Solution Assessment Report



Final Report

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1. Executive Summary

This document represents the first in a two part series of artifacts generated as part of the PnP Transformation process. Recorded here are the findings following an analyses of Contoso’s use of SharePoint and the customizations need to satisfy the business requirements of Contoso’s.

Contoso’s corporate users utilize SharePoint primarily for document storage and collaboration using Team Sites, Project Sites, Document Centers and Personal OneDrive for Business libraries. Historically Contoso had customized these sites more heavily with a unique look and feel as well as strict metadata collection. However, the recent trend has been to embrace more of the out-of-box experience in an effort to minimize investment costs and maximize the platform value returned. The remaining customizations were either localized to the administrative site or those deemed mandatory for security and compliance governance.

Reducing the invasiveness and extent of the customization was the right long-term decision for Contoso and will result in immediate cost reductions and functionality benefits. However in moving to the next version of the Office 365 the effects of the previous customizations will still need to be addressed in the form of data migration. This will be discussed more during the Solution Design phase.

The Contoso’s Solution Assessment was approached from multiple angles. The primary purpose of the assessment is to analyze how the future Office 365 environment can be comply with the current business and technical requirements. As part of the assessment, Contoso’s SharePoint vision was also clarified and recorded as guidance for roadmap planning.

1. Vision for SharePoint

The following vision statements define the high-level principles of the Contoso SharePoint Vision: Cloud ready, Agility for business, Cost efficiency and Customize for business value.

* 1. Cloud ready

All solutions and functionalities should be developed so that they can be supported in both the private and public clouds. This provides flexibility with the hosting platform and deployments are not bound to a single platform in the future.

Customizations developed for Contoso platform should be in line with the SharePoint product roadmap to ensure agility for the deployments. By using the app model as the customization pattern, changes can be applied to sites without the constant need of IT personnel to perform detailed testing.

* 1. Agility for business

App model will result in faster deployments. All projects should aim to minimize complexity, concentrate on the primary objectives, and then offer the actual business functionality in the simplest possible way.

App model supports deployments of new sites and elements to site collections without any downtime. This model reduces the service or maintenance windows.

* 1. Cost efficiency

Minimize the unnecessary complexity involved with customizations if they do not provide direct business value. Use out of box features as far as possible.

Each required function should be evaluated against the value gained and the cost associated with the development and maintenance phase.

Minimize on-premises investments in SharePoint and gradually eliminate the need for the on-premises deployments in favor of cloud options.

* 1. Customize for business value

Each customization and project should have a clear business case (ROI) taking into account short and long-term costs associated with development, training and maintenance.

Out-of-the-box functionalities should always hold priority and customization should only occur if out of the box functionalities or apps from public market place cannot provide similar functionality.

Use the app model whenever possible to minimize operational impact of the customizations and to provide flexibility with the hosting options.

1. SharePoint Assessment Report

The **Contoso** brand represents a suite of technology capabilities that Contoso has made available to its corporate users. Among those capabilities are: portals, document repositories (shared & personal) and collaboration (including social features). Today SharePoint Server 2013 provides the platform for document storage and collaboration using Microsoft’s Office 365 cloud subscription.

As mentioned previously, Contoso’s move to Office 365 will result in a number of benefits. However, part of changes required to achieve the Office 365 environment includes eliminating customizations that require modification of the Windows Server file system artifacts, including .NET assemblies, ASP.NET pages, configuration xml, registry changes, and any other file artifacts. These customizations are collectively referred to as Full Trust Code (or FTC).

To become compatible with Office 365 the ultimate goal will be to transform those customizations into more modern solutions based on SharePoint’s new Cloud App Model (or CAM). In CAM, customizations to SharePoint (beyond that which SharePoint allows through supported configuration) are still integrated with SharePoint, however special code and other supporting artifacts are hosted externally – executing within the browser or another hosting environment such as Microsoft Azure.

This section reviews the requirements leading to those customizations then analyzes the concerns and possible alternatives to achieve the same effects.

