IT Insights

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Using Microsoft SharePoint 2013 to build a robust support and training portal

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The Microsoft IT team that is responsible for hosting customer and partner content for Microsoft Dynamics needed to replace an outdated and cumbersome content management system (CMS) with a solution that would better support a complex range of content and customer needs. Using Microsoft SharePoint 2013 as a new CMS, the team created a support and training portal that helps customers and partners easily find product support information, license products, and get product updates. The portal also makes it easy for content creators to author, tag, publish, and localize content quickly without mastering complex web publishing technologies.

Situation

The Microsoft Dynamics support and training portal used an old publishing platform that was nearing the end of its life cycle. Publishing content on this platform was challenging, and customers and partners often struggled to find the information they needed.

Solution

Microsoft IT used SharePoint 2013 as a CMS to create a state-of-the-art support and training portal that integrates product information and updates from a wide variety of sources, uses a consistent model to help customers and partners solve problems, and makes answers to product questions easy to find in searches.

Benefits

- Improves discoverability
- Responds quickly to market demand
- Provides a robust user experience
- Consolidates diverse systems
- Enables self-support capability
- Simplifies authoring

Products and Technologies

- Microsoft SharePoint 2013
- Open-source and standard web technologies

Situation

Microsoft Dynamics is one of the most complex product families that Microsoft supports. Training and support content must cover a multitude of products and product versions, each having different user bases and unique security, business, and resource needs. Almost all Microsoft Dynamics products involve a partner who is certified to sell, implement, and support the product. Partners are vital to the Microsoft Dynamics business. Microsoft Dynamics products involve complex software and support highly sophisticated business processes, which partners review, optimize, and customize for customers.

Although partners provide some customer support, most customers come to Microsoft for self-help and training. In the old CMS, Microsoft partners and customers used separate web portals to access Microsoft Dynamics product support information, license products, and find product updates and patches. This portal isolation and several other limitations hindered the productivity of both partners and customers. The following are some of the challenges and limitations of the old CMS:

- **The user experience was unintuitive and required constant customization**. Because of rigid page construction, every new user-specific page design required a new custom template. This limitation resulted in an inconsistent and unattractive user interface. Content was hard to find and related content was disconnected, which led to excess support requests from users who were unable to resolve questions on their own.
- **Search results were unproductive**. Often, customers and partners found content only if they already knew where to look for it. To begin a search, a user had to first filter by category. In addition, keyword searches did not always produce accurate results, search results were not prioritized by relevance, and an unstable search index caused Search Center downtime.
- **Authoring was painful**. There was no standard process across all sites and subsites for authoring and approving content. Because authors had little control over the publishing process, they often needed support from the IT user support and operations teams. Localizing content was also a difficult manual process.
- **Publishing tools were time consuming**. The workflow for adding content forced authors to concentrate on formatting and positioning content (and often on coding HTML and cascading style sheets (CSS)) instead of on content quality. Authors also had to manually reinsert and reformat the same content on many pages, creating content inconsistencies over time that made reuse of content impractical or impossible.
- **The platform was not scalable or extendable**. The Microsoft Dynamics team was aggressively trying to increase the user base for the customer and partner portals while introducing new products and trying to gain market share. The CMS was an obstacle to these goals because it was hard to scale and did not offer a structured, streamlined method for onboarding new products.
- **Integration with other portals was difficult**. Microsoft business teams were creating separate infrastructure and web experiences. Because the old CMS lacked the capability to aggregate these experiences through cross-site search, the user experience was broken and confusing.

Solution

The primary business need was a platform that could scale and adapt to the changing needs of the Microsoft Dynamics business. Another necessity was the ability to integrate the portal with the business's commercial enterprise resource planning (ERP) solution and the customer relationship management (CRM) solution. Microsoft IT needed to create a holistic user experience that would integrate customer and partner platforms with the product experience. Integration would also expose important information from ERP and CRM solutions to users in the portal in such a way that if an integrated system experienced downtime, users could still access all other portal information.

