

CASE STUDY

Delivering an SDL Tridion Web Platform Through Effective Collaboration

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Content Bloom

content bloom

SIEMENS

Executive Summary

Maintaining a leading status within the digital enterprise software domain requires the delicate balancing of a well-organized and content-driven online ecosystem. Add translation to the mix, and your approach demands that extra level of perfection.

Siemens' product lifecycle management (PLM) software business engaged in a project to enrich the user journey of its ecommerce and marketing websites overarched by a desire to meet its buyers where they are today, online. Having built its existing web architecture upon the SDL Tridion content manager, Siemens PLM Software was focused on the re-imagination of its current web technologies while retaining the content organization and translation benefits provided by SDL.

"I'm really, really happy with what we've accomplished, not only technically but in terms of the business and collaboration" – Eric Broyles – Technical Manager, Siemens PLM

Utilizing our comprehensive knowledge of the SDL product suite and DD4T framework, Content Bloom were engaged to collaboratively participate in the technical implementation and to provide Agile and Quality Assurance leadership. After a well-defined discovery phase, we achieved technical implementation through a variety of functional code deliveries, quality assurance, consistent business engagement and thorough documentation, centered around well-defined user stories.

Upon successful delivery, we held a retrospective to reflect upon the process, progress and our learnings from the implementation thus far. The retrospective fed into the planning of future phases.

The purpose of this case study is to provide the reader with in-depth knowledge of the project while sharing our experiences and best-practices to help others achieve successful implementations.

Key Deliverables:

- Redesign of the existing ecommerce and marketing websites built on the second generation of the Java DD4T framework
- Consistent user journey across the Siemens PLM Software web ecosystem
- Scalable architectural foundation capable of supporting future initiatives
- Fully translatable website manageable via both the CM interface and inline editing
- Support for the latest internal Siemens design guidelines
- Foundation for future development of country and global websites aligned for a consistent experience through the buyers' and users' journeys

Corporate Profile

At Content Bloom, we provide engaging digital experiences through technical proficiency, creative expertise, thought leadership and value-driven commitment to clients.

Content Bloom was founded in 2011 as a SDL Tridion consultancy. Our organization later added support for other content management systems, as well as broadened our service offering to include user experience, creative design, front and back end development, hosting and 24-hour support.

We have a unique set of services related to Content Management Systems and Web Development that help our clients improve delivery times, reduce cost and result in a greater return on their investment.

Content Bloom is an official partner with many technical and creative companies such as Adobe, Amazon, Kentico, Marketo, Sitecore and SDL.

Content Bloom is 100% owned and operated by its employees, we often offer our services free of charge to support charitable or community projects. As an example, we are currently working as part of a New Orleans Police Department task force to find technology solutions for reducing crime. Each year we donate a percentage of our profits to charities.

For more information about Content Bloom, please visit our website at http://www.contentbloom.com.

Global Offices

Content Bloom has locations in the following countries:

- USA
- Canada
- Belgium
- India

Team

Our overall team structure is split into the following disciplines:

- Management (5%)
- Technology (55%)
- Creative (20%)
- Strategy (5%)
- Support (15%)

Clients

Content Bloom's clients are typically global enterprise organizations, including:

- Siemens
- Mattel
- SNC Lavalin
- Schneider Electric
- Adidas
- ICU Medical
- NRG Energy

About Siemens PLM

Siemens PLM Software is a world-leading provider of product lifecycle management and manufacturing operations management software. Siemens PLM Software help thousands of companies realize innovation by optimizing their processes, from planning and development through manufacturing, production and support.

The Motivation

Siemens PLM Software has seen the benefits of the SDL product suite for several years prior to this project. Over time, the original implementation from nearly a decade ago was tweaked and adapted to follow the needs of the business. Although a great testament to the flexibility of SDL Tridion and the original implementation, the business drive to change the core deliverable's user experience and content architecture while aligning with the expanded online requirements of the buyer and customer journey, presented us with the opportunity to implement a fresh SDL BluePrint and content model focused on the business needs of today.

Partnering with Content Bloom

Partnering with experts in the field of Web Content Management was of key importance to our customer's success. Content Bloom's successful delivery record and reputation as an industry leader guaranteed our expertise would pay dividends throughout the project life-cycle.

Our involvement brought many benefits, including:

- Expert technical consultants with combined decades of SDL product suite and DD4T experience
- Comprehensive knowledge in the content management domain
- Access to the largest representation at the SDL MVP awards
- Directional leadership in Agile project management
- Structured approach to Quality Assurance

Agency Collaboration

Engaging with leading subject-matter experts played a large role in the project's success. The collaboration amongst multiple agencies and the Siemens' business created a clean split of responsibilities and allowed each vendor to focus on their realm of expertise.

