PROJECT performance CORPORATION

Service Oriented Architecture (SOA) for the Real World

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Objectives

- Learn how SOA is defined by software vendors and research analysts
- Understand the business value of SOA
- Discover the disconnects in the theory and practice of SOA
- Learn how to adopt a practical implementation strategy;
- See how one customer is moving forward along these lines

Agenda

- Brief Intro to Service Oriented Architecture (SOA)
- Where does this Lead?
- Should I Really Care?
- Sorting out Theory from Practice
- Moving Forward in a Practical Way

What is SOA?

- W3C Defines SOA as:
  - “an architectural discipline that centers on the notion that IT assets are described and exposed as Services. These Services can then be composed in a loosely-coupled fashion into higher-level business processes, which provide business agility in the face of IT heterogeneity”
- Okay...maybe another one...

What is SOA??

- OASIS (the Organization for the Advancement of Structured Information Standards) defines SOA as
  - *“a paradigm for organizing and utilizing distributed capabilities that may be under the control of different ownership domains. It provides a uniform means to offer, discover, interact with and use capabilities to produce desired effects consistent with measurable preconditions and expectations.”*
  - *(http://en.wikipedia.org/wiki/Service_Oriented_Architecture)*
- What??

Sorting out SOA

- SOA is an architectural approach
- Premised on Reusable Services (such as authentication) and Composite Applications (applications that leverage different services)
- Loose-Coupling is important to understand
  - Coupling is the degree to which components depend on each other to work properly
  - This means the services themselves are as independent of one another as possible
  - It does not imply there are no dependencies
  - *Services should be accessible without knowledge of implementing platform*
- Interoperability between technology platforms is also a key characteristic

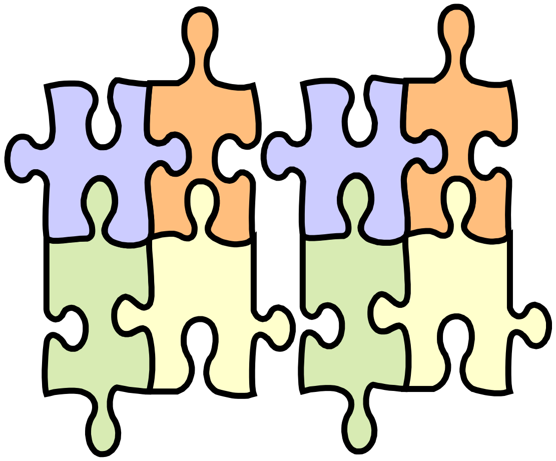
Sorting out SOA

- In practical terms, this means applications can be built on re-usable blocks of code that do specific things (these are services)
- Leverage existing business and technical services that others have already built, for example:
  - Authentication process;
  - Transaction clearing;
  - Data Validation (addresses, zip codes etc);
  - Application Integration (discreet pieces of an application that others may use);

- The idea is to build with tools (services) that others have already built and made available to others

SOA is More Than Web Services

- SOA most commonly associated with the following technology protocols:
  - XML
  - HTTP
  - SOAP
  - WSDL
  - UDDI



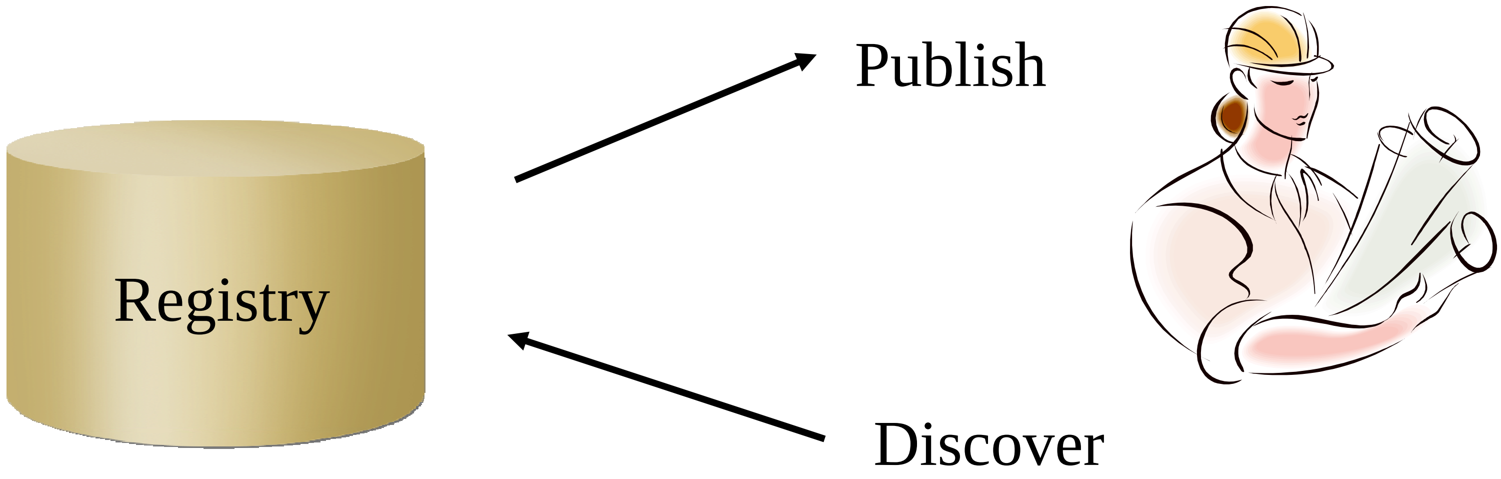
- However, SOA does not necessarily mean Web-Services
  - There are other implementation methods (Jini, CORBA)
- It is not so much the implementation method as the characteristics of the architecture that matter

