



Transforming Learning Content to Power Performance

Baker Hughes

October 2015

Company Background



Company At-a-Glance	
Headquarters	2929 Allen Parkway, Houston, TX 77019
Year Founded	1987
Revenue	\$22,364 million
Employees	60,000+
Global Scale	80+ countries globally
Customers/Output, etc.	Customers: International and National Oil Companies globally; Output: Drilling, Evaluation, and Fluids Services, Completions, Production and Chemical Services, Pressure Pumping, Reservoir Development Services
Industry	Energy: Oil and Gas
Stock Symbol	BHI
Website	www.bakerhughes.com

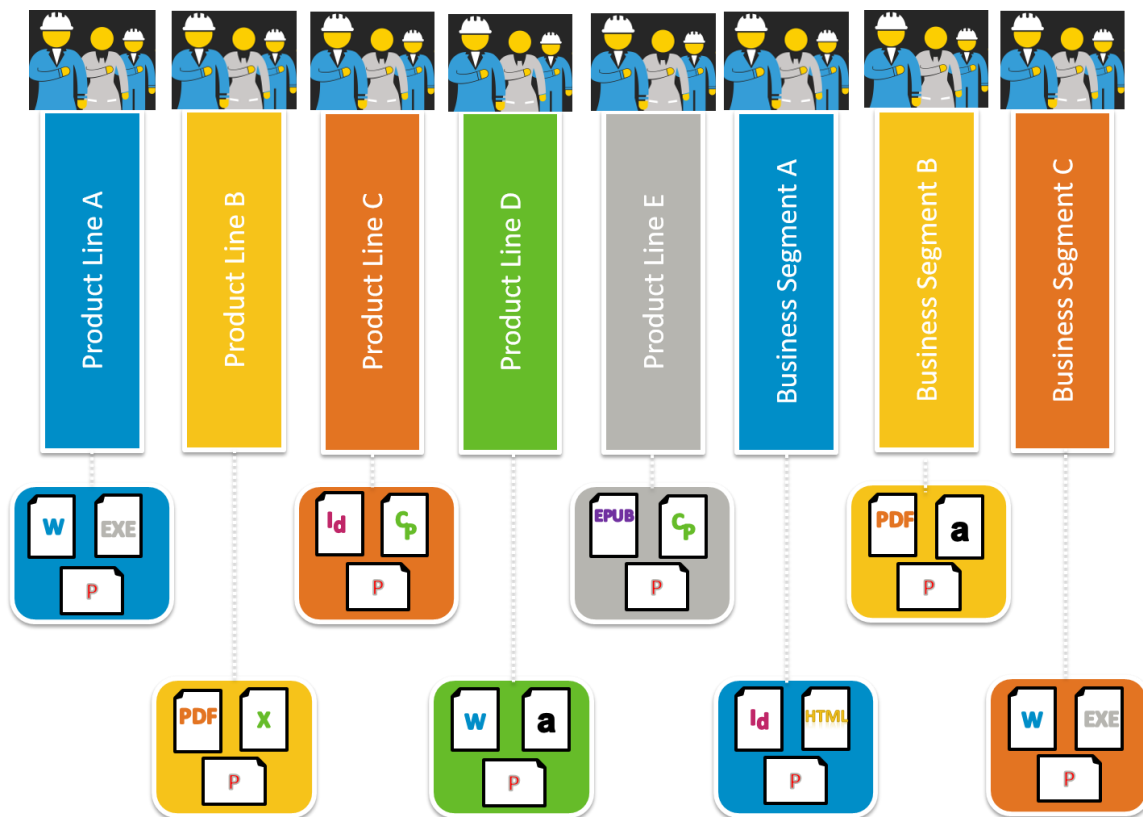


Business Conditions & Business Needs

As a large global organization built through multiple acquisitions, Baker Hughes faced a number of learning systems that had survived assimilation and a vast array of legacy content stored in various locations in numerous formats. According to Jennifer Rogers, Global Content Development Manager for Baker Hughes, “most of our outputs were print-based outputs that were consumed via paper, book format, printed out, and delivered to learners for their learning experience.” In an industry where compliance and regulations influence the ability to do business – and are quite often a matter of life and death – it was imperative that the organizations be able to bring their people up to competency effectively and quickly.