The first step in creating a solution to meet the needs of the growing Microsoft Dynamics business was to analyze the existing site structure and determine the specific requirements for the new platform. Microsoft IT identified the following requirements:

- The ability to author partner and customer portal content separately, as well as the option to develop single-source content (content that is created once and can be used multiple times and in multiple locations) to display in both portals.
- Better management of the variety of security, business, and resource needs of the multitude of Microsoft Dynamics products and users.
- Support for multilingual content management to allow publishing of content based on regional product availability.
- Ability for regional authors to review content before it goes live in their region.
- Designated Search Centers for each region, to provide content that is based on regional needs.
- Dynamic content display based on the type of page that a visitor is viewing.
- The ability to scale rapidly to support additional users while maintaining performance standards.
- Intuitive user content filtering based on metadata, and simple promotion of search results and management of relevance.
- Ability to integrate with other portals such as Microsoft Knowledge Base and the Microsoft Dynamics CRM Community.

After analyzing its requirements and the available tools, Microsoft IT determined that using Microsoft SharePoint 2013 as a CMS for the Microsoft Dynamics portal would be an excellent solution. SharePoint 2013 introduced new simplified content management capabilities, such as:

- A search-driven architecture that decouples the presentation and rendering environment from the authoring environment.
- Integrated search that provides centralized search technology administration.
- Search analytics that better supports the ability to manage relevancy and boost content.
- Cross-site publishing that lets authors create content once and use it anywhere and in any way.
- Managed navigation that provides a robust navigational framework tied to metadata that enables contextual content.
- Term-driven pages that let developers render content dynamically.
- Support for current web standards such as HTML5 and CSS3, which enables improved accessibility.
- Client-side rendering that simplifies customization of the presentation layer.
- Metadata mapping that lets developers converge metadata from external systems.
- Variations that support multilingual sites.
- A pluggable architecture that lets developers add site components based on demand without rebuilding architecture or implementing a complex deployment.

Solution architecture

To take advantage of some of the new capabilities of SharePoint 2013 and deliver a solution that separates content authoring from content rendering, Microsoft IT built an architecture that decouples the two by using cross-site publishing, as shown in Figure 1.

