



(Semantic) Web Services seekda

The business point of view

Lecture 13th May 2009

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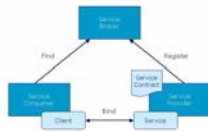


Agenda

- Web of Services
- Need for Web Services Search Engine
- Need of Semantics
- How to enable Service Commerce
- Presentation of commercial product based on semantic technologies and services – seekda! connect

Service Oriented Architectures

- IT solutions shift from monolithic systems towards Service Oriented Architectures
- Organizations require on-demand external services
- Interface vs. Implementation
 - I only do care about interface (description) but do not care about implementation (program) as somebody does it for me



Service Oriented Architectures

- However, current services market:
 - still not transparent
 - provider and/or technology centric
 - mainly atomic services and not bundles/solutions
 - low technical quality of interfaces, high setup and migration costs

Web of Services



- Current change: Web of pages → Web of services
 - there is already a considerable number of publicly available services
 - ...but users need to be aware of the existence and the features of a service
 - UDDI standard did not prevail
 - Specific portals: access to restricted sets of registered services



Web of Services



- Web Services (Web API):
 - expose all possible functionalities
 - can be integrated in traditional software systems, Web 2.0 applications
 - can be mashed up to provide new functionalities
 - using technologies as WSDL, REST, JSON, ...

Web Services Search Engine (1)



- Search Engine for Web Services
 - fully automated focused crawling process
 - aggregating information from multiple sources into a semantic model
 - efficient means for finding services
 - community features enabling understanding and selecting right services



Web Service Search Engine (2)

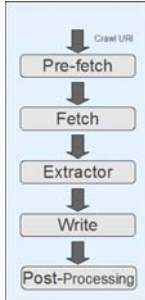


Focused Crawling

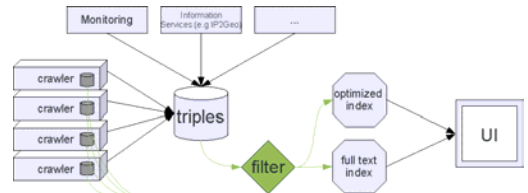


- Core Issues
 - Good seed URLs
 - Assign score for resource content
 - Guess content based on URI pattern
- Things to look after:
 - IP politeness
 - spam/crawler traps
 - bandwidth, storage, cpu, ...
- Divide and Conquer
 - Partition URLs to multiple machines
 - Separate Frontier to multiple queues

Processor Chains

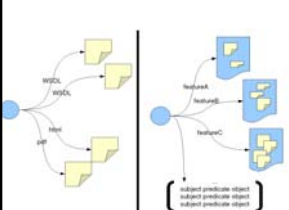


Crawling Architecture



- Collect meta data automatically from various source
- Create Object based search for services

Search Engine – Analyzing Data

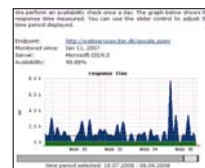


- <http://seekda.com/providers/amazon.com/S3>
- Amazon S3 provides a simple web services interface that can be used to store and retrieve any amount of data. <http://www.amazon.com/go/browse.html?node=16427261>
- Commercial Service, Computing
- Pricing
\$0.15 per GB-Month of storage used
<http://calculator.s3.amazonaws.com/calc5.html>
- Terms of Service
http://www.amazon.com/AWS-License-home-page-Money/bn?ie=UTF8&crid=1011047739&pf_rd_p=55543117&pf_rd_t=1&pf_rd_b=3440661&pf_rd_i=16427261&pf_rd_m=A3616421SJ2AIA
- Related Services
 - BoxNetStorage (box.net)
 - OnlineStorage (digitalbucket.com)

Origin of Semantics – Examples



- Information retrieval & analysis: online documentation, FAQs, pricing pages, etc.
- Leverage structure of interface description
- Network topology, server infrastructure
- Service provenance (i.e. hosting country)
- Service availability (e.g. uptime, response time)



Web Services Domains



... in terms of quality (non representative)

- ¼ research (grid, bio-informatics, ...)
- ¼ extranet services
- ¼ services with concrete business model
- ¼ toy / test

How to enable Service Commerce



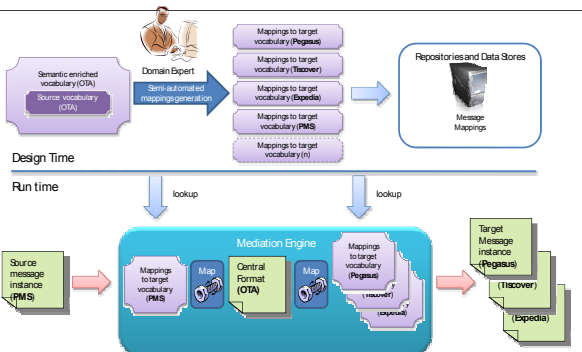
- Web Service Marketplace
 - one stop shopping across multiple service providers
 - aggregation & mediation- create service bundles according to users needs
 - provide applications that utilize services (or service bundles) e.g. on demand printing services, conference organization, etc.
 - combine services while checking technical and contractual compatibilities
 - technical integration simplified by using semantic technologies

The Semantic Magic – What is needed?

