

CONTENT

AMPLIFY SHAREPOINT BUSINESS VALUE WITH TOTAL CONTENT INTEGRATION

A TECHNICAL WHITE PAPER

IT MANAGEMENT IS HIGHLY SATISFIED WITH SHAREPOINT'S VALUE, BUSINESS MANAGEMENT IS NOT. Since its release in 2001, Microsoft[®] SharePoint[®] has evolved into a comprehensive collaboration solution offering broad capabilities that include the ability to store, organize, share, and access information from almost any device using a web browser. These strengths, combined with core functionality in document management, records management, and secure file sharing, are the catalysts that underlie SharePoint's extensive enterprise adoption and fuel the seeding of many team-level and department-level SharePoint deployments and content repositories in organizations throughout the world.

In a recent survey¹ of IT and business management leaders, Forrester cited that SharePoint is meeting two strategic and content-centric needs. SharePoint has enjoyed massive success, because it:

- Enables enterprises to control and manage massive volumes of unstructured business data
- Unifies contextual knowledge worker experiences by providing access to numerous content, collaboration, and communication tool sets

Forrester concluded, however, that "customers struggle to adopt SharePoint's full range of features, hurting the product's long-term business value. In addition, uninspired user experiences mean that business management isn't satisfied that SharePoint delivers value to their companies." The report goes on to clarify that, although IT management is highly satisfied with SharePoint's value, business management is not.

This white paper seeks to explore the key shortcomings of SharePoint that contribute to these divergent perceptions and suggest a solution that alleviates these pain points and delivers higher business value for SharePoint implementations. Ultimately, our goal is to help businesses and IT departments understand how they can leverage their Microsoft SharePoint investments to encourage broader user adoption while enabling easy access to content sources outside SharePoint.

THE LIMITATIONS OF SHAREPOINT

Although SharePoint is the cornerstone of many enterprise collaboration and content management strategies, it suffers from several significant limitations.

Integrating non-SharePoint content: Content repositories are scattered throughout most organizations and contain content from applications that support a wide range of line-of-business systems, ranging from financial and accounting applications and records management to customer relationship management, sales, marketing, and product development.

Although it is possible to connect these separate content silos to SharePoint, the Microsoft-endorsed process requires significant technical expertise to integrate SharePoint Business Connectivity Services (BCS) with external line-of-business applications and data and present that information in SharePoint. Adding new content sources to the mix requires additional programming and IT expertise.

Storage: Documents are unstructured objects. To support its hugely popular version control capability, SharePoint stores each document version as Binary Large Objects (BLOBs) within a Microsoft SQL Server database. With the introduction of shredded storage in 2013, SharePoint can store a single document in pieces, each of which is a BLOB. The storage challenge is exacerbated by the fact that SQL Server is an architecture designed to support structured, tabular data, not the unstructured data that resides in documents. Because each document version is stored individually within SharePoint's repository, the total number of documents stored multiplies, straining SharePoint storage requirements and impeding overall performance.

¹SharePoint Enters Its Awkward Teenage Years, Forrester Research, Inc., February 6, 2013.

Microsoft's workaround focuses on implementing SharePoint's strategy for proactive storage optimization, which requires significant IT resource commitments to set up and manage this recommended configuration, including database provisioning and disk fragmentation remediation requirements. Effectively administering SharePoint to the rigorous degree that achieves optimal performance is a drain on precious IT resources.

Performance: SharePoint performance degrades rapidly as SharePoint content storage requirements increase. Such performance impacts can reduce the speed of page loads, search execution, content retrieval, and content refresh. Users notice these delays, which arguably decrease the rate of user adoption.

User adoption: Performance issues and an inability to access content not integrated with SharePoint undermine the rate of SharePoint user adoption by elevating user frustration and exacerbating an overall wariness to depend on it. Employees are reluctant to rely on SharePoint when they experience long delays uploading or downloading content or challenges accessing content they need to perform their duties. Delivering a streamlined, intuitive and content-accessible SharePoint implementation is crucial to promoting user adoption.

