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ZAPTHINK CASE STUDY ZAPNOTE

THE HARTFORD
A CASE STUDY IN REAL-WORLD UDDI ADOPTION

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Abstract

The Hartford is an early adopter of Web Services and Service-Oriented Architectures (SOAs), in an industry that is leading the economy in the adoption of these technologies. Their insurance-industry focused initiative known as SEMCI supports requests for quotations for insurance from multiple carriers and provide a response in a standard ACORD XML format. The Hartford required the ability to roll out continuously changing versions of the Services they offered as a part of SEMCI. Further complicating this integration challenge was the fact that the responding carriers used different and changing versions of the insurance industry standard ACORD messages.

To solve this many-to-many versioning problem, The Hartford turned to a UDDI registry to provide a metadata repository to enable integration in a continuously changing environment. The system works by leveraging a Web Services management platform to query the UDDI registry for an appropriate Service version at runtime, thus enabling the loose coupling between Service consumers and the applications they access.

As a result, The Hartford is now able to leverage their SOA to provide greater business agility to their users, and build a "future-proof" enterprise architecture to enable continual change.

Building out the Service-Oriented Architecture

The Hartford Financial Services Group, Inc. is one of the nation's largest investment and insurance companies. They have a broad heterogeneous environment that crosses several lines of business. They are also an early adopter of Web Services and Service-oriented architecture technologies and approaches.

The IT organization within The Hartford's Property and Casualty division developed an in-house platform supporting the Single Entry Multiple Carrier Interface (SEMCI) in 1996. SEMCI allows agents who work with multiple carriers to broadcast requests for insurance quotations and get a response in the industry standard ACORD format (see www.acord.org for more information). The Hartford's SEMCI platform accepts an ACORD-based requests, authenticates the agent who sent it, transforms it, and then routes it to the appropriate set of Services within The Hartford. The first SEMCI solution approach was a tightly coupled solution that exhibited several weaknesses, including the lack of scalability, Service-level agreement (SLA) management, reporting, and alerting, and the lack of adequate management dashboards.

When it became clear that it was time to move to a more flexible SEMCI implementation, the adoption of a Service-oriented architecture (SOA) made sense for The Hartford. An SOA approach was appropriate for the SEMCI initiative because they were looking to solve internal integration problems, including the interaction between heterogeneous back-end systems and their agency portal that supports their agency channel.

Among the most important technologies underlying SEMCI are a Web Services management platform and a UDDI registry (see sidebar). ZapThink discussed The Hartford's selection of a management platform in an earlier Case Study ZapNote (ZTZN-1134). This ZapNote picks up where that one left off and discusses The Hartford's selection and use of a UDDI registry within SEMCI.

The *Universal Description, Discovery and Integration* (UDDI) protocol is an industry standard led by the OASIS consortium. UDDI specifies a standard interoperable platform that enables Web Service consumers to discover and use Web Services, providing the key publication and discovery capabilities of Service-Oriented Architectures. UDDI is a cross-industry effort driven by major platform and software providers. Learn more at http://www.uddi.org/.

How the Hartford's implementation of SEMCI Uses UDDI

The Hartford targeted its first production usage of a UDDI registry to SEMCI. They use the registry to store metadata containing versioning information for all of the Services available within SEMCI. The company then uses this UDDI registry to match incoming requests to SEMCI to the correct version of the appropriate Web Service based on ACORD, line of business, and Service version. Specifically, the process that takes place is as follows:

1. The insurance agent accesses their local agency management system.

2. The agency management system sends the agent's request containing a document in ACORD format to The Hartford's Service gateway (Web Services management Platform). This message indicates the version of ACORD that the Service must support along with information that allows The Hartford to determine the vendor of the agency management system that composed the message.

3. The Web Services management platform then matches the incoming message to the appropriate Service version by querying the UDDI registry for the appropriate Service descriptions by querying multiple tModel types.

4. The Hartford's Web Service management platform then handles the routing of the Service request to the appropriate Service version.

5. The Service processes the SEMCI request and prepares a response in the same ACORD document version in which the carrier sends the request.

Because The Hartford updates the versions of its internal Services on a regular basis, incoming messages are not aware of the updates to either the ACORD specification or Hartford-specific customizations, may thus be intended for an older version of the given Service. The Service versioning problem is compounded by the fact that ACORD releases different versions of their insurance document formats that are not compatible, and The Hartford also releases internal versions of its Services every two weeks. However, these release schedules do not typically coincide. Therefore, SEMCI must be able to match the appropriate document and Service versions dynamically at runtime. The Hartford realizes that they cannot force external consumers of the SEMCI Services to upgrade their clients, so they need to maintain and manage several versions of the Services in production simultaneously, essentially forming a many-to-many relationship among ACORD message versions and SEMCI Service versions.