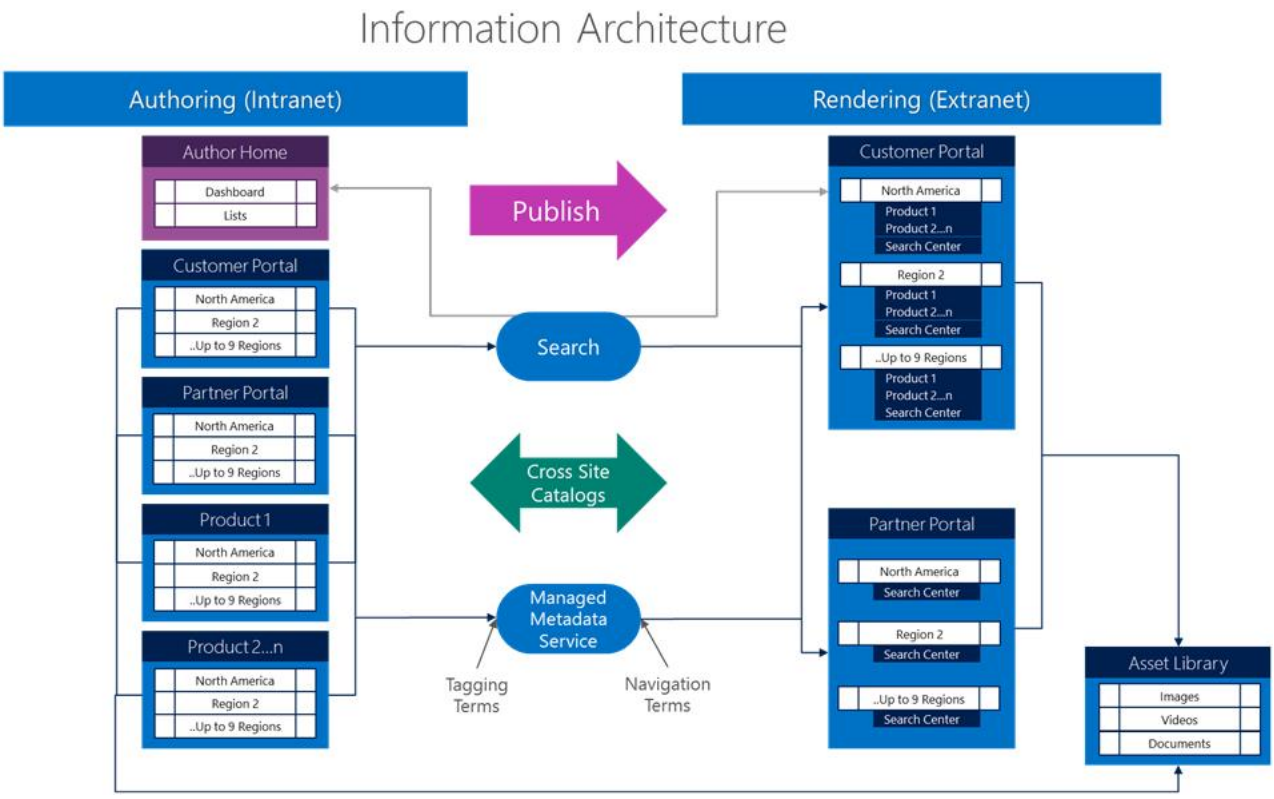

Figure 1. Information architecture for the SharePoint 2013 solution

The solution uses one SharePoint 2013 farm and includes three major components in the architecture: authoring, cross-site publishing, and rendering.

Authoring

To simplify and streamline the solution design, Microsoft IT used the decoupled architecture functions of SharePoint 2013. They created two site collections for site authors—one for the partner portal and the other for the customer portal—and a site collection for each Microsoft Dynamics product that is shared between the customer and partner portals. The SharePoint 2013 cross-site publishing feature allows display of single-source content across both the partner and customer portals. Authors create and maintain content once in the authoring portal, and meta-tags locate the content anywhere that it is configured to appear in rendering. This architecture also provides controlled security boundaries, which allows granular control of viewing, authoring, and approval based on groups, sites, and site collections.

In addition to meeting the requirements of single-source content management and enhanced security controls, the SharePoint 2013 authoring environment also provides support for multilingual content management and offers a simplified content authoring environment.

- **Multilingual content management.** Microsoft IT uses the SharePoint 2013 variations feature to support multilingual requirements and publish content to different regions. Governance for regions is a standard component of the variations framework. When an author of the source

region publishes content, SharePoint 2013 publishes that content to all regions in a draft state and initiates a workflow.

Approvers in different regions decide what content to publish and when. This gives the local market experts decentralized control over the content and allows them to localize it before it goes live. Some Microsoft Dynamics products are not sold in all regions, but multilingual variation allows each region to publish content based on regional product availability.

- **Simplified content authoring solution.** The old CMS was optimized for the end user experience; authoring and modifying content required extra effort. The SharePoint 2013 content experience is designed and optimized for the experiences of both of end users and authors. Microsoft IT used the SharePoint 2013 templates and term-driven pages feature to simplify authoring so that authors need only choose between two content types. Every page on the site is rendered from one of three page layouts. This reduction in template types is in stark contrast to the 131 content types and 27 page layouts (which all required heavy customization) that were managed in the old CMS.

Cross-site publishing and rendering

Cross-site publishing is the layer between authoring and rendering that adds search, cross-site catalogs, metadata, tagging, and navigation. Published content is not categorized by product for portal users. As illustrated in Figure 1, from either the partner portal or the customer portal, users can find content anywhere across 13 Microsoft Dynamics product sites—including variation sites and sub-webs—for a total of 473 content sources.

SharePoint 2013 uses managed navigation to determine the content displayed by tagging content with hierarchical metadata. This feature influenced how Microsoft IT planned its new portal navigation with a focus on discoverability. Previously, users found content through traditional multilevel navigation. With SharePoint 2013, category pages can expose summarized, filtered content, so another level of navigation is no longer necessary. For example, as shown in Figure 2, the Documentation category page resides under a section called Deployment. Contents of the Documentation page are filtered and categorized by content type, such as How-To Articles, User Guides, and White Papers.