To begin, Contoso’s overarching principals in delivering this to its users include:

* Leverage out-of-box functionality whenever possible to minimize investment and maximize value from ongoing innovation in the O365 cloud platform.
* Make the system discoverable with minimal user training.
* Allow the users to make intuitive choices based on the consistency built into the platform and customizations.
* Adhere to security and compliance guidelines put forth by communication, security and compliance teams at Contoso.
  1. FTC solutions analyzed

The table below itemizes the SharePoint solution packages reviewed and the functionality each provides. Subsequent sections break down the functionality into general capabilities and examine the business drivers for each of those capabilities and an analysis of the customization supporting each.

|  |  |
| --- | --- |
| Solution (.wsp) | Features |
| **Contoso.SharePoint.SafetyNews.wsp** | * Displays safety news articles from all sites and subsites |
| **Contoso.SharePoint.Branding.wsp** | * Adds User profile information on the header of the master page * Adds custom navigation to the master page * Creates the custom Contoso footer * Deploys the custom master page and page layouts |
| **Contoso.SharePoint.Provisioning.wsp** | * Hides custom actions and enable record declaration setting * Prevents the creation of sub sites, * Hides Sites and Workspaces, * Hides Manage Site Features, * Restricts list creation |
| **Contoso.SharePoint.DocRetention.wsp** | * TimerJob - Sends Reminders to document owners * ListInstance - creates list instances for Document Retention List Templates - Creates List Definitions, Site Columns and Content Types for Document Retention * ListTemplate - Creates List Definitions, Site Columns and Content Types for Document Retention * WorkflowActivity - used for activating workflow actions. |
| **Contoso.SharePoint.LibraryReceivers.wsp** | * ListEventReceivers * ListInstances |
| **Contoso.SharePoint.NewsAlerts.wsp** | * Timer job to send “Weekly News” emails to Contoso Staff |

* 1. Branding

Aspects of Contoso’s customizations which relate to a site’s look and feel are referred to as branding and are discussed here, however they are actually applied during the provisioning operation.

* + 1. Customer requirements

Contoso has decided that it will retain the native (out-of-box) look and feel of SharePoint and O365 as a whole, to minimize the cost of ownership and maximize the value added by current and future enhancements in the platform.

However, there still exists some system requirements to store commonly used files and artifacts, such as JavaScript (.JS), XML, images (.JPG, .PNG, .GIF).

* + 1. Considerations and workarounds

The decision to not replace or modify master pages has already benefited the migration to Office 365 by averting a cumbersome process of recreating side-by-side master pages and re-linking existing sites with new master pages.

Currently in FTC **files and artifacts** were created single-instance by including them within the FEATURES directory or as Template Files in the SharePoint solution manifest. These file were then ghosted into many Collaboration or Personal sites during feature activation. Without FTC this is no longer possible and another approach must be engineer to allow single instance storage of dependent files and artifacts.

Note: It is assumed here that single instance storage of dependent files is preferable due to face efficiencies and ease of updating and maintenance. However, it is also possible to duplicate each file into the content of each site where it is needed.

* 1. Provisioning

The process by which a site is created, secured and configured with functional differences is referred to here as Provisioning. Contoso uses a custom provisioning process to adhere to its policies and procedures. The tailoring of a site’s look and feel is discussed ahead in the Branding section.

* + 1. Customer requirements

Each Contoso user is entitled to a personal site (OneDrive) for file storage and can acquire additional Team Sites for shared business use. Sites are requested electronically and their creation is contingent on a number of logistical, legal and policy guidelines including:

* Only certain sanctioned site types may be created, including Team Site, Project site and Document Center. Sites or Site Collections may be created.
* Site user experience is left out-of-box by design, to minimize long-term customization maintenance and maximize platform value. This includes structural aspects such as content types.
* Assignment of 2 owners, who have been properly trained
* Training validated automatically against a manual import of completed training from Contoso’s Learning Management System
* Appropriate business purpose
* Compatible technology choice
* Legal screening by business area
* Valid URL selection and metadata – sites are created as sub-sites within existing sites or site collections whenever possible. If no suitable parent site exists another site collection is allocated.
* SharePoint administrator final approval and scheduled for creation
* Users may not access other user’s requests
* Requests number two per day on average, currently approximately 2,500 are recorded
* Site usage statistics shall be collected for use in capacity management and strategic planning.
* Non-personal sites (My Sites) are aged and expire after one year, user may request an extension, otherwise the site is deleted manually by the administrator.
* Longer term Contoso is expecting to consolidate more workloads of the brand over to SharePoint, including Publishing and Community portals for broader and more formalized information management.