The ACORD specification allows each carrier to specify supplemental information as part of the request. Each carrier may provide their own unique questioning as part of the underwriting. In addition, The Hartford automatically handles syntactical checks on incoming messages, but the insurance industry doesn't have a fully-defined semantic definition that is entirely portable even for common terms like claim, policy, etc. As a result, a central group within The Hartford approves all Service registry entries, which also keeps the registry free of superfluous information. Registries are therefore mandatory part of The Hartford's efforts to achieve SOA governance.

The heart of the Hartford's' SOA SEMCI platform is based on a Web Services management solution that leverages an external UDDI registry. The system handles routing based upon management policy pipelines, which have pre-determined criteria for Service selection. Therefore, without the UDDI registry, the gateway would have to be statically declared to the management platform, preventing the dynamic nature of the Service lookup that The Hartford required. The use of the UDDI registry in this case makes such lookups dynamic. External users do not directly access the UDDI registry directly. Instead, UDDI is a key part of maintaining the location independence of the Services, and providing the loose coupling needed to allow users to have different requirements for the Services they access.

It is important to note that the SEMCI Service is actually what ZapThink calls a Service-oriented (SO) process, which is an orchestrated process consisting of a set of discrete Services. The SO process depends on ACORD document version numbers as well as the internal release version numbers of the constituent Services. The UDDI registry's lookup capability is also exposed as a Service that returns the appropriate endpoint and version information.

UDDI in the SOA Roadmap

Fundamentally, The Harford uses a UDDI registry as the basis of the SEMCI platform to provide external control for rules-based processing in their SOA. While this application of the registry provides substantial value to The Hartford and its agents in the form of business agility, the company foresees increasing use of the registry as they build out their SOA. In the

future, The Hartford expects to use the registry for design-time Service lookups as well as the runtime discovery discussed in this ZapNote.

In fact, The Hartford expects the UDDI registry to help them address numerous roadblocks to their enterprisewide SOA rollout. One key requirement for an enterprise SOA is centralized management of the Services in the architecture. In order to achieve this centralization, The Hartford realizes they must keep the contents of the registry up-to-date as they use that information in multiple contexts.

While The Hartford is using UDDI to handle document and Service version resolution today, they foresee using the registry in the future for more general-purpose Service discovery. They are also looking for additional business process management capabilities that might also offer Service discovery. Today, however, the SEMCI SO processes are essentially synchronous, where requesting users wait for a chain of Services to execute in well under ten seconds. Long-running processes that would require a broader use of a registry to maintain those processes dynamically is a potential future need. At that point they will want to leverage their existing registry for such broader purposes.

The Hartford also requires business activity monitoring as part of an SOA. Their strategy includes a business user view, while Web Services management platforms typically provide only a technical view. The company desires a unified view by using a management platform in conjunction with a business process management (BPM) offering, As a result, The Hartford is embarking on a BPM strategy that will allow their SOA to support composable SO processes as well as handle asynchronous behavior. Also, SEMCI currently supports read-only transactions. It The Hartford's intent to support messages that require transactional support. The Hartford currently plans to execute on this BPM strategy in the fourth quarter of 2004.

Discovering the Limitations of UDDI

One of the key limitations of UDDI is its reliance on WSDL for Service description. WSDL files define Service contracts, but do not describe document-level detail that ACORD documents require. The Hartford would also like to see a better integration between Web Services management products and UDDI registries, so that the management products can use the UDDI registry to store and access lower-level artifacts like timeouts, ACORD XML schemas, as well as WSDL files. The management platform itself should only deal with policies, and leave the metadata persistence to the UDDI registry.

The Hartford would also like to be able to store a catalog of transformations in a UDDI registry as well. They found that for point-to-point applications of Web Services, transformations can be included directly in the integrations, but as they move to Service-oriented, bus-style Web Services interactions, it becomes increasingly important to externalize transformations and other operations. Today, in fact, The Hartford exposes transformations as Services.

It is interesting to note that The Hartford developed their own XML based SOA approach prior to their adoption of Web Services. The industry specifications for WSDL and UDDI state that

these standards can support other SOA types but provide no guidance or tools for doing so. The Hartford also uses other, non-Web Services-based industry vertical standards that are similar to ACORD in that they support the notion of SOA. The ability to support UDDI registration of these types of services are crucial.

The Hartford also finds that the taxonomies that UDDI supports to be too generic to be useful, especially the "yellow pages" information such as geography and SIC code data. And while they are using UDDI version 3, they find this version of UDDI's improved search capabilities to be too limited to be of much use. They look forward to a future version of a UDDI registry that supports additional taxonomies, for example, for more powerful business classification systems.