Content Bloom worked hand-in-hand with Siemens' business and technical development teams on the technical design and implementation. Additionally, Siemens' partners included a diverse creative agency, responsible for implementing all the front-end design, and an interactive marketing agency, consulting on the latest SEO best-practices to ensure maximum search ranking.

Key focus areas:

- SDL Tridion 2013 SP1 & SDL Experience Manager
- SDL BluePrinting & content modeling best practices
- Modern principles of Java based implementation
- Agile leadership (Scrum)
- Quality Assurance leadership

From the beginning, our team emphasized solid processes built on the basis of **collaboration** and **communication** alongside an agile project management methodology.

These processes, combined with a focus on overall business understanding, in-depth gathering of business requirements, and implementation level scope details ensured our immersion in the low level details which allowed Content Bloom to engage with an immediate understanding of the business goals.

Requirements Discovery & Solution Design

The project kicked off with a week of on-site workshops focused on gathering business requirements and discussing current pain points with our collective team. The results were then transformed into a functional design and short and long-term implementation roadmaps, based around the hard and soft business milestones. Having our Business Analyst capture detailed meeting notes paid dividends later.

During this discovery, we also initiated the purchasing of any software/hardware based on our requirements and the internal infrastructure upgrade timeline. Procurement being part of the cross-functional team was important to keep the project moving. We also began the commissioning of our local and DTAP environments, as well as secure access for our remote teams.

This discovery period saw several iterations on several key functional and technical aspects and proved crucial to laying the foundation for our upcoming implementation phase while obtaining stakeholder buy-in on the functional objectives.

SDL BluePrint & Content Model

The functional design contained definition of the SDL Tridion BluePrint and production of a high-level overview of the content structure for both the ecommerce and marketing websites. Extensibility and reuse being of primary importance for both.

Transparency and close engagement between Content Bloom and Siemens were critical in designing these deliverables for the long-term success of the business.

SDL Experience Manager

During the discovery, we highlighted how installing, configuring and implementing SDL Experience Manager would be much easier from the start of the implementation rather than retrofitting the product at a later date.

Key Outcomes of This Discovery

- Documentation of the Functional and Technical Specifications, detailed enough to begin implementation
- Establishment of a solid team structure and clear identification of communication channels
- High-level project milestones organized into an achievable roadmap
- Initiation of software/hardware purchasing based on the identified technical requirements
- Commissioning of our local developer and DTAP environments
- Enabling of security access for remote teams

Agile Methodology & Communication

Communication

Throughout the project life-cycle, we enforced a standard of clear, well-defined and constant communication into our daily practices. Working as a globally dispersed team increased the importance of clearly defined communication channels.

Daily sync ups and well-structured meetings with early visibility and well-defined agendas enhanced our effectiveness.

Slack

Our weapon of choice for daily communication. Slack helped our dispersed team members keep up-to-date with the general project chat:

- Dedicated slack channels restrict conversation scope
- Sticky "Posts" helped with collaborative discussions and visibility
- Effectively reduced email by 90%

JIRA

JIRA was used to create and manage all sprints and user stories, including the ability to track progress metrics and adjust based on efficiency opportunities.

- Provided Product Owner and Scrum Master the ability to manage current and future sprints
- Defined sprints which contained multiple tickets (stories) for developers to work on

SharePoint

SharePoint was chosen as the centralized document management tool as it was already the standard within Siemens PLM Software.

- Team members ensured all produced documentation was uploaded to SharePoint
- Intuitive folder structure made searching for files quick and easy

WebEx

WebEx provided clear audio, screen-sharing, and recording for our meetings. Synchronization across Gmail and Outlook calendars ensured ease of use across time zones, which was important for our globally distributed team.

- Advanced audio and screen-sharing ensured effective and efficient meetings
- Integrated with mail and calendar apps
- Ensured no fiddling around with meeting tools; reduced overhead required to start each meeting

Agile Methodology

We employed Scrum to introduce agility into our project methodology due to its simplistic and flexible approach.

Working agile increased empirical feedback through incremental deliveries, while also giving the business the ability to pivot and adapt. It's no secret that business requirements change over time and seeking opportunity to adapt to this, even during implementation, is important.

The Scrum Master and technical / QA teams worked closely alongside the Project Manager and Product Owners to ensure that the short and long-term business goals were clearly captured and defined in the form of user stories.

Constant visibility and feedback from Product Owners throughout the entire project lifespan was paramount to driving requirements-realignment to ensure well-defined user stories that reflected the true stakeholder requirements and expectations. Identifying the channels of communication to and from each Product Owner, and their specific responsibilities, aided in smooth transition of information from the Product Owners.