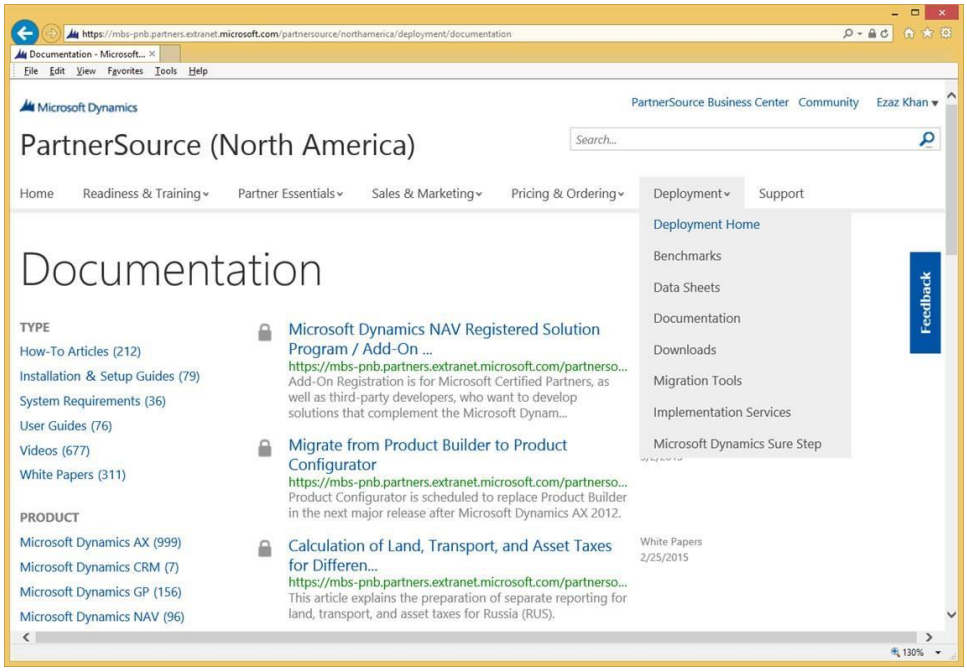

Figure 2. Example of content navigation with SharePoint 2013

Microsoft

Search-driven content

The search experience was one of the biggest struggles for customers and partners who used the old CMS. The search functionality was wizard-like and ineffective, business partners had limited control over promotion of popular search results, and regional sites lacked the capability to provide support targeted at locally available products. The search capabilities of SharePoint 2013 addressed these issues and contributed to several other significant improvements.

Ranking and refining searches

Use of integrated, metadata-driven search refiners provides a fluid search experience, similar to that of Bing, with the added benefit of content filtering. SharePoint 2013 also has an analytical component that helps improve relevancy by using a ranking model and query rules to provide promoted results. Microsoft IT created one Search Center per region and configured result sources to limit results by region. Each Search Center provides the product refiners required for each region to filter to the appropriate products. Tagging of terms also helps site users refine their search results.

Metadata mapping without custom code

Information channels outside the partner and customer portals expose additional Microsoft Dynamics–related information to site users. The old system integrated eLearning, the Microsoft Dynamics Community, and the Microsoft Knowledge Base systems, so that users could search and view content summaries from these systems without going back and forth. These external systems used different taxonomy from the CMS. (For example, an eLearning source might use the term *Axapta*, and the old CMS might use *Dynamics AX*.) This required complex customization to map the taxonomy.

SharePoint 2013 uses property extraction to facilitate metadata mapping without the need for custom code. After using an API to configure the mapping, SharePoint 2013 takes care of the complex work of mapping to give different terms the same meaning. The SharePoint Enterprise Search Center template allows for easy configuration of search verticals, or result sources, to accommodate multiple content sources.

Federated search

The new platform not only had to support current system integrations, it also had to allow future integrations. This approach led to more source integration with the CMS. SharePoint 2013 supports federated search that can delegate crawling to search providers like Bing and display results embedded in the customer and partner portals. MSDN and TechNet are integrated into the site by using federated search.

