

Facilitating Knowledge Sharing Via an In-House, Online Scholarly Publication

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ABSTRACT

Boeing Company employees regularly conduct research to uncover the state of a particular art or science and then use this material as springboards for further innovation or extension of existing technologies. It is then natural to want to publish these new developments in external journals to showcase the company, support the growing body of knowledge, and to help colleagues. The root of the problem is that Boeing employees cannot publish proprietary or intellectual property (IP) assets outside the walls of the company.

A group of Boeing employees envisioned a peer-reviewed scholarly journal where articles could be published without the potential loss of proprietary information that is critical to successful competition. The journal would be available within the company intranet for internal use only, and its editorial and publishing model would imitate externally-published periodicals. A group of interested parties met and started a grassroots development of this concept. Boeing's Enterprise Knowledge Management organization agreed to sponsor the journal and Library Services volunteered its information management resources to serve as publisher of the journal.

The goals and objectives of the journal specifically align with enterprise-wide knowledge management objectives, including knowledge capture, knowledge distribution, recognition, and technology leveraging. The existence of the journal also enriches opportunities for knowledge creation by exposing new models for thought and consideration. For the authors, having their paper included in the *Boeing Technical Journal* provides documented evidence of their efforts and contribution to technology, the company, and to the Boeing body of knowledge. The company, as well as the author, has the satisfaction of knowing that costly knowledge is not lost, is appreciated, and is readily available for making strong impacts across the company and for our customers. Work of high expertise and ideas is distributed within and among various business units providing colleagues the advantages of leveraging and cultivating knowledge into ideas for innovation and successful competition. By sharing knowledge, further collaboration is encouraged between and among various programs. In November 2010, the concept was approved and the editorial staff issued a call for papers.

This paper focuses on the role of Boeing Library Services as the publisher of the *Boeing Technical Journal* (throughout, seen as *BTJ*). After presenting some historical background

regarding the genesis of the *BTJ* and how Library Services became involved, the remainder of the discussion covers the processes and methods used for creating customized catalog records using a commercial integrated library system, and the development of customized web pages to serve as the interface for the online publication. This paper also shows the architecture for controlling access to articles within the journal that include Boeing Proprietary and International Traffic in Arms Regulations (ITAR) information. Library Services acts as a central repository of corporate knowledge and encourages collaboration by sharing knowledge.

EARLY DEVELOPMENT OF THE *BTJ*

In March 2010, Ken Hardman, an associate technical fellow, created an informal group in the enterprise collaborative networking tool used within Boeing called inSite. Hardman proposed the concept of creating an in-house scholarly publication and provided evidence of his vision with the document that he posted called “Cases and processes for Boeing Technical Journal.” In this document, he provided a rationale for the *Journal* and included initial conceptual ideas to promote discussion about content, focus, format, participants, processes, and publishing options.

Hardman explained that the purpose of the journal would be to specifically serve enterprise knowledge management objectives including knowledge capture, knowledge distribution, recognition, and technology leveraging. The journal would also enrich opportunities for knowledge creation by exposing new models for thought and consideration. For the authors, having their paper included in the *Boeing Technical Journal* would provide documented evidence of their efforts and contribution to technology, the company, and to the Boeing Body of Knowledge. The company, as well as the author, would have the satisfaction of knowing that costly knowledge is not lost, is appreciated, and is readily available for making strong impacts across the company and for our customers. Work of high expertise and ideas would be distributed within and among various business units providing colleagues the advantages of leveraging and cultivating knowledge into ideas for innovation and successful competition. By sharing knowledge, further collaboration would be encouraged between and among various programs.

In May 2010, shortly after Hardman made a presentation at the 17th Boeing Technical Excellence Conference (BTEC17), held in Seattle, Washington, a grassroots team was formed. By June 2010, Hardman had a group of 32 Boeing employees who were interested in seeing this vision come to fruition, with an additional 300+ members of the *BTJ* inSite group. Hardman, who later became the Chairman of the *Journal*, called these volunteers “*Boeing Technical Journal* Enthusiasts” when referring to them (in email and in meetings) because of their keen interest and willingness to turn the concept into a reality. An execution plan was developed over the course of the next several months. In order to distribute the work without overloading all of the volunteers, five advisory board and development committees were convened. These included: Journal organization, roles, responsibilities, and process committee; Intellectual property and security policies and processes committee; Paper and journal format committee; Peer review paper checklist committee; and Proofing and publishing committee.