Information Governance: SharePoint has evolved into a dominant content management and records management solution by disrupting respective markets. Although it is entrenched in enterprises large and small, it suffers from significant technology gaps in critical areas including advanced records retention, disposition, security policies, archiving and governance.² Such limitations are not only of particular concern to organizations in regulated industries, but also to records management, compliance, and legal teams within large enterprises and the public sector. To fill these gaps, Microsoft encourages the adoption of third-party tools and technologies that extend standard SharePoint support—a strategy that can quickly become complex, expensive, and unscaleable. A more straight-forward approach is required—one that provides a single, cohesive solution—rather than multiple point solutions and one that achieves corporate-wide information governance and federated records management by enabling content integration across multiple repositories and enforcing mandatory corporate access control and retention policies across record sets.

DELIVERING HIGHER SHAREPOINT BUSINESS VALUE: THE CASE FOR ASG-TOTAL CONTENT INTEGRATOR (TCI) AND ASG-TCI FOR SHAREPOINT

The most desirable solution for extracting business value from SharePoint will strengthen its positioning as a comprehensive content portal while enabling broader access to enterprise content and alleviating performance degradation.

The ASG-TCI for SharePoint solution enhances SharePoint business value by:

- Integrating content between SharePoint environments and external content repositories used by other business applications
- Granting SharePoint users access to employee- and application-generated content throughout the enterprise using the familiar SharePoint interface
- Improving performance and augmenting SharePoint scalability by storing and archiving SharePoint binary large objects (BLOBs) outside the SharePoint repository
- Optimizing storage by enabling the archiving of content for long term retention in order to meet compliance requirements
- Coordinating records management by enabling content integration across multiple repositories including SharePoint, and enforcing mandatory corporate access control and retention policies across record sets.

²Market Overview: Information Governance for the Microsoft SharePoint Ecosystem, Q1 2014, Forrester Research Inc., February 13, 2014.

TO FILL FUNCTIONALITY GAPS, MICROSOFT ENCOURAGES THE ADOPTION OF THIRD-PARTY TOOLS AND TECHNOLOGIES

Before delving into specific benefits of ASG-TCI and ASG-TCI for SharePoint, let's first review how these products together can broaden the capabilities of SharePoint.

ACCESS ALL CORPORATE INFORMATION FROM THE SHAREPOINT USER INTERFACE

An important strategy for improving the value of SharePoint implementations involves expanding the available pool of content for knowledge workers to access and manipulate. SharePoint users require transparent capabilities for content search and retrieval from within their familiar SharePoint interface, so that they can access documents, reports, images, records and other content contained in external repositories.

To provide additional context, the following diagram illustrates the challenge experienced by SharePoint users who need access to content stored in repositories outside SharePoint. When these repositories are not integrated with SharePoint, a spaghetti mess ensues.



Figure 1: Spaghetti Mess

How frustrating can it be for an employee to find important information outside SharePoint?

First, it can be difficult for employees to search for information when they don't know where it's stored. If they do know where it's stored, signing in and out of different systems and toggling between applications can be confusing. It is equally difficult for legal teams and IT groups to administer and manage the content within these repositories and consistently apply information management policies to support corporate, governance, and regulatory requirements. This complexity increases IT costs that result from maintaining custom applications and myriad points of integration and contributes to employee frustration when knowledge workers cannot find what they need to perform their jobs efficiently and effectively.

Some solutions that integrate external information into SharePoint are based on custom Web Parts that present information from a single repository with unique and proprietary functionality and behavior. Such solutions merely move the content access problem to multiple SharePoint pages.

TOO MANY DISPARATE SOURCES OF CONTENT CREATE A "SPAGHETTI MESS" Microsoft promotes its Business Connectivity Services (BCS) as the preferred solution for integrating external information into SharePoint, which can provide a common look and feel for various repositories. This approach, however, does not support horizontal integration – the ability to integrate content from multiple data sources. Further, proper implementation not only requires precise configuration, but also a code development effort when working with anything other than a SQL Server database. It is also important to note that BCS does not support content presentment (a unique ASG facility that renders and exact replica of the original document in a number of formats including HTML, PDF, XML, SVG, VML, PNG, and JPEG, yet stores the original document only once in its native format); it is geared only toward structured metadata.

What is needed is a unified, federated solution that integrates the functions of search, discovery, and presentation into a single user interface while normalizing dissimilar – but related – terms and metadata across various content sources.