Contextual search

Proper categorization of content, powerful search tools, and authoring content once and using it in multiple places all contributed to improving content discovery. A site visitor looking for information can search across multiple sources, including the Microsoft Dynamics Community, from one place.

Content from both internal and external sources is easily discoverable and filterable. For example, as shown in Figure 3, a site visitor looking for tax updates for Dynamics AX can type “tax update” into the Search box on any Microsoft Dynamics AX page. Results are delivered, in which the user can filter by Product or Customer Document Type, and then on the content source, such as Community, KnowledgeBase, E-Learning, or CRM Customer Center.

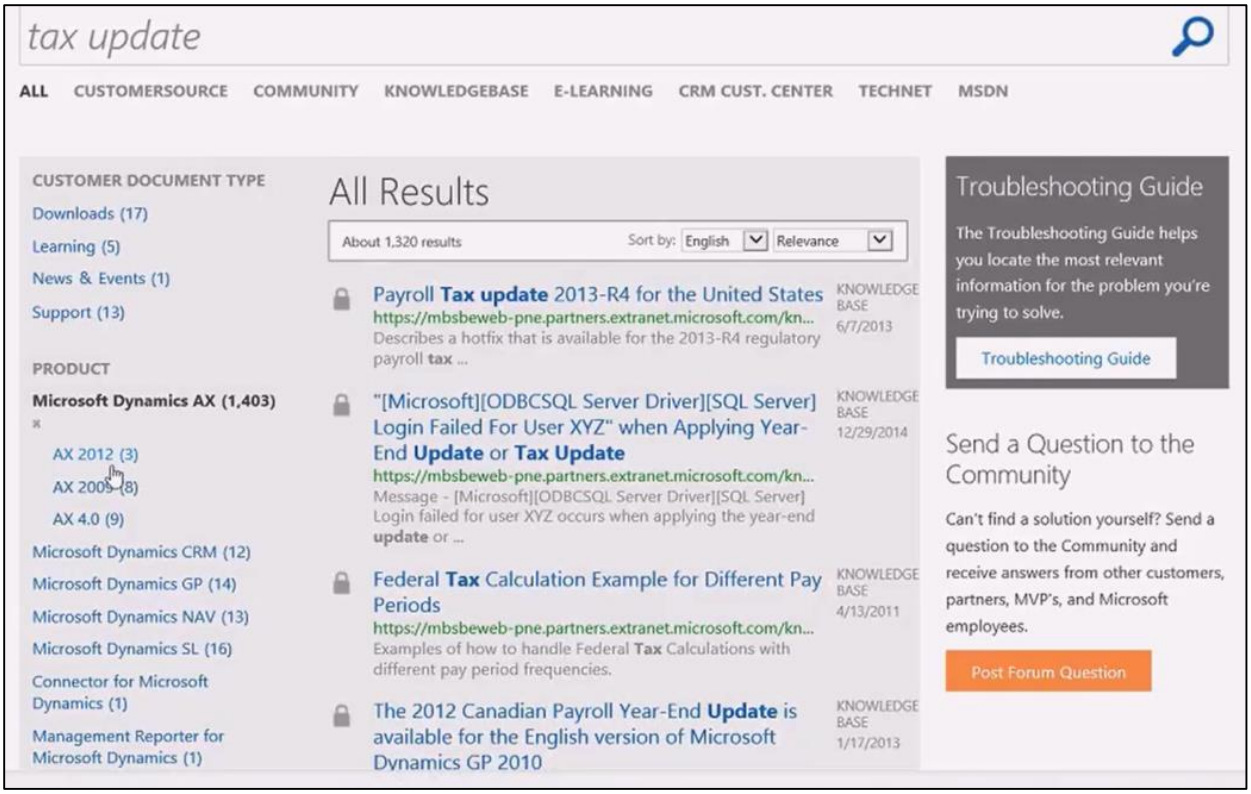

Figure 3. Results of a search using SharePoint Search in the SharePoint CMS

Context-sensitive information

The ability of SharePoint 2013 to display context-sensitive information helped Microsoft IT create powerful, flexible information discovery tools that enable more relevant results for self-support and, in turn, reduce support calls. For example, a site visitor on the Documentation page might see a widget that displays the most recently added and most-often viewed documents, whereas a user on the Downloads page might see a widget that displays available hotfixes. When site visitors browse to a term-driven page, those terms provide context for display of information that is relevant to users on that particular page. Context-sensitive information derived from term-driven pages lets SharePoint Search learn and display related content and essentially function as an intelligent search engine.