SOA is More than Technology

- It is a way of conducting business
  - Solutions are now constructed using existing services, or services you will build and then provide to others
- This exchange of information about services requires communication
  - Developers need a way to discover existing services
  - Business managers need to know what functional elements exist

Meta-Data and Service Repositories

- To allow for service discovery, a meta-data repository should be created and maintained;
  - This is often called a Service Registry
  - It is a place for services to define themselves to the outside world (what it does, how to use it);
  - Most Vendors, such as BEA, SUN, and IBM have registry products
- Supports IT Governance, Reuse, Quality, Consistency



Where Does this Leave Us?

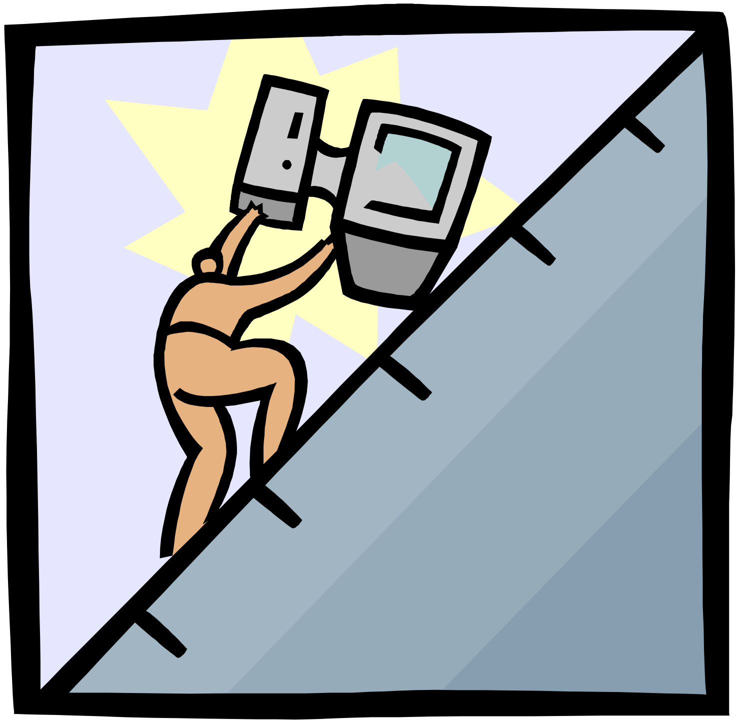
- SOA is big
  - ...big ideas
  - ...big thinking
  - ...big budgets

- SOA is Complex
  - Many technologies and vendors
  - Government and larger companies are in the vanguard

- How do you move forward?
  - Should we start?
  - Where to start?

Moving Forward: Should I Care?

- SOA is happening (“S” happens)
  - ...or at least everyone talks about it
- SOA does offer business advantages
  - Places business needs ahead of technology (Interoperability)
  - Efficiencies (Reuse)
  - Agility
- Disadvantages
  - Another new thing
  - New tools, new nomenclature
  - New technologies with no definitive approach or standards
- A lot of work
  - Technology and Process



Moving Forward: Choices

- For most, SOA is worth a look
- Many questions and decision points:
  - How much SOA do you need?
  - How does SOA fit with current architecture and IT practices?
  - How does this impact the politics of the enterprise?
  - Do we have the skills to do this?
  - Do we have the governance?
  - Do we have the infrastructure?
  - What is the ROI?

Moving Forward: Reality

- There is a collision between the theory of SOA and the real-world difficulties of managing your business and moving towards a new paradigm
- Most of us cannot afford to stop everything, design an architecture, and then move forward
- A concurrent build-design approach is how SOA will really move forward

Moving Forward: Make a Plan

- You need a Road-Map
- You define where you want to go
- It tells you how to get there over time
- Be ready to deviate from the map
- Take shortcuts
- Wing-it
- Occasionally ask for directions

A Credible Path Forward

- Recognize SOA is too much to tackle all at once
- It is scary, even for big firms, to tackle
- Need to avoid the collision between theory and reality
- You can only do so much at any given time
  - Budgetary constraints
  - Political and bureaucratic constraints
  - Staffing issues
  - Energy (another new thing!)
- Consider a bottom-up approach
  - Develop the broad-outline of your architecture
  - Build today using SOA principles

Moving Forward: Incremental Progress

- Understand that the SOA Roadmap and architecture do not need to be fully in place to move forward
  - Avoid paralysis due to complexity of the issues at hand
  - SOA will never be fully defined before technology and fashion change
- An incremental approach is more than okay...it is safe and effective
- Focus on using SOA concepts with your next solution

Case Study: NCTA

- National Cable & Telecommunications Association (NCTA)
- Founded in 1952, NCTA's primary mission is to provide its members with a strong national presence by providing a single, unified voice on issues affecting the cable and telecommunications industry
- Based in Washington DC

Case Study: NCTA IT Infrastructure

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- Small, but very IT Savvy Staff
- Big IT infrastructure is not in the cards
- SOA is a goal, but a full SOA Roadmap is not practical
- However, the benefits of SOA are clear to them
  - Loose-Coupling
  - Reuse
  - Interoperability
- Have IT needs now, cannot wait for a roadmap and infrastructure
- What to do??