ASG-Total Content Integrator (ASG-TCI) leverages the familiarity, power, and flexibility of BCS, and then enhances it with zero-coding, out-of-the-box integration of both external metadata and the content delivered to standard BCS Web Parts and to ASG-TCI for SharePoint native content-viewing Web Parts. ASG-TCI for SharePoint, a client technology of ASG-TCI, adds value to BCS through metadata normalization and concurrent, multitargeted search to the back end, and provides specially-tuned document-viewing Web Parts on the front end.

FEDERATE CONTENT ACROSS REPOSITORIES

With the explosion of user- and application-generated content, enterprises have an ever-increasing number of content repositories scattered throughout the organization—including legacy systems, business-specific applications, geographic/language-specific repositories, department-based solutions, and new employee-created repositories. With such disparate sources of content, it can be difficult for employees to locate the information they need quickly and easily and apply it to operational and strategic decision making. It is equally difficult for IT departments to identify and manage all of the content repositories and adhere to corporate information governance policies. Integrating all content into one master repository is unrealistic in most cases due to multiple operating platforms, unique line of business needs, high cost (both financial and personnel), and growth resulting from mergers and acquisitions. Further, most companies desire to remain flexible and adapt to change, which may be difficult when trying to maintain one Big Content repository.

Federating content across repositories enables seamless access to desired enterprise information, promotes information transparency to SharePoint users and permits unified records management. Federated access not only improves productivity and information governance, but also supports additional capabilities – which are discussed in the paragraphs that follow; these leverage the power of federated access to external repositories and are enabled via TCI.

EXTEND SHAREPOINT'S SEARCH CAPABILITIES

SharePoint provides search tools to search its own repositories and a crawling paradigm to search for content across external sources. However, crawling offers neither feasible nor practical search capabilities for all content types and sources, and SharePoint's current implementation to crawl and index external repositories comes with a high overhead cost that can reduce performance significantly. As a result, the crawling capability does not scale for large volumes of data.

ONE MASTER REPOSITORY IS A WORTHY GOAL, BUT IS NOT REALISTIC

ASG-TCI for SharePoint fortifies SharePoint search capabilities with federated search and eliminates the need for SharePoint crawling. The outline below illustrates the power of federated search within SharePoint:

- SharePoint users initiate a search from within a BCS list Web Part or by using the ASG-TCI for SharePoint Flexible Search Web Parts. ASG-TCI for SharePoint search web parts can be added on any page in a site collection where the flexible search web part feature is activated.
- Because both of these search modes invoke ASG-TCI's intelligent field mapping functionality, endusers do not need to know individual repository field-naming conventions and need not switch to other applications. Further, end-users don't need to know where data or documents are located; ASG-TCI searches all identified repositories and specifies the search scope.
- Search criteria are sent to ASG-TCI, which in turn federates the search across appropriate repositories (depending on the scope of the search). Figure 2 illustrates this search process.
- Results from all repositories are returned to ASG-TCI, then to SharePoint and, last, properly presented in the BCS results list or TCI for SharePoint flexible search results web part. Once the user selects an item to view in the results list, the ASG-TCI for SharePoint viewing Web Part displays the document. The viewing web part is only required from a BCS list; for flexible search web parts no additional web part is needed to view the content.



VIEW ALL ENTERPRISE CONTENT THROUGH THE SHAREPOINT USER INTERFACE

Figure 2: Extending SharePoint's search capabilities

Extending SharePoint's search capabilities allows users to search for the non-SharePoint content they need, transparently federating the search to repositories scattered across the organization, while normalizing index names and values. Users access target content without wasting time switching windows, changing applications, or re-keying values for search criteria; everything is handled through their familiar user interface.

EXPOSE EXTERNAL CONTENT TO SHAREPOINT PAGES AUTOMATICALLY

In many cases, portal applications need to present the information that users require within the context of the portal or site page they are viewing – without forcing the user to navigate to a search page. In these cases, the flexibility of interconnected BCS Web Parts, the ability to predefine criteria while hiding them from users, and the

FEDERATED SEARCH ELIMINATES THE NEED FOR SHAREPOINT CRAWLING

ability to present content in ASG-TCI for SharePoint native viewing Web Parts, provides unlimited possibilities governed only by the imagination of SharePoint site designers.