UDDI Registry Purchasing Decision

The Hartford found that there were a number of UDDI solutions on the market, and as such defined the following two criteria that were important to them when making the decision which UDDI registry to purchase:

- They wanted a UDDI registry solution that other companies were actually using in real-world, production scenarios. They found that while several vendors offered standalone UDDI registries or combined UDDI capabilities with other products, it wasn't clear users of the vendors product were actually putting those registries into production.

- It was also critically important that the registry be fully standards compliant. They found that some vendors were vague about full standards support, which was sufficient reason to eliminate those vendors from their purchasing consideration.

One of the important things to note is that cost was not a primary factor in The Hartford's purchasing decision. All registries reviewed were within their expected five-figure pricing range. When making purchasing decisions, The Hartford's willingness to pay a specific amount is tied more towards the value the purchase brings rather than arbitrary CPU or seat forms of licensing.

Scalability was also not a factor in The Hartford's decisionmaking process, because their registry currently experiences a very low volume of requests, numbering in the hundreds per day. Even over time, the company doesn't expect the number of queries to exceed the low thousands per day.

The Hartford's approach to UDDI also helps solve several enterprise architecture-related problems like portfolio management. Essentially, they need a single place where people can go to understand the characteristics of the Services they offer in both a browsable and detailed manner. BPM tools will further leverage the registry to support the catalog of Services that they require in order to realize true SO process.

The ZapThink take

In many ways, UDDI is the ugly duckling of the core Web Services standards. Unlike SOAP and WSDL, companies have either struggled with how to apply UDDI in their IT environments, or simply excluded UDDI registries from their plans. However, just as with the duckling from the story, UDDI shows its worth upon maturation—in this case, in adding considerable value to The Hartford's SOA.

The most important lesson to be learned from The Hartford's experience with their UDDI registry to date is that discovery of Services can enable a specific, short-term production SOA without the need for large-scale, generalized Service discovery. In The Hartford's case, they

focus on solving a versioning problem by enabling their Web Services management platform to query rules stored in a UDDI registry. As a result, they enable loose coupling between Service consumers and their SEMCI platform, making it a true Service-oriented process. Fundamentally, the solution The Hartford put in place did not require substantial costly or risky changes to enterprise systems, IT procedures, or customer behavior. They were able to solve an otherwise knotty problem of many-to-many integration in a straightforward way with an SOA that included UDDI, and as a result they are now well-positioned to build upon that solution as they continue with their SOA rollout.

Profile: The Hartford Financial Services Group, Inc.	March 2004
Date Founded: 1810	
Funding: NYSE: HIG	
Employees: Over 29,000	
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Related Research

Reports

- *Service-Oriented Process* Foundation Report (ZTR-WS108)
- *Service-Oriented Tools and Best Practices* Foundation Report (ZTR-WS107)
- *XML in Financial Services* Foundation Report (ZTR-VI100)

ZapNotes

- *The Hartford* Case Study ZapNote (ZTZN-1134)
- *Systinet* ZapNote (ZTZN-1096)
- *Confluent Software (Oblix)* ZapNote (ZTZN-102)

About ZapThink, LLC

ZapThink is an IT market intelligence firm that provides trusted advice and critical insight into XML, Web Services, and Service Orientation. We provide our target audience of IT vendors, service providers and end-users a clear roadmap for standards-based, loosely coupled distributed computing – a vision of IT meeting the needs of the agile business.

ZapThink's role is to help companies understand these IT products and services in the context of SOAs and the vision of Service Orientation. ZapThink provides *market intelligence* to IT vendors who offer XML and Web Services-based products to help them understand their competitive landscape and how to communicate their value proposition to their customers within the context of Service Orientation, and lay out their product roadmaps for the coming wave of Service Orientation. ZapThink also provides *implementation intelligence* to IT users who are seeking guidance and clarity into how to assemble the available products and services into a coherent roadmap to Service Orientation. Finally, ZapThink provides *demand intelligence* to IT vendors and service providers who must understand the needs of IT users as they follow the roadmap to Service Orientation.

ZapThink's senior analysts are widely regarded as the "go to analysts" for XML, Web Services, and SOAs by vendors, end-users, and the press. They are in great demand as speakers, and have presented at conferences and industry events around the world. They are among the most quoted industry analysts in the IT industry.

ZapThink was founded in October 2000 and is headquartered in Waltham, Massachusetts. Its customers include Global 1000 firms, public sector organizations around the world, and many emerging businesses. ZapThink Analysts have years of experience in IT as well as research and analysis. Its analysts have previously been with such firms as IDC and ChannelWave, and have sat on the working group committees for standards bodies such as RosettaNet, UDDI, CPExchange, ebXML, EIDX, and CompTIA.

Call, email, or visit the ZapThink Web site to learn more about how ZapThink can help you to better understand how XML and Web Services impact your business or organization.

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