Integration with external systems

SharePoint 2013 integrates the customer and partner platforms directly into the product experience and allows integration with customer ERP and transactional data in the portal. This exposes important information to users, such as pending agreement renewals and service plan status notifications, when they view their Online Services dashboards.

This transactional data is exposed through use of a RESTful web service, which takes advantage of user control in SharePoint to call the Representational State Transfer (REST) service to display information in the portal. An architecture that decouples transactions from other systems allows flexibility in releases that facilitates independent system enhancements.

Usage, performance, and high availability

The usage statistics for the new SharePoint 2013 portal for Microsoft Dynamics are impressive. Microsoft IT executed comprehensive performance testing by using server architecture that the Microsoft product launch team and product team recommended. To support the growing business of

the Microsoft Dynamics group, the new platform was designed and tested to support three times the user load of the retired site.

Table 1 shows usage statistics for the final month (December 2013) of the retired CMS portal and May 2015 for the SharePoint 2013 CMS. The two portals produced similar distinct user statistics, which demonstrates a strong interest in the new portal. The increase in site visits and page views demonstrates more overall usage.

Table 1. Usage data for SharePoint CMS

Distinct Users (average per day)	Site Visits (over 30 days)	Page Views (average per day)
New system: 22,000	New system: 100,000	New system: 2.5 million
Old system: 18,000	Old system: 50,000	Old system: 90,250

The chart in Figure 4 shows the current length of time between visits to the portal by authenticated (non-anonymous) users. Frequency of portal visits remains high, with 57 percent of users returning within a day and 83 percent returning within a week.

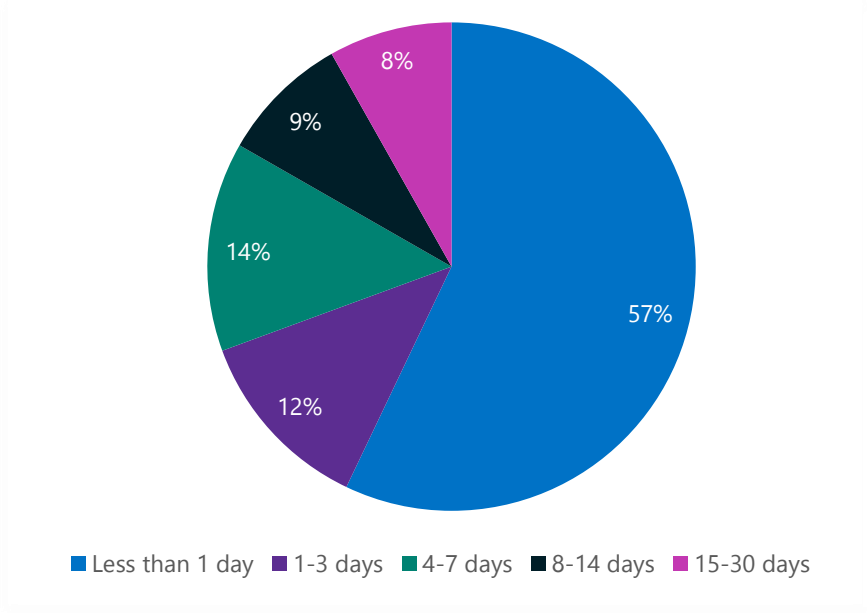

Figure 4. Frequency of portal use by known users

The new platform can be scaled up and out to support increased user volume as Microsoft IT enhances the portal and makes it the gateway for all Microsoft Dynamics content. More memory and processing power can always be added to the current servers. SharePoint 2013 provides pluggable architecture to scale out. As user demand grows, more web front-end servers can be added. Because content is served by search (specifically, the query processing component), more application servers can be added to the existing farm, which can be dedicated as query processing servers to support more users. Similar approaches can be used for analytical processing and crawling.