ASG-TCI for SharePoint and BCS provide Web Parts that SharePoint site owners and designers use in SharePoint pages to execute automatic or hidden searches, list focused results, and present content via ASG-TCI viewer Web Parts.

The benefits that arise from this flexibility are better understood through an example. Let's consider a regional sales site in which a site designer configures the main page with a hidden Web Part to search for the six most recent monthly regional sales reports from ASG's flagship repository, ASG-ViewDirect[®]. Another Web Part obtains the information and lists it on the site's main page; the results list is configured to be sorted chronologically, so the prior month's report is displayed at the top. To make it more useful, the designer may specify a third area of the page, with the ASG-TCI content-viewing Web Part presenting (in PDF format) the most recent sales report for that region. This approach offers unlimited flexibility to meet the needs of different user constituencies:

Sales: Whenever a sales executive logs into this page, the latest sales report is presented automatically – without the need to execute a search. To compare this month's progress against last month's results, he simply selects the prior month's report from the list, and the page is refreshed to present the requested information.

In another case, the page designer might be more specific. Rather than showing a list of search results, the Web Part could be configured to open the prior month's report for that sales team automatically – inside the Web Part region of the display.

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WEB PARTS CAN BE CONFIGURED TO DISPLAY EXTERNAL CONTENT IN SHAREPOINT

Figure 3 Exposing External Content to SharePoint Pages

Customer Service: Another example is a Web Part for the Customer Service organization to search exclusively for transactions related to a particular account number. This scenario can be expanded easily to present lists with bank statement reports extracted from one source and transaction images from another, filtered by a selected statement date or transaction number, as contained in the report.

The use cases expounded above, as well as many others, result from federating and presenting documents from SharePoint, output from ERP systems, images, and reports from non-SharePoint repositories on the same SharePoint page.

Presenting SharePoint and non-SharePoint content in the context of a given page, and allowing users to find information using intrinsically-focused searches (when they don't even realize that they are conducting a federated search), contributes business value and dynamism to SharePoint portals and sites. The use of multiple interconnected BCS and ASG-TCI for SharePoint Web Parts leverages metadata from one source to be used in others. This integration scenario provides users with a full view of the information in the context of the portal page, without the need for additional training, switching applications, or re-entering criteria in multiple different forms and formats.

LEVERAGE SHAREPOINT COLLABORATION

Knowledge workers want to search for, obtain results lists, and retrieve supplementary non-SharePoint content from within their familiar SharePoint interface. They also want to access SharePoint documents while working with other critical applications.

ASG-TCI for SharePoint integrates back-end repositories and information sources with SharePoint, delivering maximum flexibility for storing, searching, accessing, and governing all enterprise information.



Figure 4:ASG-TCI for SharePoint Integration

ASG-TCI FOR SHAREPOINT INTEGRATES BACK-END REPOSITORIES AND INFORMATION SOURCES WITH SHAREPOINT

REDUCE STORAGE CONSTRAINTS BY ARCHIVING SHAREPOINT DOCUMENTS OUTSIDE THE SHAREPOINT REPOSITORY

SharePoint stores documents in a SharePoint SQL Server database. This storage paradigm presents challenges for retaining large volumes of documents, especially with regard to documents with long retention periods, records with time and/or event-based retention periods, and binary large objects (BLOB). Database expansion and backup and recovery processes affect the long-term scalability and reliability of any SharePoint repository. Further, it is difficult to leverage compliant and read-only storage devices when documents remain in the database. Database-based storage makes it difficult to use more cost-effective storage technology during the document lifecycle, such as archiving documents to a cheaper, slower magnetic disk after the document reaches a certain stage in its lifecycle. Figure 5 represents projected SQL Server storage growth as new versions of documents are published, as well as the potential savings realized by removing the actual documents from SharePoint databases.