THE ROLE OF LIBRARY SERVICES

Boeing Library Services was asked to serve as chair of the “Proofing and Publishing Committee”. Our solution for “publishing” was to use our library catalog to serve as the repository for the final articles and our website as the homepage for the *BTJ* with links to published articles and instructions on how to submit a paper, etc. Over the course of time, we have moved from using the word “publishing” to “releasing” or “sharing” the articles. All editorial processes (submitting a paper; assigning volunteer subject matter experts to review; tracking the course of the paper throughout the editorial process; monitoring approvals for release; accepting or rejecting paper; correspondence about the paper; final proofreading of the to-be released article; etc.) are managed using a secure SharePoint site and are not part of Library Services’ role in the final step of releasing the article. The proofreading process of the originally-named committee was dropped from this committee name and is now part of the editorial processes committee.

The Publishing committee was asked to demonstrate a proof of concept *Boeing Technical Journal* website to members of the other committees. In quick order, we created a website to show them how the journal articles would be accessed; how security and authentication measures would occur; and how these papers would be readily available. Our mockup was based on one of many Knowledge Management (KM) Gateway websites that the library has created during the past five years for Boeing employees requiring better organization and accessibility of their own special collections. We use a modular design for our Gateway websites and this helped us create a customized website quickly for the demonstration. Library Services’ proposal to the committees was that we would act as a secure, long-term, and central repository of the corporate memory. The *BTJ* is seen as a special collection which increases business value through high quality proprietary knowledge capture, review, and internal transfer. This special collection contains knowledge that might otherwise not have been made available; it uses subject matter experts who serve as peer reviewers to improve the value of knowledge leveraged across the enterprise; and it provides a reputable venue to incentivize employees to share key expertise and knowledge. Members from the five committees agreed to move forward with the KM Gateway model for releasing the *BTJ* articles based on our demonstration.

Boeing Library Services uses Innovative Interfaces Inc. (III) Millennium integrated library system (ILS) software as the repository of the bibliographic data. The bibliographic data is served up on a “knowledge management gateway” page, which is the architecture we use for other special collections we manage for Boeing groups. We also use our library catalog and web presence for enterprise visibility of the knowledge we are housing. A Gateway website is like a pathfinder or a landing page; it helps to bridge the gap between internal enterprise knowledge management and traditional library resources. At present, Library Services is the steward of 36 KM Gateways on various topics for Boeing employees.

All KM Gateway websites have their own Electronic Resource Management (ERM) record in Millennium, which provides background information about the KM Gateway, in addition to librarian contact information, a list of special subjects needed to make the search widgets work, and other administrative information. See Figure 1. The ERM record helps

populate the Library website's A-Z Resource List which serves as an additional method for gaining access to the *BTJ* KM Gateway website.

The screenshot shows the Millennium library catalog interface. At the top, there is a menu bar with 'File Edit View Go Tools Admin Help' and a toolbar with icons for 'Host', 'View', 'Edit', 'Summary', 'Browse', 'Print', and 'Close'. Below the menu is a section titled 'Edit Functions'. The main area displays record information for 'e10004191', including 'Last Updated: 04-11-2011', 'Created: 11-03-2010', and 'Revisions: 6'. A table lists various fields such as 'Rights Type', 'Resource Status', 'Termination Date', 'Suppress', 'Funding Source', 'Unused Date', 'Purchasing Org', 'Trial Begin Date', 'Access Provider', 'Multi Year Contract?', 'Trial End Date', 'Publisher', 'Collection Code', 'Paid Thru Date', 'Cov Load Provider', and 'Load Frequency'. Below the table, there are sections for 'Resource Name', 'Alternate Resource Name', 'Resource URL', 'Additional Resource URL', 'Resource Type', 'Description', 'Coverage', 'ERH Subject', 'Notes', and 'Library Contact'.

Rights Type	u UNKNOWN	Resource Status	- ACTIVE	Termination Date	- -
Suppress	- DISPLAY NORMAL	Funding Source	- NONE	Unused Date	- -
Purchasing Org		Trial Begin Date	- -	Access Provider	
Multi Year Contract?		Trial End Date	- -	Publisher	
Collection Code		Paid Thru Date	- -	Cov Load Provider	
Load Frequency	r AD-HOC	Activation Date	- -		

Resource Name: Boeing Technical Journal [special collection]
 Alternate Resource Name: BTJ
 Resource URL: <http://catalog.web.boeing.com/search/d?SEARCH=boeing+technical+journals&searchscope=2>
 Additional Resource URL: <http://library.web.boeing.com/resources/bti.html> Gateway page to Boeing Technical Journal
 Resource Type: SPECIAL COLLECTION
 Description: Official repository of published papers. In addition, the site provides details about how to submit a paper; the criteria for publication; FAQs about the editorial and publication process; contact information for editorial board members; volunteer opportunities within the peer review and associate editor processes; and links to other Boeing sites such as the Boeing Technical Fellowship, inSite, intellectual property management, and proprietary information markings.
 Coverage: 2011-
 ERH Subject: Engineering
 ERH Subject: AlphaB
 Notes: For Boeing technical journal.
 Notes: MARC 440: Boeing Technical Journal :vVolume X, Issue X, YYYY
 Notes: MARC 690: Use these three 690s: BTJ collection; Boeing employee-authored material; BTJ specific collection name* *where specific collection name is one of the six categories for the dropdown box. MSW has the list of approved categories.
 Notes: Where to store papers: See \u26. Proprietary papers go into "prop" folder; STECL papers go into "boeus" folder.
 Library Contact:
 Name: Mary Whittaker
 Responsibility: Focal
 Phone: 425-306-2086
 Email: mary.s.whittaker@boeing.com
 Address/Mail Code: 62-1C
 Organization: LeICS
 Initials/Date: msv 20110411