While the learning function within Baker Hughes is essentially centralized to deliver learning across the entire enterprise, it is faced with learning requirements from a wide variety of products and services groups. It was often very difficult to meet those learning needs because the content was scattered and hard to find. Even when it was found, the content was often locked within a monolithic course structure with no way to get it out. It was cumbersome to deconstruct a large SCORM package or InDesign file to get at the element they needed, so designers would often start over and build a new course. This challenge directly impacted the sensitive time to competence because it was difficult to get the right material into people’s hands at their moment of need.

Figure 1: Baker Hughes Content Environment – Before



Source: Baker Hughes 2015

In addition to all of the legacy content, new content was being developed using many different Rapid Authoring Tools. This was helping Baker Hughes create new content quickly, but because each tool had proprietary standards and outputs, getting all of the content to look consistent and behave properly on a single platform was challenging. Content had to be deployed in very basic formats to get it to all work together, which took a great deal of time and effort. All of this inevitably led to numerous support tickets being generated by learners challenged with content not working properly. It was also necessary to retain licenses for all of these authoring tools to maintain the courses and content they had developed, which proved costly.

This environment also made it very difficult and time-consuming to rebrand any of the learning. When a rebranding effort was launched, each piece of content had to be changed in each instance that it existed. It was a similar story when regulations were



changed or updated – as they often are – because anywhere that particular regulation was referenced had to be found and updated.

Program Overview

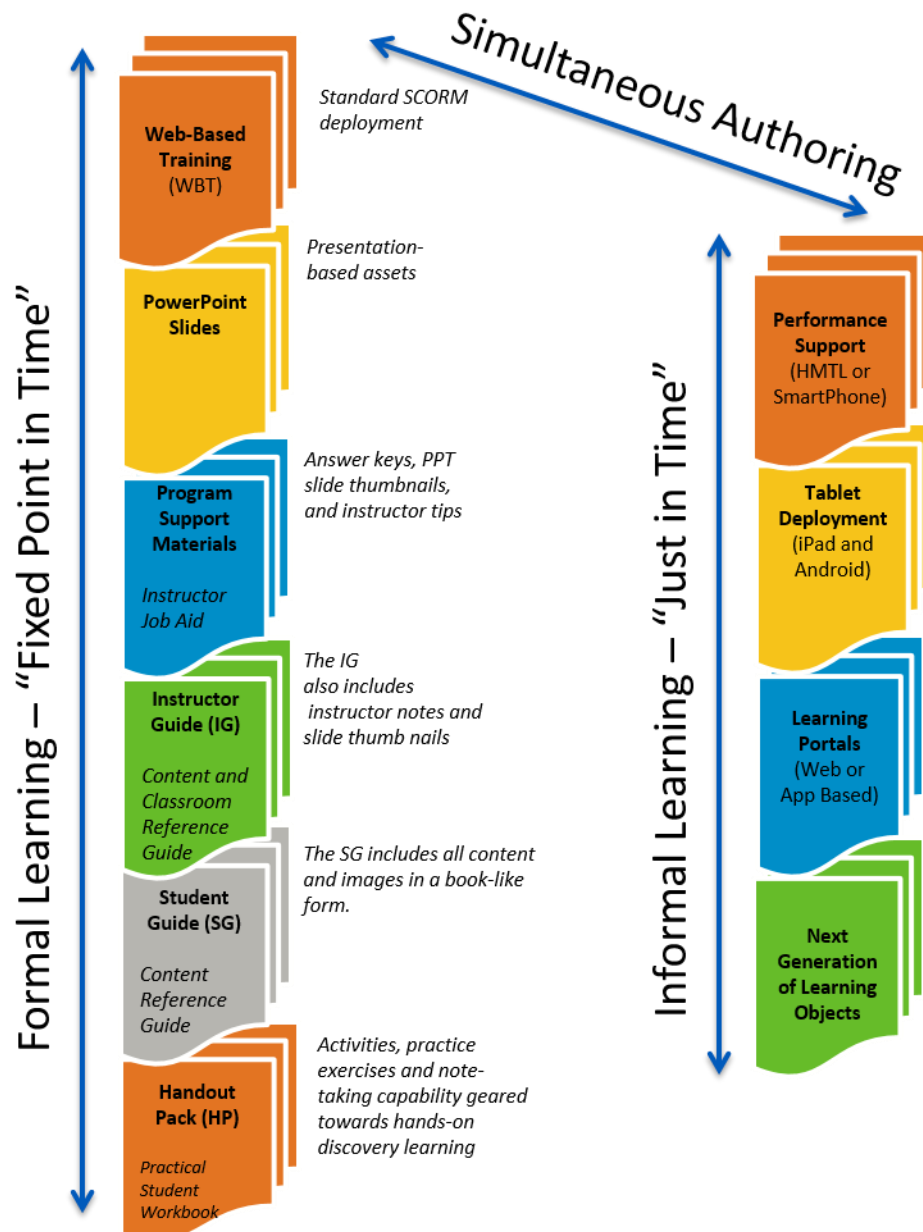
Baker Hughes made the decision to overhaul the way it approaches content. The idea was to focus on both centralizing and standardizing everything, making it easier to find, use and reuse, and widen the variety of ways they could put learning into people's hands. This would allow the learning function to focus on more strategic elements of learning, such as the overall architecture for learning delivery, and making sure that the delivery methods matched the best ways for people to learn and adopt the desired behaviors. Baker Hughes chose Xyleme for both its technology and partnership to help in this journey. It was important that the plan they developed would help the learning team focus on being more strategic and not simply be a technology solution. According to Rogers, "Xyleme has been critical to ensuring that we're working toward our own business objectives and not fitting our business objectives into a technology."