ASG-TCI FOR SHAREPOINT ALLOWS DOCUMENTS FROM SHAREPOINT TO BE STORED IN ITS UNIVERSAL REPOSITORY

Figure 5: Storage space used by SharePoint documents

ASG-TCI for SharePoint directly responds to these challenges by allowing SharePoint documents to be archived in the ASG-ViewDirect repository-of-record. This highly scalable, platform-independent, universal repository provides centrally-controlled retention and disposition for all enterprise content and records, including SharePoint documents.

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Figure 6: Archiving SharePoint Documents in the ASG-ViewDirect Repository

ASG-TCI for SharePoint provides archiving capabilities for SharePoint documents, similar to hierarchical storage management or information lifecycle management, but with additional flexibility that enhances the operations and usage of SharePoint libraries. Organizations have numerous options for determining archiving triggers based on their unique needs—archiving actions can be governed by conditions such as new document version creation date, publish date, final status, date of metadata properties change, or by using other criteria (e.g., age, size or other events including document deletion).

The ASG-TCI for SharePoint solution leverages ASG-ViewDirect's scalable repository, while providing unparalleled flexibility through several archiving modes and SharePoint document disposition actions.

ARCHIVING MODES:

Discretionary or user-initiated: An interactive process in which authorized users initiate the archiving of one or more documents. There are no events or predefined triggers.

Scheduled based on policies: An automated process that requires no user intervention. Rather, it is based on ASG-TCI for SharePoint extensions to SharePoint Information Lifecycle Policies, which define archiving triggers and criteria and control the selection and timing of document archival.

ARCHIVING FUNCTIONALITY IS FULLY DEFINED BY SHAREPOINT ADMINISTRATORS

SHAREPOINT DOCUMENT DISPOSITION ACTIONS:

Copy (Copy of Record): A copy of the document is archived to the destination repository, leaving the document intact in the SharePoint library. Copy is useful when an official snapshot of the record is required while a user continues to modify the document in SharePoint.

Move (Historical): The document, its metadata and full text indexes are archived to the repository and completely removed from SharePoint. This approach is most practical when the document is no longer needed in the SharePoint library, but is required for historical, auditing, compliance or records management reasons. Move helps organizations achieve maximum SharePoint database space savings while leveraging alternate storage technologies for archived records.

ASG-TCI for SharePoint's archiving functionality is fully defined by SharePoint administrators using ASGembedded extensions into the SharePoint Information Lifecycle Management Policies. Archiving, therefore, becomes a seamlessly-integrated function within SharePoint administration and settings.

Archiving SharePoint documents streamlines cost reduction efforts from IT operations and compliance departments by:

- Reducing backup, recovery, and maintenance times for SQL Server databases and removing bulky documents and BLOBs from the dataset.
- Enabling the use of more cost-efficient storage technology to retain these documents, without affecting the performance of SharePoint or SQL Server. In fact, offloading the storage of SharePoint documents actually improves SQL Server performance.
- Ensuring that the document retention policies applied to SharePoint documents are consistent with the retention applied to other business records.
- Making it easier to attain desired compliance levels for internal governance and external regulatory
 mandates in regulated environments—choices of compliant or WORM media are equally available to
 SharePoint documents to meet long-term retention requirements.

ACCESS SHAREPOINT DOCUMENTS FROM ANY APPLICATION

Enhancing the business value of SharePoint should include the ability to access SharePoint documents from other enterprise applications when required. Search and retrieval of SharePoint documents from any frontend application, such as custom applications or ASG-DocumentDirect for the Internet, is handled by the Web Services bundled within the ASG-TCI SharePoint Enterprise Search adapter. The ASG-TCI SharePoint Enterprise Search adapters connect to SharePoint 2013 and SharePoint 2010.

These ASG-TCI SharePoint adapters can be combined with other ASG-TCI adapters to provide complete access to content in disparate repositories, including ASG-ViewDirect, ASG-Cypress[®], IBM[®] OnDemand, IBM[®] FileNet[®], Microsoft[®] SQL Server, Alfresco[®] and any CMIS-supported repository. ASG customers rely on ASG-TCI adapters to integrate all enterprise content and disparate repositories via ASG-DocumentDirect[®] for the Internet, their own portals, or custom-developed applications. Figure 7 illustrates this function.

