

Collaborative Authoring at British Telecom

A Rapid e-Learning Solution Decreases
Time to Market

—Chris Howard, *Principal Analyst* | August 2007

▶ IN THIS CASE STUDY

British Telecom (BT) successfully launched and implemented a new learning management system (LMS) in 2006. One year later, the learning and development (L&D) team turned its attention to a new challenge – how would L&D achieve its goals to:

- Support the business need to create and update learning content;
- Do this more quickly and cheaply;
- Ensure quality; and,
- Adhere to industry standards for accessibility?

After assessing line-of-business requirements and capabilities, L&D decided to implement a collaborative system for authoring, managing and deploying learning content. Now, nearly a year after its initial implementation, BT's collaborative authoring system

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is enabling the lines of business to deliver e-learning content more quickly and efficiently – and ensuring compliance with the company’s commitment to accessibility.

In this case study, you will discover:


- Business challenges driving end-user demand for simpler, faster ways to produce training;
- The company’s approach to the evaluation and selection of an authoring system;
- Details of system implementation and its associated challenges;
- The impact of a collaborative authoring system on the development and delivery of training; and,
- Lessons learned. 

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Company Overview

BT is one of the world's leading providers of communications solutions and services, which operates in 170 countries. Its principal activities include:

- Networked IT services;
- Local, national and international telecommunications services;
- Higher-value broadband and Internet products and services; and,
- Converged fixed / mobile products and services.

Operating with the support of more than 104,000 employees and with revenues in 2007 (year ending March 31, 2007) of more than £20.2 billion, BT consists principally of four lines of business – BT Global Services, Openreach, BT Retail and BT Wholesale.

- **BT Retail** is the U.K.'s largest communications service provider (by market share) to the consumer and small business markets. It supplies a wide range of communication products and services, including voice, data, Internet and multimedia services, and offers a comprehensive range of managed and packaged communications solutions.
- **BT Wholesale** provides network services and solutions within the U.K., including ADSL, conveyance, transit and bulk delivery of products. It serves more than 700 communication companies.
- **Openreach** operates the physical assets of the local access and backhaul networks providing products, such as wholesale line rental and local loop unbundled lines, to around 400 communication providers.
- **BT Global Services** targets the top 10,000 global multisite organizations worldwide. It provides global reach, and a complete range of networked IT solutions and services.

Two operational units support these lines of business:

- **BT Design** is responsible for the design and development of the platforms, systems and processes that will support the company's services; and,

- **BT Operate** is responsible for the deployment and operation of the services.

In the U.K., BT serves more than 18 million business and residential customers with more than 28 million exchange lines, as well as providing network services to other licensed operators.¹

Learning Environment

Learning and development (L&D) at British Telecom is directed by a learning council, comprised of senior employees responsible for learning. The council's membership includes one to three people from each line of business, for a total number of 12. e-Learning has been employed as a delivery strategy for a number of years already – prior to the recent LMS upgrade, the enterprise was already offering online courses targeting a range of necessary skills. Training courses and blended solutions were provided by a variety of external vendors, as well as being produced in-house specific to particular departments, according to a federated model² (see Figure 1). These departments used PC-based authoring tools and produced content of varying levels of quality.

