1] MediaWiki™
     http://www.mediawiki.org