SEARCH, ACCESS AND RETRIEVE SHAREPOINT DOCUMENTS FROM ANY APPLICATION

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Figure 7: ASG-TCI adapters enable users to access SharePoint documents from ASG-DocumentDirect for the Internet or other applications

FEDERATED RECORDS MANAGEMENT ALLOWS RECORDS TO BE MAINTAINED IN THEIR NATIVE REPOSITORIES, "IN-PLACE"

APPLY FEDERATED RECORDS MANAGEMENT ACROSS THE ORGANIZATION

Unlike a unified records management implementation where records are consolidated into a single "repository of record," a federated records management approach allows records to be maintained in their native repositories, "in-place." Thus, records do not need to be moved from their point of origin, yet a single set of retention rules can be applied.

This is particularly important for enterprises using SharePoint. Although SharePoint provides a basic level of records management capabilities, it is not designed to meet the needs of organizations with complex record retention and destruction policies or intricate disposition processes. Enterprises in regulated industries, such as healthcare and financial services, require a more robust records management solution.

Because ASG-TCI can integrate content from any number of content repositories, SharePoint users can experience federated records management easily and transparently. An obvious benefit is that a federated records management approach enables organizations to preserve the investments they have already made in their existing records management systems. Further, by using ASG-Records Manager in conjunction with ASG-TCI and ASG-ViewDirect, complex record retention and disposition policies and holds can be applied to all documents archived from SharePoint into the ASG-ViewDirect repository. For enterprises that have many SharePoint implementations across various departments and geographies, the benefits that arise from closing SharePoint's records management capability gap become invaluable.

TOTAL CONTENT INTEGRATION SPECIFICS

Now that we've stated the case for ASG-TCI and ASG-TCI for SharePoint, it's important to fully understand the capabilities of these products. The following sections provide more detail about how these products work.

ASG-TOTAL CONTENT INTEGRATOR

ASG-Total Content Integrator (ASG-TCI) provides users fast, easy, secure, and seamless access to assorted and isolated content sources anywhere in your organization. These content sources can include a plethora of repositories, such as ASG-ViewDirect, Microsoft SharePoint, Microsoft SQL Server, IBM FileNet, IBM OnDemand, EMC Documentum, Alfresco and other repositories, databases, collaboration, and social media applications. ASG-TCI's Web Services are publicly available, allowing organizations to integrate disparate content easily into any application. For organizations that have other portals or custom Web interfaces, ASG-TCI adapters integrate these varied repositories and enable them to present all content within customized interfaces or portals.

Designed for reliability, scalability and robustness, ASG-TCI includes the following components:

• **Out-of-the-box adapters:** An adapter is software that connects ASG-TCI to a content repository. Each adapter is specifically configured for ASG-TCI to connect to a specific type of content repository. Whenever a search is executed across repositories, applications, and databases, the adapters provide information to ASG-TCI regarding the indexes, search properties, and display capabilities of the associated content repository—in essence, translating the queries into the format required by the content repository API to extract the desired content. After the content repository processes the query, the adapter translates the search results item to the format required by ASG-TCI so that the desired content can be presented to the user.

This powerful index mapping capability allows ASG-TCI to scale easily. With a single search, ASG-TCI can execute search criteria across multiple repositories at once and apply its universal index to translate all the indexing differences so that queries can be processed quickly, easily, and accurately.

ASG-TCI also supports Content Management Interoperability Services (CMIS), the emerging standard for content management solutions that has been adopted by the majority of Enterprise Content Management (ECM) vendors, including ASG. The TCI Adapter for CMIS Repositories permits support for new repositories to be delivered more quickly, since all ECM vendors will code to this standard. Therefore, the only effort required when adding support for a new CMIS-compliant repository is to test the CMIS adapter with that repository; it will no longer be necessary to implement a new adapter for each new repository.