Single Source

The key to making this all work is single-source authoring powered by Xyleme technology. This is what enables the re-use of the content. Instead of building courses from the ground up each time, developers begin by thinking about the different audiences that may benefit from the content. Content is then written in a way so that it can be used multiple times in multiple places and ultimately reduce the amount of time it takes to deliver. Mike Rodriguez, Learning Content Manager at Baker Hughes, says that "the more time and planning we put in the beginning of a project, the smoother it went during development."

By using the Xyleme platform, the Baker Hughes team is able to author once and publish all of the content to multiple outlets, including iPads, PowerPoint, Microsoft Word, PDFs, etc.

Figure 2: XML Single Source Template Development



Source: Baker Hughes 2015

A single-source platform also means that Baker Hughes is operating from a central document library that makes access and discovery of what is available very easy for the designers. There is no more hunting and searching through network drives for content

that may exist only on one subject matter expert's laptop. When content cannot be found, it was often recreated, which means a lot of duplication of effort. By creating a central repository, the organization is able to quickly reference and reuse everything that has been developed. What makes it so effective for Baker Hughes is that all content is associated with various learning objectives, which are linked to specific behaviors. When a stakeholder identifies a necessary behavior change, the team can do a search and pull the related content to tailor a solution to the specific need.

"This is the type of learning experience that we needed to accelerate performance," Rogers said. "Essentially, we needed to surface up our content and make it accessible to the enterprise in a variety of formats, rather than just developing one deliverable for one particular audience at a fixed point in time."

Time to Competency

Baker Hughes' learning strategy is based on behavioral changes and the learning team's ability to measure those changes and communicate the metrics to the rest of the organization. This required a very robust competency management program. In fact, there is a team of assessors that ensures people are competent enough to perform each particular service, because these skills are critical to how Baker Hughes does business. In the oil and gas industry, companies report the competency levels of their workers to clients. If Baker Hughes doesn't have enough people with the right competencies, they don't get the work. Thus, total alignment with competencies and learning is essential. Each job and service has qualifications associated with them, and there are specific learning needs associated with each qualification.