Sprint Meetings

Efficient meetings were achieved by outlining our meeting schedule early in the project. We identified **what** meetings were necessary, **who** would attend and **when** each meeting would take place in the sprint.

- **Daily scrum**: Provide round the table updates
- **Sprint planning**: Prioritize and finalize sprint backlogs
- **Progress demos (2-4 per sprint)**: Provide visibility to Product Owners and other stakeholders
- **Estimation**: Estimate story difficulty
- **Retrospective**: Identify potential improvements at the end of each sprint

We also increased our productivity by avoiding "blanket" invitations and carefully considering meeting attendees.

Sprint Duration

A two-week sprint interval was based on several key benefits:

- Earlier visibility to stakeholders
- Reduced planning time per sprint
- Smaller, more efficient meetings

Technology & Implementation

Technology Stack

Our carefully chosen technology stack was based on the most modern enterprise technologies being used today. At the heart of the project was the SDL Tridion Content Manager. Adopted as a Siemens PLM Software standard prior to this project, SDL Tridion was selected due to its numerous extension points and flexibility. The benefits of localization and content organization seen during the previous engagement proved that SDL Tridion could provide the adaptability necessary to meet our project needs.

One of the key technological requirements was a clean separation of concerns between our Content Manager and application, which led us down the path of a flexible dynamic delivery implementation versus a more content manager-centric approach. The SDL DXA framework was considered; however, it had some additional functionality not required for this project and lacked some flexibility that was needed. Technical discussions and investigation concluded that we required only the core of DXA, aka DD4T, which ultimately became our chosen platform.

Application Performance

A key aspect guiding the technology stack was performance; and by utilizing several layers of caching with careful consideration around each configuration, we were able to achieve rapid application performance with a high-level of scalability. The SDL Tridion Object Cache meant that our application could reduce the amount of database calls, while the out-of-the-box EHCache, supplied with the DD4T framework, provided time-to-live based caching of our MVC models. Akamai sat in front of the previous two layers. Our overall caching solution exceeded our performance expectations. which ultimately became our chosen platform.

Implementation

With the discovery phase complete and a thorough project plan in place, it was time to begin work on the key deliverables for the project. The implementation phase, which was roughly 24 weeks long consisting of a dozen sprints, involved developers picking up tickets (stories) in JIRA which they would then implement, test and document.

A combination of automation tools and carefully selected technologies freed up developers to spend their time efficiently, and not on tedious overhead tasks such as regression tests and manual builds. Continuous integration and a detailed Git workflow allowed developers to rapidly move code through environments, while the thorough automated unit tests ensured quality and minimized risk of breaking existing functionality.

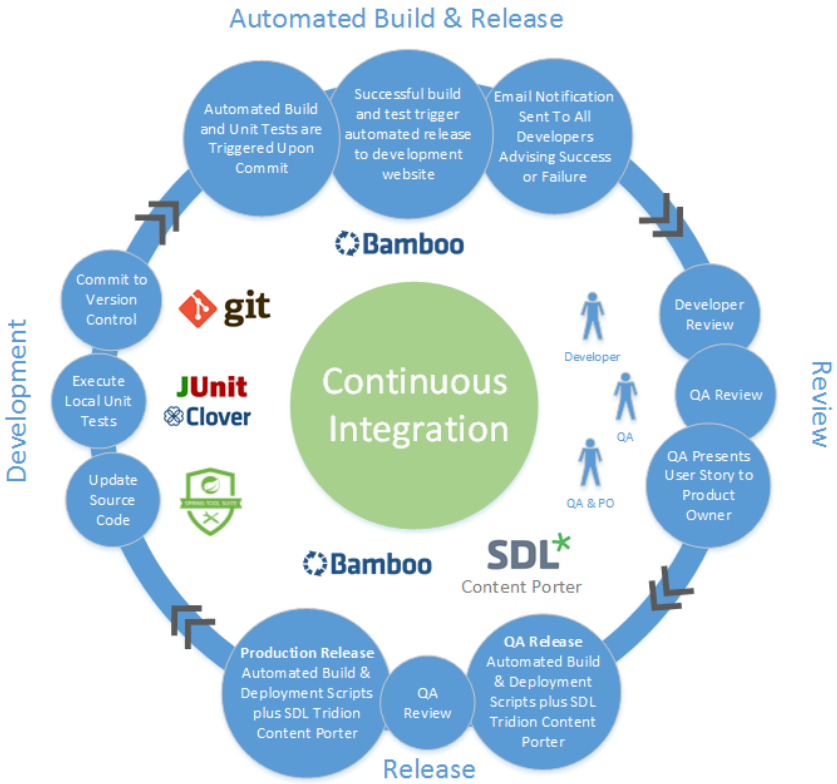
Continuous Integration, Deployment & Delivery

Continuous Integration is the process of streamlining the creation, release and testing of deliverables through software automation.