- Ability to easily create custom adapters: The TCI Adapter Software Development Kit (SDK) permits
 users to integrate with custom, legacy, or other content management solutions through the creation of
 custom adapters:
 - *TCI Adapter Foundation Classes Framework.* This framework is utilized to construct custom adapters. It speeds up development by eliminating the need to implement TCI Adapter Web Services directly.
 - Sample Adapter. The SDK includes a sample adapter Web application as well as Java source files that you can use when developing custom adapters with the TCI Adapter Foundation Classes Framework. It makes use of industry standard test utilities with which Java developers are already

SEAMLESS ACCESS TO CONTENT STORED ANYWHERE IN THE ORGANIZATION

ASG-TCI SUPPORTS CONTENT MANAGEMENT INTEROPERABILITY STANDARDS (CMIS)

ALL ASG-TCI COMPONENTS PROVIDE AN OPEN, STANDARDS-BASED ARCHITECTURE THAT ENSURES INTER-OPERABILITY familiar. Examining the sample adapter will help you understand the structure and components of an adapter, and the sample adapter can also serve as a template for a new adapter.

- **Core services:** These services perform ASG-TCI's basic functions and enable true enterprise content integration by supporting Search, Authentication, Index Mapping, Index Update, and Content Delivery to all configured repositories, and Archive Write to the ASG-ViewDirect repository.
- A published Web Services interface: Any application that can call this interface can access content through TCI. It can be used to develop applications that retrieve content from all repositories connected to ASG-TCI.

All ASG-TCI components are built using packaged Web Services, providing an open, standards-based architecture that ensures interoperability and is J2EE-compliant and .NET-enabled. Because ASG-TCI does not require system modification, it does not degrade performance, and administrators can easily maintain the security of all content.



ASG-TCI ALLOWS SHAREPOINT TO ACCESS NON-SHAREPOINT CONTENT REPOSITORIES

Figure 8: ASG-Total Content Integrator Components

Figure 8 illustrates how ASG-TCI connects consumers of content, such as knowledge workers, Web sites and applications, to providers of content, such as content repositories and other line-of-business, content-generating applications.

ASG-TCI FOR SHAREPOINT

The ASG-TCI for SharePoint solution is essentially an ASG-TCI client; it can only function in conjunction with ASG-TCI. ASG-TCI for SharePoint relies on the Web Services, adapters, and core functions of ASG-TCI to communicate with back-end repositories and to present content within SharePoint. Although the back-end

repositories and services of many solutions (e.g., SharePoint, ASG-ViewDirect, ASG-Cypress, SAP[®], and others) can communicate with their own traditional thick or Web-based clients and present content natively, they need ASG-TCI services to present content stored and managed in third-party back-end repositories securely and transparently, within a desired front-end client. In other words, ASG-TCI is the integration-enabling layer that allows SharePoint to access non-SharePoint content repositories, as well as to permit ASG-DocumentDirect for the Internet, the ASG-Cypress client, and other front-end interfaces to access and retrieve SharePoint documents. ASG-TCI also enables SharePoint, ASG-Cypress, and ASG-DocumentDirect for the Internet to search and access content from other repositories. Finally, the ArchiveWrite function of ASG-TCI acts as the bridge to archive SharePoint documents in ASG-ViewDirect, maintaining transparent access for end-users and minimizing storage burdens on the SharePoint repository.

Applying ASG-TCI's core strengths to problems and needs faced by IT and users of SharePoint, and exploiting SharePoint features such as Microsoft's SharePoint Designer and Business Connectivity Services (BCS), ASG-TCI for SharePoint seamlessly provides – without coding – search, integration, and presentation of external content within SharePoint as well as secure archiving of SharePoint documents.

SUMMARY

Entrenched in enterprises worldwide, Microsoft SharePoint enables organizations to fulfill their portal, collaboration, and document management goals. But a recent Forrester survey reveals the disparity between IT leadership and business management perspectives as to the business value that these implementations deliver.

ASG's solutions complement and extend SharePoint technologies, enhancing their business value by providing tangible benefits to SharePoint user communities. Together, ASG-TCI and Microsoft SharePoint provide bestin-class capabilities for managing the collective content lifecycle – from the moment content is created until it is no longer needed – while guaranteeing the long-term integrity and availability of mission-critical content.