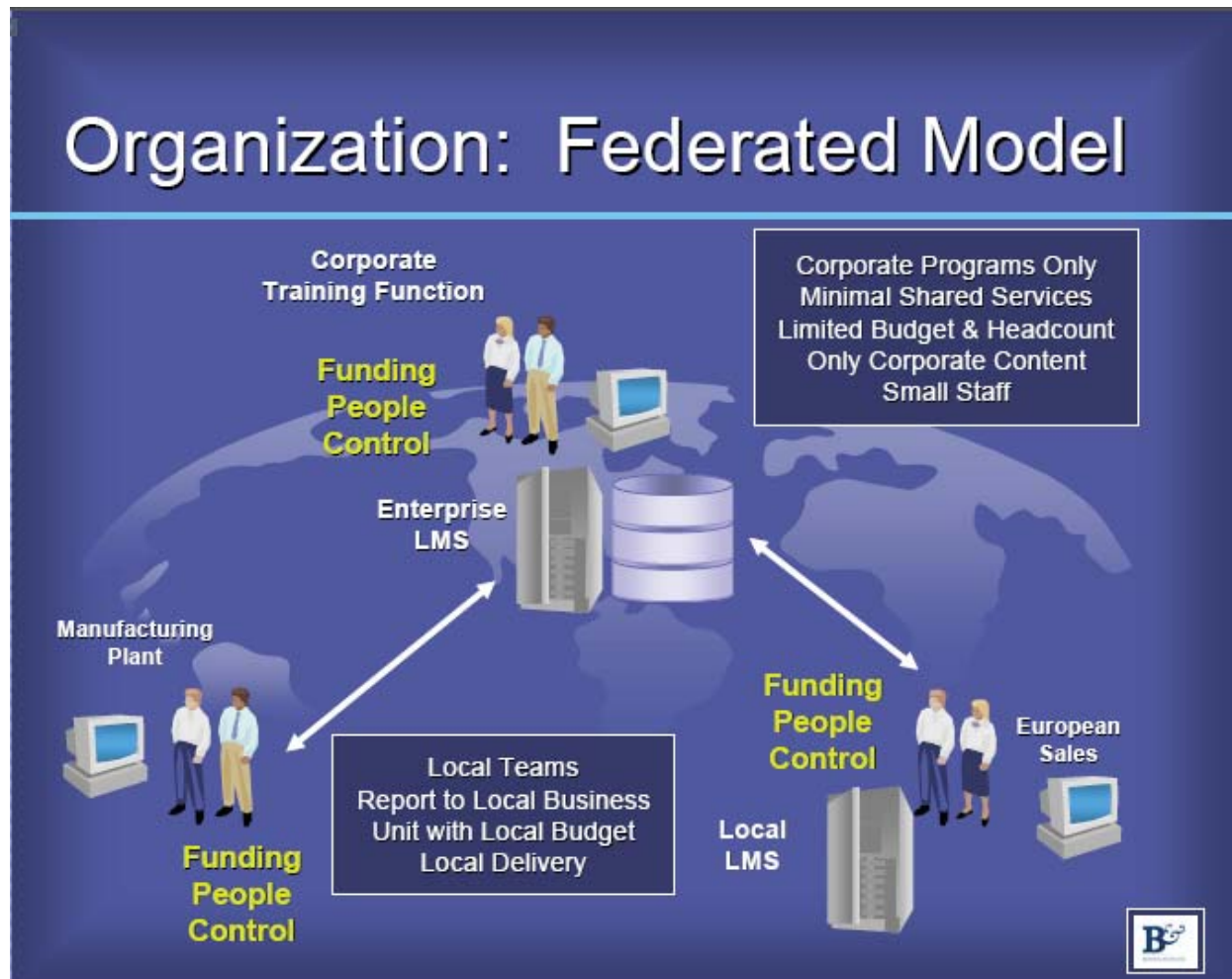
In 2005, British Telecom determined that all new e-learning content must comply with the Worldwide Web Consortium's (W3C) web content accessibility guidelines (AA) for conformance³ for individuals with disabilities. This prompted the learning council at BT to assess line-of-business requirements and capabilities. The enterprise recognized two key needs – those of:

- Industry standardization / compliance; and,
- The ability for the lines of business to produce their own training content specific to departmental requirements.

¹ Source: British Telecom, "Company Profile," www.btplc.com/Thegroup/Companyprofile/Companyprofile.htm.

² A "federated model" has a small core team that manages some technology and corporate programs, and empowers business and functional units to run their own training programs.

³ For more information, <http://www.w3.org/TR/WAI-WEBCONTENT/#conformance>.

Figure 1: Federated Model of L&D Deployment

Source: Bersin & Associates, 2005.

As a result, the BT council sought out a way to upgrade its existing LMS, offering a solution for authoring, managing and delivering the content collaboratively.

LMS

From March 2001 to March 2006, BT operated an outsourced LMS provided by SumTotal Systems®, called Route2Learn™. In 2006, this existing LMS was upgraded to a more full-featured system that provides

a single platform for deploying, managing, tracking and reporting of all training events (both online and off). This enterprisewide LMS is now operated by the company inside the BT firewall.

Atlantic Link®'s solution for BT, which features a new integrated learning content management system (LCMS), also contains its own built-in, integrated LMS called KnowledgePoint™ – that is used primarily for testing purposes prior to deploying courses on the original Route2Learn enterprisewide LMS. (For more information, please see section, “Selecting a Solution.”)

Training Content

British Telecom's approach to the development of training content is similar to that of many companies – to employ seasoned external vendors to produce the majority of the company's training programs. BT has relied on a small number of custom e-learning vendors – in addition to which the lines of business have been creating content on their own. Typically, these in-house initiatives dealt with smaller, rapid e-learning projects.