Figure 1

LIBRARY RELEASE PROCESSES

While we are in the early stages of releasing articles, we are still honing our processes. The cataloging subprocess is quite stable, as it closely follows processes already created for other KM Gateways. The cataloger receives notification from the *BTJ* SharePoint administrator that the paper has been approved and it is ready to be released. The cataloger copies the PDF from the Message Courier message and moves it to a secure folder. The PDF is renamed with a standard naming convention, then the PDF is opened, and the cataloger creates a bibliographic record and an online item record in Millennium. The catalog record contains the author, title, series title, date, security information, subjects, special subjects, abstract, and URL of the article from the secure server. Special subjects (a local subject added entry topical term MARC tag, the 690) are added which are used in the search widget for displaying the records on the KM Gateway website. The record is saved and viewed in the online public access catalog (OPAC) to proofread the catalog record and to make sure that the URL link is working. The catalog record's permalink is noted and sent to a list of editorial staff members. In turn, the chief editor sends a congratulatory note to the author, including a permalink to the catalog record (and the linked released article).

AVAILABILITY OF THE ARTICLES

The released articles are discoverable using several methods: in the library catalog (via author, title, keywords, and/or subjects); by searching at the *BTJ* KM Gateway website (via keywords, title, or author), or by using the enterprise search engine (via keywords) from the Boeing intranet homepage. Library Services regularly “feeds” our catalog records to the enterprise Google Search Appliance used on the corporate intranet. As with all bibliographic records in the catalog, those who have access to the Boeing intranet can search for and view the library catalog record. Library Services works with the Enterprise Search organization by helping to create and maintain “starting points” for key websites. Employees can now search the enterprise with a keyword such as “btj” or “boeing technical journal” and they are instantly directed to the *BTJ* KM Gateway website. Employees can also search for individual articles from Enterprise Search, too.

Various restrictions for viewing the online, released articles are described below. The catalog record contains a link to the PDF version of the released article.

SECURITY OF THE ARTICLES

Controlling access to proprietary information is one of the most fundamental issues that we deal with regularly in a corporate library setting. Because we are releasing Boeing Proprietary material in the *Boeing Technical Journal* articles, our methods were scrutinized so that we would be in compliance with company policies and procedures. Again, we have experience with information management issues like this and we provide a secure solution. The articles arrive via Message Courier (an electronic mail service for large files and proprietary documentation) and the cataloger transfers the final, ready-to-be-released article to a secure web server folder. If the article is marked as Proprietary (it is the responsibility of the author (in conjunction with others) to make this determination), the article is placed in a folder for Proprietary materials. If the article is marked as export controlled, it is placed in a folder for export restricted materials. When an employee tries to access a *BTJ* article, web single-sign-on (WSSO) is used to authenticate and certify that the user is authorized to view the document before the PDF is made available.

***BTJ* KM GATEWAY**

This website, maintained by Library Services, is the official repository of released *BTJ* articles. See Figure 2. The widget used for searching within the catalog for only *BTJ* articles works with the use of our special subjects field in the catalog record. The *BTJ* KM Gateway website also provides details about how to submit a paper and the criteria for publication; a standard template to submit a paper; a link to attach the submitted paper to a Message Courier electronic mail message that is sent to the *BTJ* SharePoint administrator and editorial staff; frequently asked questions (FAQs) about the editorial and publication/release process; contact information for editorial board members; volunteer opportunities within the peer review and associate editor processes; and links to other Boeing sites such as the Boeing Technical

Fellowship, inSite, intellectual property management, and proprietary information markings. The website is created in HTML and JavaScript and can be easily updated by the systems administrators.