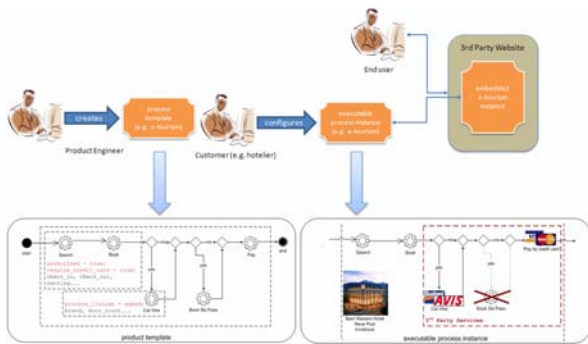


- Discovery
 - Automated focused crawling
 - Aggregating information from multiple sources into semantic model
 - High quality without relying on manually maintained registry
- Mediation
 - Service interfaces are mapped to ontologies
 - Mapping rules specified on a semantic level
 - Enables runtime exchange of similar services
- Bundling/Composition
 - Semantic descriptions enable semi-automatic creation
 - Technical service integration done by marketplace
 - Consuming a bundle as easy as an atomic service

Mediation



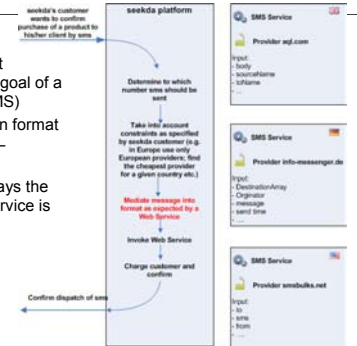
Composition – the Process



Mediation & Bundling Example



- There are many equivalent services capable to fulfil a goal of a customer (e.g. sending SMS)
- Every provider uses its own format to represent SMS service – mediation is then required
- Benefits for customer: always the best (the most suitable) service is selected for invocation



Service Commerce - SaaS



- Software as a Service (SaaS)
 - "Software deployed as a hosted service and accessed over the Internet" (Microsoft)
 - SaaS applications are typically contrasted with on-premise applications
 - Network tends to mean the Internet, leveraging Web technologies tends to be essential

Goldman Sachs, November 2007

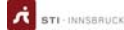
- 23% projected annual growth
- \$21.4 billion industry by 2011

SaaS - Business Case for Providers



- Reduce the substantial costs of code delivery to the customer
- Expand the potential customer base
- Revamp traditional business models to a more Internet focused approach
- Offer better online services and information to customers
- Limit the costs of configuring software for customers, suppliers and internal users

SaaS Business Case for Customers



- Why buy when you can rent?
- Transforming IT departments from application developers to application users
- Greater flexibility and scalability
- An expectation for unleashing new value of previously isolated data silos and functionality



Application of presented technologies within real commercial product



About seekda



- seekda's mission is to facilitate on-demand use of services over the Web
- seekda is a privately held company founded in 2007 as a spin-off of University of Innsbruck, Semantic Technology Institute (STI) Innsbruck
- seekda is operating a search engine and marketplace providing access to publicly available Web Service and delivering products based on services for vertical markets (e.g. one of them presented on the follow up slides is seekda! connect – e-tourism product offered for hotel industry)

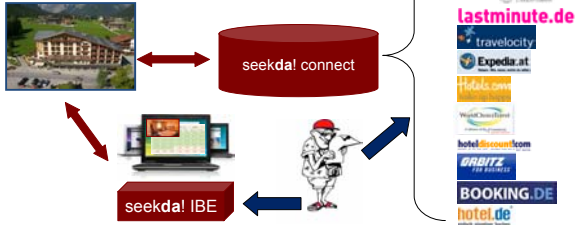
Why seekda! connect



- Hotels use various distribution channels.
- Daily maintenance of right balance of rooms availability across multiple channels does not scale.
- Average time for hoteliers required to maintain a profile of a medium size hotel at one portal takes between 5 to 15 minutes a day.
- An effort of maintaining hotel's profile on 10 portals would require then at least 2 hours of work.