With this framework for learning, the Xyleme technology has allowed Baker Hughes to focus on how to efficiently change behaviors to improve time to competency. No longer limited to just virtual and in-person instructor-led training, they have developed many new ways to get learning into people's hands. During the transition, Baker Hughes used the opportunity to ensure that all four core learning functions (Competency, Curriculum, Content, and Delivery) were engaged at the appropriate places in the process and partnered with Kirkpatrick to ensure that front-end analysis was thorough and focused on critical behaviors.



Another key piece to Baker Hughes' new content strategy was "right-sizing" the learning. While a large course may cover too many concepts and be unwieldy, the content also needed to not be so contextualized that it couldn't be re-used.

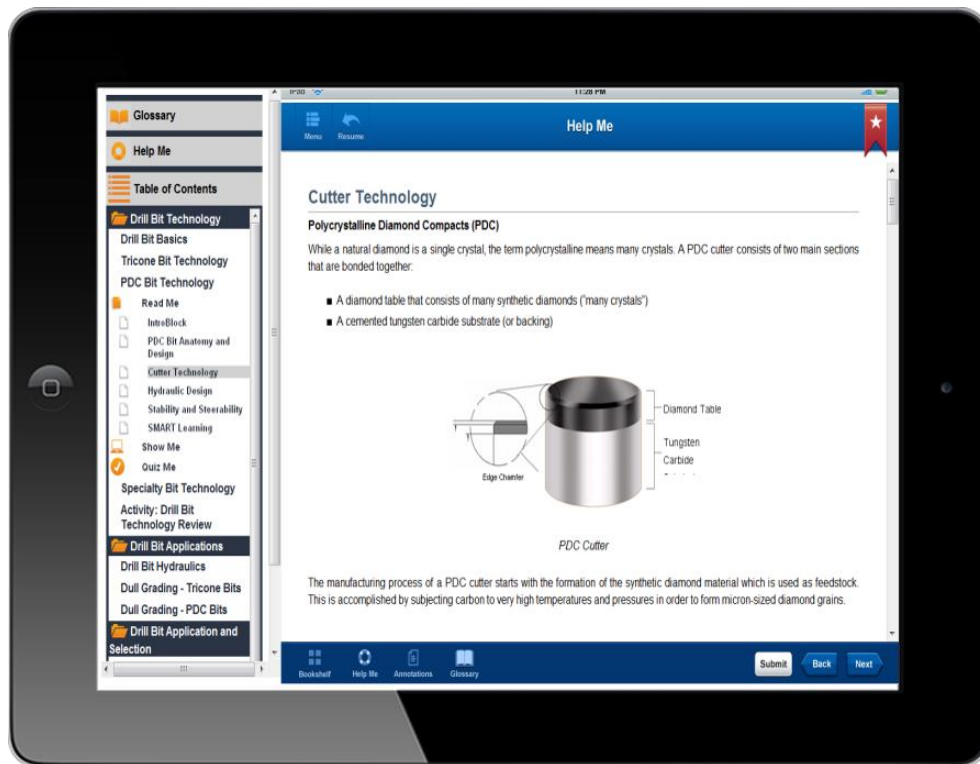
With a focus on speeding up time to competency, Baker Hughes now has the capability to provide on-the-job support for individuals while the company transitions. So instead of relying solely on a formal classroom experience that starts and stops at one particular time, the learning team is able to extend the learning experience and provide granular assets in any format to individuals anywhere, anytime. It could be a small media asset, such as an animation, to illustrate a particular point. It could be a video to see a portion of a procedure being conducted. Learners can even go back and read a chapter from a particular manual or student guide that they experienced in a more formal experience.