To complete internally developed projects, the business units employed whatever tools and skills were at their disposal. In some cases, technically savvy individuals employed traditional authoring tools (like Adobe® Flash™ or Authorware™) to create projects, while other, less-advanced authors produced materials using simpler tools (such as Camtasia Studio™, Microsoft® PowerPoint® and TechSmith®). The resulting training content was delivered by whatever method was the most expedient, including:

- CD-ROM;
- Network server; or,
- Internal web server.

Training records for these courses were typically captured and managed with simple spreadsheets.

While this approach provided a quick fix for selected training needs, it also posed challenges. Over time, corporate reorganizations resulting in employee turnover left software licenses languishing in a drawer (so to speak). Custom applications created in-house were hard to maintain

 **KEY POINT**

The business units needed a faster and cheaper way to create training – but the ad-hoc solutions they employed to meet these needs were creating a whole new set of challenges.

– backups did not occur, source files were misplaced and personnel with the skills to update applications moved on to other job opportunities. British Telecom had a library of more than 2,500 learning programs, many of which were stored in a closet filled to overflowing with CD-ROMs and other media.

In summary, for some projects the business units needed a faster and cheaper way to create training – but the ad-hoc solutions they employed to meet these needs were creating a whole new set of challenges.

Business Drivers

In the case of larger projects (for which time to deliver was not critical), the traditional approach of engaging vendors worked well. With smaller projects (for which timely delivery was essential), however, working with an external vendor proved ineffective. The process of producing a business case, securing financing and coordinating with an external vendor was too slow and expensive.

British Telecom's L&D team identified a number of situations for which the standard approach of relying on external vendors failed to meet the demands of the business. These situations involved:

- Frequently changing training content;
- The rapid training of a target audience due to time-to-market pressures;
- The cost-effectiveness of engaging a vendor for a small target audience; and,
- Rapidly converting available low-level material to online content.

Defining Requirements

L&D personnel took the lead to find a solution for the business units, but included representatives from each of the stakeholders. A small team was assembled, including:

- Three systems engineers;
- A training administrator;

- An LMS administrator;
- A systems implementation manager; and,
- Training leads from each line of business.

The team defined the requirements for a content authoring tool that would meet the needs of the lines of business, as well as the requirements of the L&D group. The team was then assigned to evaluate solutions and submit a recommendation to the BT learning council.

The requirements used by the learning team to evaluate possible solutions (see Figure 2) addressed a number of areas, including:

- Ease of use;
- Product capability;
- Compatibility with company and industry standards;
- Product architecture; and,
- Competitive pricing.

Selecting a Solution

The team evaluated 16 different authoring tools – including tools already in use within BT, as well as new tools available in the marketplace – against the checklist of BT requirements. Each evaluation also included a product demonstration, most of which were conducted online.

Based upon the company's requirements, the evaluation team selected a collaborative authoring system from Atlantic Link (see Figure 3), which provided an integrated suite of tools for creating, managing and tracking learning content. The tools in this suite include:

- ContentPoint™ – A collaborative authoring system, which provides a collection of pre-built templates for creating online courses;
- CapturePoint™ – A tool for capturing screen activity for the development of IT training applications; and,
- Knowledge Point™ – A management system for deploying and tracking finished courses.

Figure 2: British Telecom’s Checklist of Requirements for Evaluation

British Telecom: Requirements	
<p>Ease of Use To provide ease of use, the product must:</p>	<ul style="list-style-type: none"> • Require minimum technical skills to use; • Allow development without coding (i.e., no HTML or Flash scripting); and, • Provide templates and template capability.
<p>Features The product should include features that allow authors to:</p>	<ul style="list-style-type: none"> • Record computer screen activity; • Import PowerPoint files, including animations; • Add and synchronize narration to PowerPoint files; • Create questionnaires and tests; • Randomize test questions; • Randomize answer options; and, • Incorporate and deliver video.
<p>Standards The product must produce content that complies with industry and other standards, including:</p>	<ul style="list-style-type: none"> • W3C AA accessibility standard; • AICC⁴ / SCORM⁵ data tracking;⁶ • BT PC desktop build standard; • That content easily uploads to the LMS; • The iDesk⁷ delivery environment; and, • Macromedia Flash delivery.
<p>Architecture The product must provide a solution that is:</p>	<ul style="list-style-type: none"> • Scalable, for use across BT; and, • A server-based solution, supporting remote authoring and a standardized uploading process.

Source: Bersin & Associates, 2007.