Siemens already had a considerable continuous integration environment powered by Atlassian Bamboo. Build plans powered most of the build and deployment lifecycle, including compiling code, running unit tests, deploying code through all environments, publishing updated configuration through the environment, even building and publishing Tridion TBBs.

Following Git Flow, our developers wrote and tested code locally in feature branches before merging to the development branch and pushing to the centralized Git repository.

Atlassian's Bamboo then picked up the commit and built the updated development branch. A successful build triggered two actions: (1) deploy the build to our development web server (2) email a success email to all developers. A build failure simply triggered an email to all developers advising the details of the compilation error or unit test failure.



This workflow enabled developers to focus their skills on implementation level details, while also responding rapidly to changes in business requirements.

At the end of each day, our developers knew that their contributions to the project were collectively synchronized and that the collaborative parts worked together. Integration errors rarely occurred, due to local unit testing and manual review, but when they did, they were quickly discovered and addressed.

GIT Branching

Our Continuous Integration coupled with Git branching helped organize several parallel development streams each based upon a specific user journey/feature.

Branching in this way supported multiple developers working collectively upon a feature, while retaining that separation from the master code base. Once a feature reached completion that branch was simply merged and committed to the mainline development branch which was then built and deployed by Bamboo.

Synchronizing CM Environments

It's extremely important to synchronize the release of your application and content manager (CM) updates.

SDL Content Porter allowed us to export the content manager items that had been modified during each development sprint, and then release them as part of our DTAP process. Archiving a copy of the export enabled us to follow the exact same release steps on QA and Production.

Utilizing SDL Tridion "bundles" in structured folders helped our developers track the updated content manager items by each sprint. Looking ahead, we're considering an update to the process via automated management of the modified items/bundles via the SDL Tridion Event System.

Automated Unit Testing

Automated unit tests are a great way to identify bugs early, facilitate code change/refactoring and reduce the amount of manual developer regression testing.

Siemens already used JUnit with Clover, which was integrated within our local Spring Tool Suite IDE to provide analysis of our unit testing coverage. Clover also integrates with Bamboo which gave us the chance to report on our unit testing directly from within our automated continuous integration. Knowing your tools and their integration points is essential to achieving a streamlined architecture!

Aside from ensuring completed code was not mistakenly broken, automated testing helped us ensure long-term success by reducing the overhead required to regression test modified features.

Time saved through the extensive unit tests was evident when tasks such as upgrading our DD4T version arose, which would have previously taken significant effort with an accompanied high risk of missing issues introduced by the upgrade.

Quality Assurance

Quality Assurance

A well-designed testing approach supported the development process by combing through low-level details of each completed ticket to verify that each implemented user story aligned with its acceptance conditions. A detailed testing cycle involved thinking outside of the box to push the limits of what the users and content editors expected from the implementation and how they could potentially use it, so that all angles are covered during testing.

Zephyr for JIRA

We used the Zephyr add-on for JIRA to integrate QA ticket management directly into our Agile management suite. Zephyr allowed the monitoring of our build quality via ticket creation, execution and status tracking for low-level sets of test cases. This also enabled quick regression testing using pre-existing test cases, already configured in JIRA.

Communication

The QA team relied on constant communication with both developers and the business. Early issue detection was crucial to allow the development team enough time to correct any known bugs or defects to minimize technical debt carried forward throughout the project.

Product Owner Demos

The QA team handled the demos of completed user stories to the respective Product Owner, which took place after each ticket had passed testing and all conditions of acceptance were met for the story. Not only did this remove pressure from the development team, but it also kept the Product Owners involved and engaged throughout the process. Several demos throughout each sprint gave developers the necessary time to react to feedback, while ensuring that the end deliverable was exactly what the Product Owner required.

The end-product was a fully functional, user-friendly implementation both bug free and in line with the desires on the Product Owner.

Going Forward

Success of the project was defined by our ability to clearly set and achieve all our goals and objectives.

Our collaboration transformed the existing website into a modern, content-rich platform, in line with Siemens PLM Software's global web strategy. Taking the time to evaluate and plan upfront, in our discovery phase, set a solid foundation for going forward with a clear understanding of the business vision. This allowed us to not only achieve success in the short-term but also to set the client up for sustained success for many years to come.

The attention to detail provided by all team members enabled us to create an enhanced online user experience that is well suited to today's, and tomorrow's, business requirements.