Lawrence Chapman, Western Hemisphere Education Center Manager, says, "I think one of the biggest things that our leadership has done to shorten that time to competency is the investment in the education centers and the rigs and the equipment that we have here. And that's a very, very large investment, and it's a clear signal of the experiential learning model. Performance support is important, and it's the right thing to do.

Delivery

Xyleme is a big part of the strategy in terms of what Baker Hughes is trying to do for its workforce, and allows them to take the content and put it in the hands of learners once they leave the controlled learning environment, whether that's in Baker Hughes' Education Center or via the learning management system. Xyleme allows for a more personalized learning experience outside of the classroom and courses. Rather than dictate how much content and what format in which they will consume it, learners have the option to access the content they want in almost any conceivable format. This gives learners the opportunity to consume the content in a way that makes the most sense for them.

Figure 3: Tablet Deployment



Source: Baker Hughes 2015

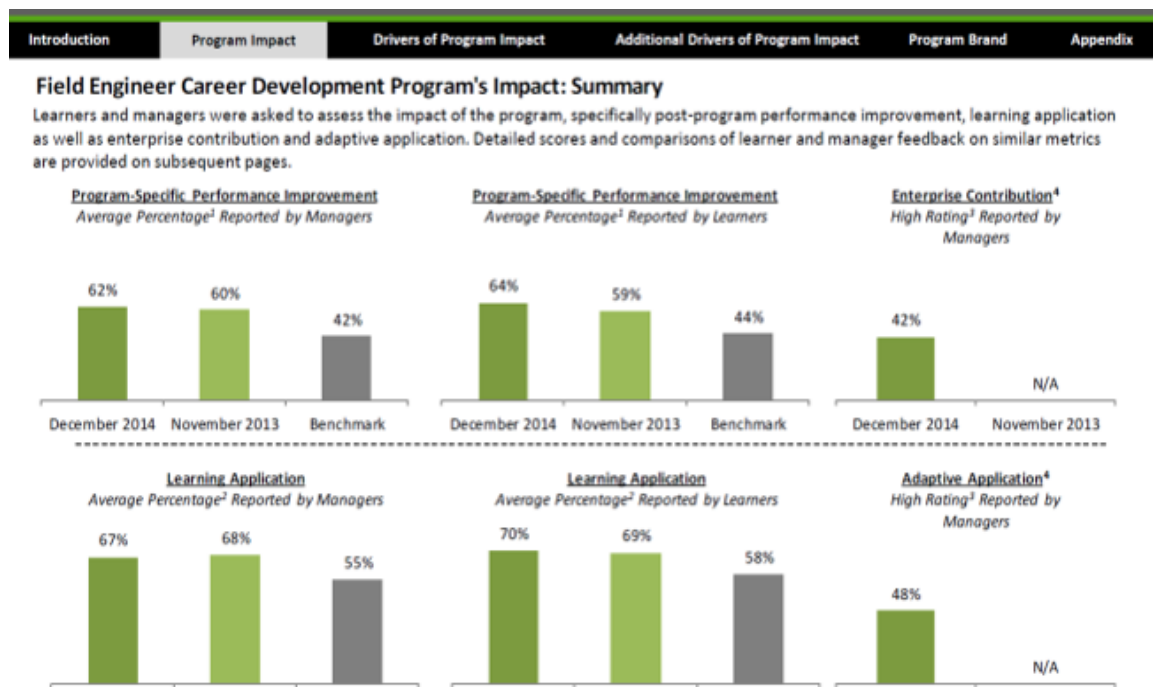
Chapman notes, “We’ve gone from one week of PowerPoint slides to a multi-week hands-on experiential learning event, which is vastly different and far more valuable to our employees.” In the past, it could take more than a year to prepare and get ready to run a job.

Xyleme also provides Baker Hughes with learning analytics that give insight into what content is being consumed and how. The learning team uses this information to shape the way that it builds content and how it assigns the building of content. For example, if learners are consuming video or animation a tremendous amount for a specific learning objective, that indicates where to put resources from a content-development perspective. Likewise, another objective may generate high consumption of straight text.