⁴ The “Aviation Industry CBT Committee” (AICC) is an international association of technology-based training professionals that develops guidelines for the aviation industry in the development, delivery and evaluation of computer-based training (CBT) and related training technologies.

⁵ “Sharable Content Object Reference Model” (SCORM) is a set of specifications for course content that produces reusable learning objects.

⁶ For more information, *SCORM and AICC: What Are the Differences?*, Bersin & Associates / Chris Howard, February 22, 2007. Available to research members at www.elearningresearch.com.

⁷ According to Wikipedia, “iDesk” is a minimalist computer program used in conjunction with X window managers to draw icons on the desktop. For more information, <http://en.wikipedia.org/wiki/iDesk>.

Figure 3: Diagram of BT's Server-Based Collaborative Authoring System

Source: British Telecom, 2007.

Users access all of the components of the system by using a web browser to log in to a centralized application server.

The design of the software suite provided by Atlantic Link is one of server-based architecture, which offers many features and benefits, including:

- Collaborative authoring;
- Centralized content management; and,
- An integrated learning management system (LMS).

The collaborative authoring system contains features designed to simplify and accelerate the authoring process, including authoring wizards, Flash-based templates and a PowerPoint importer.

Prior to acquiring the collaborative authoring system, the L&D team demonstrated the proposed solution to the learning council. In turn, the learning council shared the solution with its constituents in the business units – the response from which was swift and positive.

System Rollout

Implementation Process

After obtaining buy-in from the business units, the L&D team acquired and began to implement the system. The first step was to install a development server to support an initial group of end-users. The server was configured to support five concurrent logons, which were shared among approximately 25 users throughout the company. Before users were allowed to access the system, the L&D team required that they complete a two-day training course on the authoring system, as well as a series of four courses on designing information for delivery online to meet BT's publishing standards.

Training on the collaborative authoring system was provided as a self-paced course (available from the vendor's website), followed by a two-day instructor-led course (also provided by the vendor). From the very beginning, demand for the training was high, as existing BT content developers were keen to develop their skills with the new system.

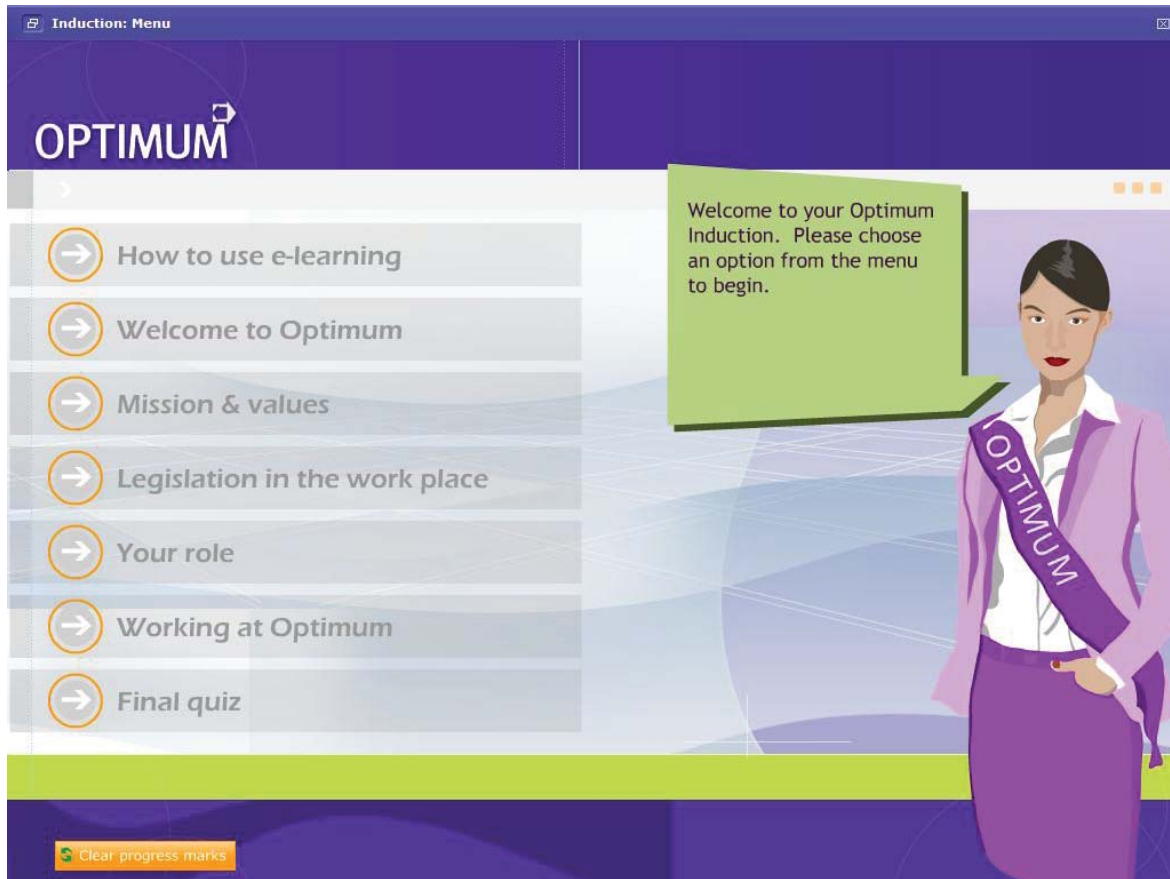
Once the end-users were trained to use the system, the L&D team faced a new set of challenges, which included:

- How to provide end-users with ongoing support; and,
- How to test and quality-assure the courses they produced (with Atlantic Link's integrated LMS) prior to uploading them to BT's enterprise LMS, Route2Learn.

Testing and quality assurance processes were developed to ensure that courses were produced to the minimum standards of design and technical quality. A few ways in which the L&D team implemented quality control was to:

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Figure 4: Example of a Course Created with the Collaborative Authoring System

Source: British Telecom, 2007.

- Establish a system portal; and,
- Publish the rules with which all system users must comply.

These rules included prerequisite training for authors and the requirement that all courses meet WC3 AA guidelines. The rules also specified a means of enforcement – any author not complying with the rules could have his / her access to the system revoked.

The L&D team's testing of courses takes two forms. First, every course submitted for publishing undergoes mandatory testing for compliance with accessibility standards. Second, random sections of each course are assessed for overall quality (see Figure 4). If a course fails either test, then it is returned to the author for improvement. If an author

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If an author submits courses that consistently fail to meet quality standards, then the L&D department provides coaching to improve that author's work.

submits courses that consistently fail to meet quality standards, then the L&D department provides coaching to improve that author's work. If the author's courses continue to fail to meet the company's quality standards, the team may revoke that author's system access.

Implementation Challenges

The implementation of any enterprise application is a significant task – and the implementation of the BT collaborative authoring system was no exception. For BT's L&D team, the following four challenges stand out:

1. Providing the appropriate IT infrastructure;
2. Training end-users;
3. Providing post-implementation support; and,
4. Quality assuring and testing finished courseware.

The first challenge was to ensure that the necessary server was in place, with adequate capacity – as well as to configure it to provide maximum flexibility. Working with BT's OneIT team, L&D decided to locate the server outside BT's firewall and to control access using secure authentication. This approach allows BT to collaborate with external subject matter experts (SMEs) using a single development platform.

The enterprise is currently exploring the possibility of having its primary learning vendor, Accenture®, use the BT collaborative authoring system to build its content. This approach would allow groups with a need for rapid development of e-learning (but no internal development resources) to work with Accenture to develop their training. Since the collaborative authoring system stores files on a centralized BT server and provides easy-to-use authoring capabilities, BT groups can update course content quickly and easily by themselves.

The second major challenge was training end-users on how to utilize the system. By leveraging existing BT and vendor courses, the company was able to train new authors on the collaborative authoring system and teach them to create usable, accessible content.

The third challenge was providing end-users with post-implementation support. To address this need, the L&D group created a portal through



KEY POINT

British Telecom's HR learning and development manager quickly discovered that an important part of supporting end-users involved responding to requests for new features and capabilities.

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The L&D team addressed the challenge of maintaining course quality by establishing and communicating rules, standards and processes for quality control.

which it published links to training courses, authoring rules and guidelines, information on support resources, and frequently asked questions (FAQs).

British Telecom's HR learning and development manager quickly discovered that an important part of supporting end-users involved responding to requests for new features and capabilities. The L&D team strove to avoid nonstandard uses of system templates and, whenever possible, to address end-user requests with existing features. When this was not possible (and when the requested feature had broad applicability), the L&D team worked with the vendor to develop and release a template providing the requested capability.

The final major challenge the L&D team faced was how to maintain the quality of courses created with the collaborative authoring system. The L&D team addressed this challenge by training users before providing them with system access (as previously explained) – but also by establishing and communicating rules, standards and processes for quality control (see Figure 5).