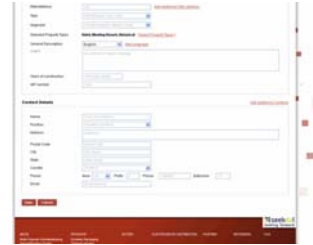
What (1)

- The multi-channel-solution for hotel-industry internet distribution



What (2)

- seekda! connect open new dimensions of online distributions for hoteliers allowing them to manage various distribution channels with only one tool.



What (3)

- Additional services (car rentals, insurance, airport shuttles) offered directly at hotel's Website



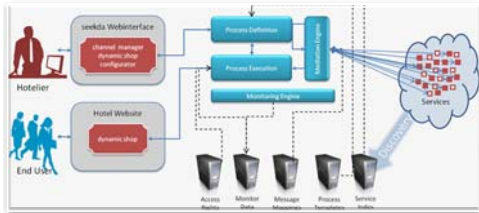
What (4)

- additional services (concert tickets, ski passes, sport offers) offered through mobile devices to travelers, not only before, but also during the trip.



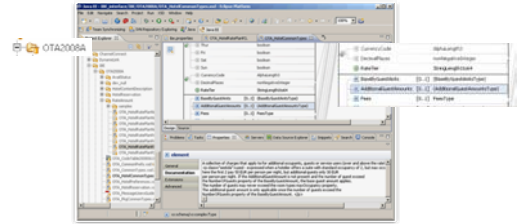
How (1)

- seekdal connect Service Platform provides advanced means for authentication, authorization, accounting, mediation, process definition, process execution and monitoring.



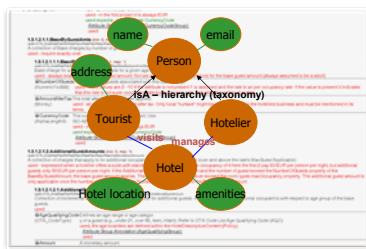
How (2)

- Engineers and domain experts from the company define mappings allowing to generate messages suitable to be delivered to destination systems
- This work is heavily based on OTA, which is industry standard for tourist industry

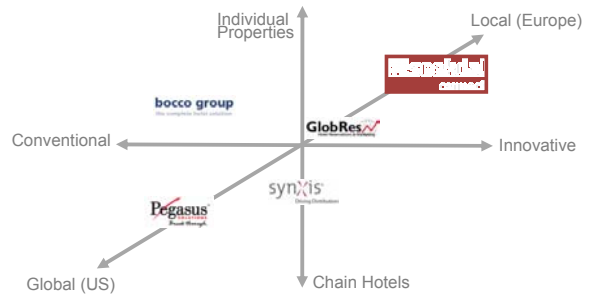


How (3)

- seekdal connect open API defines the proper semantics to simplify data, process and protocol mediation.



Competition (e-tourism market)



Competition (marketplaces)



- Strikelron – the biggest marketplace for commercial Web services;
 - seekda's Search Engine make the market more transparent than Strikelron
 - Strikelron does not allow to share subscription between services
- widgetbox – Funding: \$1.5 million from Hummer Winblad; Advertises itself as an "open web widget marketplace and syndication platform":
 - their widgets are all still free, but the intention is to provide support for commercializing widgets.
 - targets in particular bloggers and website owners to deploy the widgets
 - has pre build integration with some blog engines and content management systems to lower the barrier for people to deploy their widgets.
- SpringWidget - internally funded; it is also a widget marketplace.
 - puts a stronger emphasis on having widgets available on many platforms (blogs, website, desktop) with the cost of needing a stronger integration of the widget with the SpringWidget's platform.

Competition (search engines for Web Services)



- programmableweb about 400 APIs, seems non-commercial, but good content and can be used for many ideas...
- Strikelron global directory
- Xmethods – about 400 services, simple interface
- Merobas
- webrpc - very small set of services, however more community features and not only WSDL
- SoaHub – portal about WS
- WSindex (small set of WS)
- wbslogger (set of WS in different categories and languages, user can rate and comment entries)

seekda's Future Plans (related to WS Search Engine)



- To remain leading Web Service search engine
 - Broader Service Definition
 - aiming at services without explicit Interface Definition e.g. implemented in REST style (will WADL be revived?)
 - More Semi Structured non technical information
 - costs, service level agreement, ...
 - Broader Audience, more "related" Information
 - Understanding search results is hard for non techies
 - Extend on Community Features

seekda's Future Plans (related to SaaS applications)



- Facilitate the trade of Web service usage in a one-stop-shopping manner - dramatically reducing procurement costs
- Offer Domain specific Products via Software as a Service (SaaS) and Application Exchange
 - seekdal connect (tourism sector) – <http://connect.seekda.com> (launch product in June 2009); also go mobile in the future
 - seekda conference suite (already deployed on several conference sites) – enhance with additional services

Questions?