Once created site owners are empowered and restricted in the following ways:

* Owners are granted Full Control to the requested site, however not Site Collection Administrator
* Sub-sites may not be directly created, instead they must be requested. Sub-sites are never allowed for personal sites.
* Additional lists may be created, from an approved subset of available SharePoint list types
* Owners of Document Center sites are prohibited from creating any additional lists by Contoso policy
* Users are restricted from using certain settings (ex: Site Collection Features, Site Features). System administrator are permitted to bypass this restriction for maintenance.
  + 1. Considerations and workarounds

Contoso’s maintains a central administrative site, dubbed the SharePoint Framework. The site collection is the foundation for provisioning, compliance and some records management activities (see 3.4 and 3.5 below).

Provisioning in particular utilizes a custom list definition encompassing custom content types, custom forms and workflows utilizing a coded workflow activity. Retracting the associated WSPs would render the provisioning system inoperable because of the missing file dependencies of the site columns, content types, new/edit forms, the list definition itself and the .NET assembly.

SharePoint maintains a permanent link between the database object and the XML Element declaration files used to instantiate them – this is often referred to in SharePoint as “**ghosting**”. This term which is popular when referring to ASPX pages also applies to some XML Element declarations.

In some cases that relationship can be severed by un-ghosting, which has the effect of duplicating the file-based structure into the database where it can be retrieved by SharePoint going forward. Examples of items that can be un-ghosted include: **Site** **Columns and Content Types**. Unfortunately **List Definitions** (aka <ListTemplate>) do not behave as such and instead the list data must be first copied to another compatible list (based on a standard list type), before removing the original list and ultimately retracting the **Contoso.SharePoint.Provisioning.wsp** containing the <ListTemplate>.

Site Collections are created manually by the SharePoint Administrator however sub-site creation from completed site requests are automatically created through the use of a SharePoint **Timer Job**. If this timer job remains part of the transformed solution it would have to be implemented remotely in some external server/service, such as an on-premises Windows Server, or perhaps in Azure as a scheduled Web Job. The implementation can remain in C# procedural code, however the dependency on the SharePoint Server API would be replaced by the equivalent SharePoint Client Object Model (CSOM). Additionally, a trusted service account is needed because there would be no concept of “Elevated Privileges” in the external hosting environment. Preferably in scenarios that require “Elevated Privileges” the use Application Only Permissions is recommended.

**Event Receivers** are used to provide additional custom processing when a Site, Web, List or Item is affected. This procedural code is currently loaded from a .NET assembly found in the Global Assembly Cache (GAC) on the SharePoint server. To be CAM compatible this code has to be relocated to a remote hosting location and refactored into a **Remote Event Receiver** which uses CSOM or REST interfaces to communicate back to SharePoint. Additionally, any synchronous event receivers (ex: WebAdding, ItemUpdating, SiteDeleting) will need to be re-coded as asynchronous event receivers (ex: WebProvisioned, ItemUpdated, SiteDeleted) as Remote Event Receivers are exclusively asynchronous. This implies the developer no longer has the ability to “cancel” an event, as they are only called after the event is complete.

**Feature Receivers** are being used to perform additional provisioning or setup/cleanup on the current site collection or web as a feature is activated or deactivated. For example, creating groups or adding the Content Editor Web Part to the NewForm.aspx or EditForm.aspx on the Request list. Similar site provisioning work can be done using an **App Event Receiver** included in a **Provider Hosted App**; or perhaps through other externally hosted code (ex: console application, Web Job, Windows Service).

Supplemental provisioning steps are also implemented through **Feature Stapling**, where a named feature is automatically activated by SharePoint upon successful creation of a specified site type. Custom Stapling is not available in Office 365 therefore additional provisioning logic must be moved to one of two areas. For Collaboration sites, provisioning can be added to the **scheduled process** which creates the site. Personal sites can be provisioned through a centralized **batch process**; or by means of JavaScript injected in a common landing page. This landing page can utilize a **hidden Provider Hosted App** to asynchronously access the personal site and perform the necessary provisioning steps.

**Web Parts** also exist for page redirection and Administrative Edit forms for additional information on modern implementation options for Web Parts. Redirection in particular may be implemented through a **Custom Action** using a **ScriptBlock** or **ScriptLink**.

* 1. Records Management

Aspects of compliance which relate to special treatment of information based on importance, confidentiality or retention is discussed here as the topic of records management.