With ASG solutions, customers can:

- Extend SharePoint search and content access capabilities across all corporate repositories and provide seamless, transparent content search and retrieval for documents, reports, images, records and other content from multiple, disparate repositories—all from the familiar SharePoint interface. ASG solutions enable a single point of access to all static and work-in-progress documents.
- Access SharePoint documents from any application. ASG solutions provide search and retrieval of SharePoint documents from any front-end application, including ASG-DocumentDirect for the Internet.
- Archive SharePoint documents to ASG-ViewDirect for long-term retention and protect critical digital information by migrating static content to the world's most scalable, reliable archive. Archiving content to ASG-ViewDirect ensures compliance with read-only storage, guarantees enforcement of retention policies, and reduces costs by transferring content to less expensive storage media.
- Enable content integration across repositories, including SharePoint, to deliver federated records management.
- Apply complex records retention and disposition policies to SharePoint records.
- Deliver an unrivaled, elegant SharePoint solution that manages and shares content, enforces retention and storage policies, and improves business processes and operations across the enterprise using a combination of ASG-TCI, ASG-TCI for SharePoint, and ASG-ViewDirect.

ASG'S TCI SOLUTIONS COMPLEMENT AND AMPLIFY SHAREPOINT

ASG's world-class enterprise content management portfolio includes:

- ASG-DocumentDirect[®] for the Internet is a powerful, integrated, Web-based user interface for the ASG-ViewDirect Suite. It provides users the ability to easily view, download, and link content across repositories and platforms from anywhere, at any time. ASG-DocumentDirect for the Internet provides authorized users with secure, remote access to all content stored anywhere in the enterprise, including AFP, DJDE/Metacode, PDF, PCL, Postscript, XML, e-mail, HTML, images, text, rich media, word processing, spreadsheets, and more. By giving authorized users fingertip access to critical information when and where they need it, ASG-DocumentDirect for the Internet helps organizations leverage enterprise knowledge to gain competitive advantage.
- ASG-Mobius[®] Luminist[™] is an easy-to-adopt, easy-to-learn, efficient, secure and cost-effective way to
 make information in the ASG-ViewDirect repository-of-record available for employees –wherever and
 whenever employees are working. It delivers convenient touch screen operation for better, faster and
 easier ways to view and share critical information. Users can browse through folders to find documents,
 reports, files, or any other content they need, or use the intuitive search feature to locate content that
 meets specific criteria. Users can also save searches, folders and documents as "favorites" for quick
 access to high priority or routinely viewed content.
- ASG-ViewDirect[®] is the foundation of the ASG-ViewDirect Suite. It captures, indexes, stores, transforms, and publishes any content from disparate applications, repositories, and platforms in distributed and mainframe environments. The ASG-ViewDirect Repository functions as both a content storage platform with Web delivery of document-based content and a long-term archive for regulatory compliance. Advanced indexing technology puts content into context by associating it with shared business values. A transformation engine transforms any data stream into the appropriate format for delivery across multiple channels, including printer, fax, email, browser, wireless, tablet and more. By managing content with defined life cycles to ensure accurate storage and long-term archiving, it helps organizations implement information governance to meet corporate policies and regulatory mandates. With its superior architecture, ASG-ViewDirect enables unlimited scalability, flexibility, and interoperability necessary for aggregating and integrating all enterprise content.
- **ASG-Records Manager**[™] facilitates information governance with comprehensive life cycle management for all records, including high-volume, transactional electronic records, in their original format, including holds, automatic folder structures, and advanced retention.
- ASG-Total Content Integrator[™] provides a unified, federated, content aggregation and integration technology for transparent search, discovery and presentation of electronic documents, records and other content anywhere in the enterprise.
- ASG-Total Content Integrator (TCI) for Microsoft SharePoint is designed to provide SharePoint environments total content aggregation and integration with content repositories for other business applications - finance/accounting, customer relationship management, warehouse management, etc. It grants SharePoint users access to employee- and application-generated content throughout the enterprise via the familiar SharePoint user interface. And it gives IT the ability to store and archive SharePoint documents for long-term retention, including binary large objects (BLOB), to improve SharePoint scalability and performance. When combined with ASG-ViewDirect and ASG-Records Manager, ASG-TCI for SharePoint enables enterprise-class storage and archiving, enhanced information governance and compliance, and improved business process controls. This powerful combination results in an enterprise-class solution that combines the best of SharePoint content management capabilities with total enterprise content integration and best-in-class enterprise storage, archiving and records management services.

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ABOUT ASG CONTENT MANAGEMENT PRODUCTS