Benefits

The new support and training solution can show internally and externally generated content and external transitional content in a single portal. The benefits of this system include:

- **Improved user satisfaction.** Based on a Microsoft user survey, partner satisfaction increased by 12 percent.
- **Increased user visits.** Average monthly customer visits increased from about 50,000 with the old system to about 100,000 with the new system.
- **Faster results.** Although overall page views increased, page views per visit decreased by 34 percent because customers found what they need faster.
- **Increased efficiency.** Microsoft IT consolidated its InformationSource portal under the new platform, which made the content easier to find and eliminated an expensive, duplicate infrastructure used to store thousands of videos and training materials.
- **Faster content changes.** The time required to publish a typical piece of content decreased from 90 minutes to just 15 minutes.
- **Faster support for new products.** The time required to launch a new support site for Microsoft Dynamics decreased from 12 months to two months.
- **Better availability**. Feature release time decreased from 12 to 24 hours to approximately 20 minutes, with very few support incident calls.

Best practices

- Plan content with the authoring experience in mind. Because authoring and rendering are decoupled, rendering need not be a focus of content creation.
- Plan for taxonomy. Because navigation and refiners are driven by tagging taxonomy, content navigation and filtering should be considered when taxonomy is defined.
- Practice appropriate metadata tagging taxonomy for content so that it can be presented to the right audience at the right time.
- Carefully plan your Search Center. You have the flexibility to keep it broad or target specific content, depending on your needs.
- Limit customization of SharePoint 2013, which can be time consuming, costly, and problematic during upgrades. Instead, use configurations of standard features whenever possible.
- Prefer client-side customization, which is lightweight and easy to update and maintain. Client-side customization does not put dynamic-link libraries (DLLs) on the server or run on the server, so even a poorly written customization will not bring down the whole server.
- Measure usage before, during, and after new solution deployments to help understand areas of the solution that resonate with users.
- Have a delta deployment strategy during your initial portal development. Plan ahead for incremental feature additions or changes.
- If you plan to support a large user base in the future, do performance testing and understand the hardware and service configurations that will be required to scale when needed.
- If you plan to integrate your portal with external content systems, carefully consider your content needs and design your system so that external content can be added systematically.
- Use the service layer for external transaction system integration to allow decoupling from deployment and other systems. The portal will still be available to users even if the transaction system is down, and integration will be easier to maintain and upgrade.

Resources

SharePoint 2013 TechNet Library
https://technet.microsoft.com/en-us/library/cc303422.aspx

SharePoint at Microsoft Course
http://www.microsoft.com/itshowcase/Courses/Classroom

Plan for variations in SharePoint Server 2013
https://technet.microsoft.com/en-us/library/cc262404.aspx

Microsoft Office Patterns and Practices
http://dev.office.com/patterns-and-practices

Microsoft SharePoint Server 2013 Architecture
http://download.microsoft.com/download/8/1/9/8196850D-45C7-48AB-A84A-918C7C2C3530/sps-2013-architecture-overview.pdf

Product Line Architecture (PLA) Team Blog
http://blogs.technet.com/b/pla/

SharePoint 2013 Product Line Architecture and Strategy
http://channel9.msdn.com/Events/SharePoint-Conference/2012/SPC007

Products and technologies

Microsoft SharePoint service applications

- App Management Service
- Application Discovery and Load Balancer Service
- Managed Metadata Service
- Search Administration Web Service for Search Service
- Search Service
- Secure Store Service
- Security Token Service
- SharePoint Server ASP.NET Session State Service
- State Service
- Usage and Health Data Collection

Modern user experience technology

- HTML5
- CSS3
- Open-source libraries
  - jQuery 1.9
  - jQuery UI 1.10.2
  - jQuery Validation 1.11.1
  - Modernizr 2.6.2

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