Measurement

The analytics piece of the transformation is huge for the organization. It's not only about being more efficient. Baker Hughes is focused on creating and delivering highly effective content that is learner-centric and empowers the business over the long term. To that end, the company collects as much intelligence as it can, including feedback from learners in the classroom, anecdotal information, formal Kirkpatrick Level 1 surveys and Level 2 data from exams and assessments the learners take. They also gather information from the learners after they leave the learning experience and go back into the job to identify changes in behaviors.

Figure 4: Learning Measurement



Source: Baker Hughes 2015

"If individuals come to a course experience and learn, but then they leave the course experience and they haven't actually changed their behavior, we haven't actually solved anything for the business," Rogers said. "So we're very passionate about collecting information both from surveys and from learning analytics in regard to our populations



once they go back to their everyday job so that we can actually measure how content is impacting their performance.”

Xyleme provides Baker Hughes the ability to capture learning analytics on content that it has never been able to get before. By including Tin Can (xAPI) statements, the learning team gets a better picture of what learners are doing both in and out of a formal learning experience in a classroom or in a learning management system. Baker Hughes is also rolling all of the learning data up into a central database with other talent management data. Now the learning staff can measure how people are experiencing learning and how that translates to performance. They can also identify who their top performers are, what makes them top performers, and what can be done to help develop people better in the future.

Measurable Results

Rogers said, “We've had an incredible return on investment in the sense that it's changed everything about the way that we build things. It's changed everything about the assets that we have.” Rather than thinking in terms of how many courses there are, it's now about literally millions of learning assets that can be readily delivered in any way, shape or form.

At this point, the LCMS has over 2,000,000 unique objects for Baker Hughes. The ability to reuse those objects in different formats greatly reduces the costs associated with content development. In fact, about 26% of the content objects get regularly reused.

Figure 5: Current Learning Objects

Total Available Learning Objects	
Learning Objects (absolute)	2,660,774
Unique Learning Objects	2,023,366
Reused Learning Objects	323,122 (26%)



Available Learning Objects by Type

Figures	187,797
Topics	107,274
Multiple Choice Questions	81,889
Procedures	24,065

Source: Baker Hughes 2015

Another huge cost savings is in translation. Having to translate content in its legacy formats was a costly endeavor, with 30%-40% of the cost related to unpacking and repacking the content for translation. The new system puts all of the content into XML, eliminating the need for unpacking completely.

After four years in production, Baker Hughes has recognized the following results:

- Current ROI is based on actual 70% adoption and 25% reuse.
- Current licenses: 50 Active Editors, 50 SMEs, and 50,000 End Users
- Current savings is \$1.2M per year, or ROI of 240%

The less numerical results are plentiful as well. Rogers says, “The ROI has a lot to do with being able to position ourselves in our own internal business and looking at them and saying, ‘You have a problem. Our job as learning professionals is to solve your problem. I have a ton of assets that can solve that problem, and let's look at the best ways that we can deploy those to meet your particular solution.’ ”

Overall, the learning experience itself has been transformed from having one static course experience for people to solve their business problems to having tons of flexible assets that can be deployed at any moment in time to meet their specific needs.



The development experience has been transformed as well. No longer are individual developers working on individual pieces in complete isolation from one another. Instead developers are able to be more collaborative. Having the entire global enterprise within one learning content management system has been great for productivity. Visibility into all of the assets that are being created all over the organization prevents developers from recreating assets or redeploying those that already exist. This increased productivity has allowed the learning team to take on more from a backlog of waiting projects.

Future Plans

According to Rogers, the goal is to create a learning experience where content can be consumed within any application people are already using to do their job. This would be a huge step forward in enabling embedded learning, where learning becomes part of the daily workflow and not seen solely as an event separate from the job. This would in the future reduce time to competency, keeping the workforce up to standards at the speed of the business.

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