System Use

Ten months after the initial rollout of the development server, the business units at British Telecom began to deploy finished courseware. In some cases, the courseware enhanced existing low-level training (such as video segments or PowerPoint presentations), with interactivity, knowledge checks and assessments. In other cases, the speed and ease of creating training with the collaborative authoring system allowed the lines of business to create new training materials where none had been previously available. Examples of content produced by the business units include:

- Customer service training;
- Compliance training;
- Application training;
- Product training (covering new product releases); and,
- Product updates.



Ten months after the initial rollout of the development server, the lines of business at British Telecom began to deploy finished courseware.

Figure 5: Course Authoring: Quality Control Standards

1. Authors using the authoring suite software must have attended a two-day training session and be deemed "suitable."
2. Users will have read and completed the training on publishing standards.
3. Users must have been suitably briefed / trained and any content produced for publication must go via an "authorized user."
4. All content produced must meet W3C AA guidelines for accessibility; in most cases, this will be achieved by the use of standard templates.
5. All content will be delivered via the enterprise LMS, unless alternative arrangements are agreed to by the LMS support team.
6. Any content submitted for loading that does not meet the required accessibility standards or is substandard in other ways will be referred back to the author for improvement.
7. The right is reserved to refuse to load content that fails to meet any standards although, whenever possible, encouragement and help to improve will be offered (subject to resource availability).
8. If any author blatantly flouts the above rules, then he / she may have his / her authoring system logon credentials revoked – and, if ways to make substandard content are found using another route (e.g., an alternative authoring tool), then the matter may be referred to the HR director.

Source: Bersin & Associates, 2007.

Many of the projects created with the collaborative authoring system, so far, have been relatively small in scope or budget. For example, the legal department was delivering training in the form of digital recordings of LiveMeeting™ sessions. While managers in the department wanted to provide a richer, more effective training experience, they had neither the budget nor the skills to do so. With the advent of the collaborative authoring system, the legal department was able to obtain authoring assistance on a chargeback basis from content developers in other lines of business. This assistance allowed the department to convert linear video assets into navigable, interactive training content. Another way in which the business units are using the collaborative authoring system

Although BT has an enterprisewide LMS, it uses the integrated LMS (provided with the collaborative authoring system) to test courses before they are deployed through the enterprisewide system.

to improve the quality of training materials is by using the system's PowerPoint import capability to convert linear presentations into interactive, online training modules.

Expanding the Scope of e-Learning

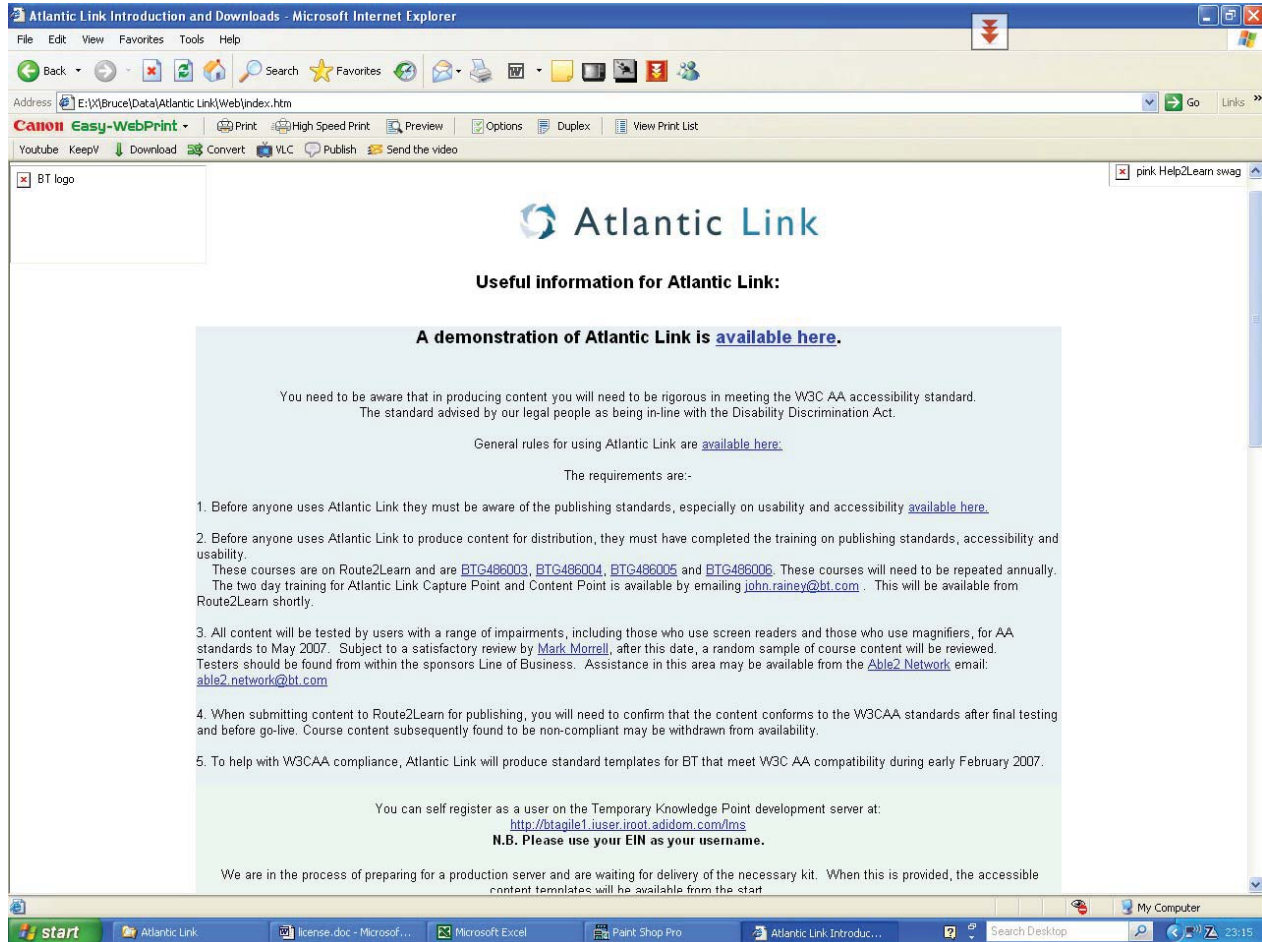
Deploying a new authoring system and putting development capabilities into the hands of end-users has redefined BT employee roles and processes for creating content in several ways.