* + 1. Customer requirements
* Documents stored in shared sites which are seven (7) years or older, regardless of the type, undergo an automatic disposition process. This is done for both legal compliance as well as farm capacity management.
* Site assets and items in the Style Library folder are considered site-rendering artifacts and are excluded from expiration.
* A user or administrator can view a list of expiring documents.
* Expiring documents may be …
  + reassigned to another owner
  + renewed, thus resetting their expiration window
  + ignored
  + manually deleted if appropriate
* The action taken on an expiring document needs to be subsequently logged.
* Standard SharePoint content types and site column should be chosen over custom to minimize the impact on end-user’s productivity and increase adoption.
* Currently considering using SharePoint’s Record Center functionally in order to create a robust File Plan and will likely use the eDiscovery capabilities of Office 365.
  + 1. Considerations and workarounds

Choosing standard content types for the majority of document storage pays off during migration to Office 365 as those content types do not need to be systematically “un-ghosted” by an update utility prior to deactivating the corresponding features and removing the solutions from the farm.

**Information Management Policy** kicks off workflow with several custom **Workflow Activities** which processes the expiring document. These activates are not compatible with Office 365 in their current form, however the business logic could be factored to one or more **oData Web Services** called by the new Workflow Manager’s **Call HTTP Web Service** action. Although SharePoint 2013 backwards compatible with 2010 workflows, the Call HTTP Web Service action is only available with new workflows built with SharePoint 2013 declarative workflows.

* 1. UX Components

Any remaining aspect of the end-user’s experience with SharePoint that has not been discussed in previous sections is recorded here as a UX component.

* + 1. Customer requirements

The experience of shared collaboration, storage and personal sites remains largely unaffected, except for the customizations necessary to support compliance and other operational/administrative mandates.

Prior to June 2013, most existing sites remained in SharePoint “2010” mode – approximately 1000 site collections. Since then they have been actively converting to “2013” mode, currently at a rate of approximately 150 per week. The central site collection will be the last to cut over due to its level of customizations.

* + 1. Considerations and workarounds

Runtime modifications to rendering pages takes place in the browser using delegate controls and client-side JavaScript and HTML injection. Because delegate controls are hosted in the file system these may no longer be used to intervene in ASP.NET page rendering pipeline. Alternatively, JavaScript and HTML may still be injected by utilizing host-web custom User Actions with ScriptBlocks or ScriptLinks. (see 3.4.2 above)

**Web Parts**, **Server Controls** and **User Controls** are all similar in that they ultimately derive from an ASP.NET “Control” though each may be used for a slightly different purpose (in/out-zone, delegate controls, etc.). All of which constitute FTC and cannot migrate to Office 365 without a transformation. Some possible approaches include:

* SharePoint App Part – often suitable for web parts, offering larger chunks of functionality presented in the main content area of a page.
* HTML injection – may apply to smaller controls which present only small informational windows or clickable links (ex: server controls).
* Out-of-box – advances in SharePoint 2013 (ex: Content Search web part) may obviate the need for a custom web part.
  1. 3rd Party Software

Software not written by, or otherwise written through contract for, Contoso’s is considered 3rd Party software. Though the actual code and artifacts were not reviewed the business purpose and benefit from the software was quantified to assist Contoso’s in planning an alternative approach to achieve a similar benefit.

* + 1. Customer requirements

Additional turn-key software has been procured and installed to provide Contoso with enhanced system administration capabilities, including:

* Ability to search staff members based on their skill and years of experience
* Ability to search Fabrikam location by entering the Zip Code.
* Content migration from site to site, or on-premises systems to O365
* Importing files from a conventional file system into SharePoint
* Operational and administrative assistance
* Gather usage statistics on collaboration and document storage sites
* Report on usage statistics gathered

The current software packages include:

* **TailSpin -** Provides skill finder capability
* **Fabrikam -** Provides location finder capability
* **WingTip – Content Migration**
* **Reskit – Web Analytics**
  + 1. Considerations and workarounds

Currently the Wingtip’s Migration API is installed in the Contoso’s farm; this cannot be transferred to Office 365. Contoso should consider other third party offerings that offer migration capabilities using web services.

**Reskit** analytics is implemented through HTML injection of the master page through a **Delegate Control**. Custom delegate controls are not compatible with Office 365, however a similar HTML injection can be accomplished through a custom **User Action**, either through a **ScriptBlock** or **ScriptLink**.