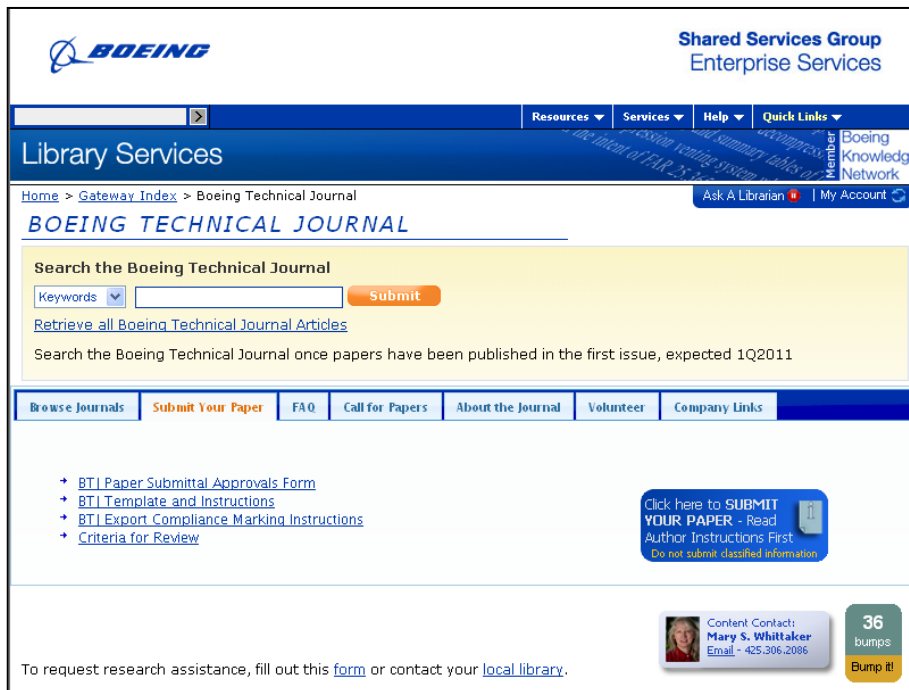


Figure 2

WEBSITE METRICS

Library Services can provide website usage reports using Webtrends software. The report shows the number of those who have accessed the site; as well as the name of the person and his or her unique identification number used within Boeing. For employees who are viewing a catalog record and viewing a released article in a PDF format, a report can be run which shows who has viewed the PDF.

PRESENT AND FUTURE OF THE *BTJ*

As the grassroots effort of organizing the *BTJ* was gaining momentum, the advisory board saw the need for an executive sponsor who could help legitimize our efforts. The Advisory Board Chairperson found several possibilities for sponsorship; in the end, the most logical champion was the enterprise director of knowledge management at Boeing, Timothy Bridges, who shared the same vision we had. Library Services staff members also work closely with Bridges on his major KM initiatives, including the development of the Boeing Knowledge Network website. On November 1, 2010, we used the inSite *BTJ* group (as well as other networking groups within inSite) to announce a “call for papers” with a target date of publication

in the first quarter of 2011. The editorial board created a sporty goal of publishing 60 articles in 2011 at a meeting in December 2010. Unfortunately, we did not foresee how long the blind peer review editorial process would take. We thought it would take about two months, but the cycle takes closer to three or four months. Patterned after external journals, those who are serving as peer reviewers are critiquing the submitted papers on their own time, for the most part, and so the process takes much longer than what we had originally anticipated.

As we look at our editorial team and reflect on where we are in our team development (forming, storming, norming, or performing), we are most likely seen in the norming stage at this time. There is a sense of cohesion within the team, and yet we are still trying to establish some of our working roles (our norms). This is new territory for us: each article brings in new questions that we need to answer, document, and stay consistent within our processes. The editorial team members are a diverse set of Boeing employees – covering all geographic U.S. time zones; all major Boeing business units; all types of job titles; and all ages. Yet, in common, we all have a passion for working together in a collaborative environment and we all work towards a common goal of knowledge sharing through the *Boeing Technical Journal*.

At the time of writing this paper, the *BTJ* group in inSite has 1,261 members who receive regular updates from the Chairman about the *BTJ* and our early successes. Four articles have been published in Issue One of the *BTJ*. There are an additional 16 papers in various stages of the editorial review process. In the meantime, the editorial board uses the *BTJ* KM Gateway website to document our processes and update the FAQs, for instance, to make it as robust as possible. For many of the editorial processes, we have questions and must resolve issues that we have never run across before. The releasing process offered by Library Services is a stable process, yet, we have added innovative functionality to the *BTJ* KM Gateway website that does not exist in other KM Gateways. These innovations include using a Message Courier pre-filled-in email message to remind potential authors what needs to be submitted; and the “submit your paper” template which is the style guide template for the paper, plus a detailed explanation concerning how to prepare the paper (all within the style and formatting of the template).

Library Services is proud of its role in making the *BTJ* a successful knowledge sharing tool within the enterprise and we foresee a growing need for this and other forms of knowledge sharing. We want to share our expertise in information management and offer solutions for collaboration and knowledge sharing within the company by working with other groups to use our adaptable and customizable special collections model for knowledge management .

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