- First, the system has empowered SMEs to create their own training.
- Second, it has expanded the use of e-learning to new applications.
- Third, it has decreased the cost and increased the timeliness with which the business units can deploy certain types of training.

For the lines of business, an easy-to-use authoring system has empowered in-house personnel and SMEs to produce training content on their own, bypassing external vendors (see Figure 6). The ability of the business units to create training relatively quickly and inexpensively has changed the cost equation, making new courses economically viable to create. For example, a short tutorial that formerly would have required both an SME and a content developer to produce, and would have cost £3,000 can now be developed with internal resources for approximately one-third the cost.

Finally, instead of relying on external vendors to update and maintain the organization's courseware, the new system has allowed the business units to perform these tasks in-house. For example, the lines of business can manage changes to textual content, graphics or questions in-house – decreasing the cost, and increasing the efficacy and timeliness of training materials.

While BT expects to continue to employ external vendors for large-scale projects (such as companywide compliance training), the collaborative authoring system has allowed the organization to respond with greater agility to smaller projects requiring rapid turnaround.

Figure 6: Screenshot of BT Course-Authoring Portal


Source: British Telecom, 2007.

System Benefits

From the perspective of the enterprise's L&D group, the implementation of a server-based collaborative authoring system offers an entirely different set of advantages. One of these is the cost-efficiency of sharing a small number of licenses across a large pool of authors. The L&D personnel view this investment as far superior to locally installed desktop authoring programs, which are typically restricted to a single user. For the team, local applications are difficult (if not impossible) to support. By contrast, a centralized, server-based system makes it much

easier for the organization to provide training and end-user support to in-house authors.

Another advantage of the collaborative authoring system is that it provides centralized storage and management of training courses, as well as the media assets that they contain. Since applications are stored in a central location, the source files are never misplaced or lost. Centralized assets also facilitate course updates. Use of a standard authoring tool allows nearly anyone in the organization (whose has earned access to the system) to maintain applications. This approach also supports collaborative authoring by multiple contributors, and the possibility of bridging differences of place and time.

Lessons Learned

Reflecting on British Telecom's experience in selecting and deploying a collaborative authoring system, BT's group HR L&D manager offered recommendations to anyone planning to undertake a similar initiative.

Involve All Stakeholders – Do this from the project's outset and give them real opportunities to provide input. At BT, the learning council offered a readymade vehicle for involving the business units and soliciting their input.⁸ If no similar body exists within your organization, consider creating one. A learning council might serve as a permanent body for facilitating training plans in the organization or as a temporary body assembled expressly to provide input for a single initiative.

Collaborate with IT – Since a collaborative authoring system is a server-based system, it is important to engage the IT organization early on in the project. Also, secure the necessary server capacity, and establish plans and resources to provide ongoing systems administration.

⁸ Bersin & Associates research indicates that establishing enterprisewide learning councils to support technology initiatives increases success and adoption. For more information, *The High-Impact Learning Organization: WhatWorks® in the Management, Organization, and Governance of Corporate Training*, Bersin & Associates, June 2005. Available to research members at www.elearningresearch.com or for purchase at www.bersin.com/highimpact.

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Because a system that allows you to develop rapid e-learning can be used to create bad content fast (and lots of it!), it is important to establish a system of quality control.

Provide Training – As part of the system rollout, train users on how to use the system. In addition, investigate the possibility of leveraging courses provided by the vendor, as well as training that may exist within the organization. You should not stop at training users on how to use the system but, rather, find or create ways to educate and support users in creating effective content.

Provide Post-Implementation Support – Once you have trained users on how to use the system, be prepared to support their ongoing use of the tool with training resources and clear authoring guidelines. For example, British Telecom's L&D group created a portal to consolidate support resources. Looking ahead, the BT Group's HR learning and development manager hopes to foster a user community through the implementation of support resources, such as blogs,⁹ a wiki, an online community and a newsletter to keep users abreast of system enhancements that include a feature on "tips and tricks."

Accommodate New Users – To avoid frustrating end-users, establish a simple, quick process that allows new users to acquire a license quickly and easily. The system should support the tracking and management of these licenses after they are deployed. For instance, at BT demand for access to the system grew rapidly after its initial deployment. The opinion of BT's group HR learning and development manager is that agility in response to user demand has been important to its early success.

Practice Quality Control – Because a system that allows you to develop rapid e-learning can be used to create bad content fast (and lots of it!), it is important to establish a system of quality control. At BT, the L&D group established guidelines, standards and processes to guarantee minimum quality standards for any course created.

Manage Requests for Enhancements – Prepare for user requests for enhancements by defining and implementing a process for managing them. The L&D team at British Telecom found that no sooner had the

⁹ For more information, please see these reports: (1) *New Technologies for Corporate Learning: Part 1 – Podcasts, Blogs, and Wikis*, Bersin & Associates / Karen O'Leonard, May 2006; and, (2) *Podcasting: A New Technology for Learning*, Bersin & Associates / Karen O'Leonard, November 29, 2006. Available to research members at www.elearningresearch.com.

system been rolled out than users were pressing for new templates and features. Also, strive to avoid nonstandard implementations, and make sure that enhancements address a commonly requested or critical user need before committing to them.

Manage Change – As with any significant rollout, change management is important. Consider dedicating a project manager to handle the systems implementation, and manage communications with the business and system end-users.

Manage the Vendor – Unlike PC-based authoring tools, a collaborative authoring system is server-based and, therefore, an enterprise-class solution. This architecture enables a single point of contact between the client and vendor, which can support the development of a mutually beneficial business relationship. For example, in response to BT's need to produce accessible content, the vendor agreed to add this capability to its product.

Future Plans

During an initial test phase, nearly 100 test courses were created at BT. Since then, approximately 20 courses have been finalized and delivered via the enterprisewide LMS. Looking ahead, BT has plans to increase the number of authors who have access to the system. After initially deploying five licenses (which were shared among approximately 25 users), BT has plans to expand the capacity of the system. To better serve the needs of the different business units, the L&D group is considering plans to divide the server into multiple virtual systems, so each line of business has its own system with dedicated (as well as floating) licenses.

Besides using the system internally, the enterprise is considering making the system accessible to its learning vendors. The goal here is to leverage the system's productivity to decrease the development costs of its training programs. In addition, British Telecom hopes to reduce the time and money required to update and maintain applications by performing these tasks themselves.

Summary

For the company, the introduction of a collaborative authoring system does not signal the end of working with external vendors. The organization will still rely on vendor expertise to address more advanced and formalized training needs. However, the system is affecting change in when, where and how e-learning is deployed within the company. With its ease of use and centralized, server-based architecture, the collaborative authoring system is empowering the lines of business to create their own e-learning more quickly and cost-effectively – it is also increasing e-learning use by engaging new authors and making new applications commercially viable to create.

KEY POINT

For the enterprise, the introduction of a collaborative authoring system does not signal the end of working with external vendors – the company can still rely on vendor expertise to address more advanced and formalized training needs.

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