Case Study: NCTA Requirements

- Understood that industry is moving towards SOA
- While they may not be large enough to build a SOA infrastructure, they knew they could use SOA concepts to implement their latest solutions
- Critical Need for a highly specialized CRM tool
  - Needed to track legislation, people, activities
- Elected to build a custom application using SOA concepts
- Goals:
  - Modular construction (each piece is a webpart/portlet)
  - Ability to re-use components (such as authentication) for other applications
  - Rapid-Deployment

Case Study: NCTA SEER Application

- SEER provides visibility into linkages between people, activities, issues, and legislation
- Built on .Net 2.0 Framework
  - User Controls
  - Data Visualization Layer
- Built using SOA Concepts to keep as modular as possible
- This was intended to be “SOA from the Ground-Up”
- Each webpart (or portlet) built to be independent as possible to promote use by future NCTA applications
- Therefore, components of SEER to be services consumed by future applications

Case Study: NCTA SEER

- SOA Concepts Found in SEER:
  - Each of the web parts are loosely coupled to the .Net 2.0 portal and can be consumed by most web pages or portals
  - Each of the web parts are self contained and can be extended/modified with no impact to the overall application
  - Each of the components can be reused separately
  - The business logic is abstracted in middle layer of datasets which can be (and have been) plugged to other web parts, promoting code reuse
  - The projects consumes webservices like address validation
  - The project also hosts AJAX and non AJAX web-services like data field name completion and data validation to be consumed by other front ends
  - Entire portal has been built with flexibility in mind and as such independent self contained modules or web parts can be added, removed or extended to meet the future business needs

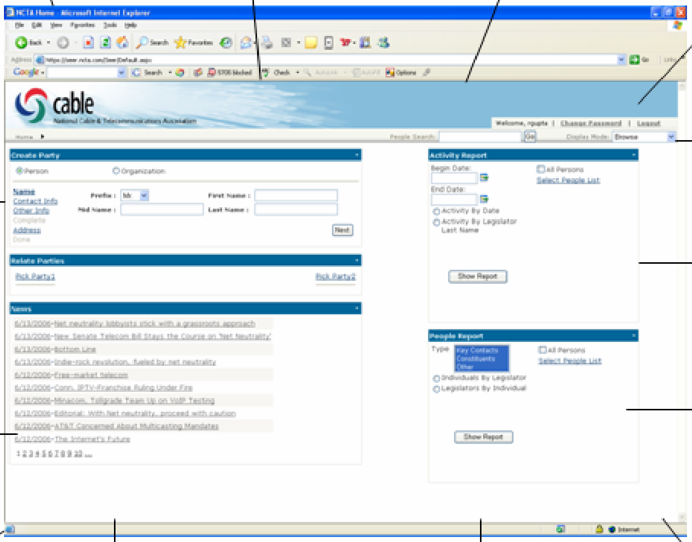
SEER Components

Use of Master Page

Web Services consumption/implementation

Error logging in DB, emailing and real time error Monitoring

Error Logging Modules And Handler (ELMAH)


NCTA Home - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address https://seer.ncta.com/Seer/Default.aspx
Go
Google Search 5706 blocked Check AutoLink AutoFill Options
cable
National Cable & Telecommunications Association
Welcome, rgupta | Change Password | Logout
Home
People Search: Go
Display Mode: Browse
Next
Show Report
Show Report
Internet

Create Party

● Person ○ Organization

Name
Contact Info
Other Info
Complete
Address
Done

Prefix : Mr | First Name :
Mid Name : | Last Name :

Relate Parties

Pick Party1 Pick Party2

News

6/13/2006-Net neutrality lobbyists stick with a grassroots approach
6/13/2006-New Senate Telecom Bill Stays the Course on 'Net Neutrality'
6/13/2006-Bottom Line
6/13/2006-Indie-rock revolution, fueled by net neutrality
6/12/2006-Free-market telecom
6/12/2006-Conn. IPTV-Franchise Ruling Under Fire
6/12/2006-Minacom, Tollgrade Team Up on VoIP Testing
6/12/2006-Editorial: With Net neutrality, proceed with caution
6/12/2006-AT&T Concerned About Multicasting Mandates
6/12/2006-The Internet's Future
1 2 3 4 5 6 7 8 9 10 ...

Activity Report

Begin Date: | □ All Persons
End Date: | Select People List
○ Activity By Date
○ Activity By Legislator Last Name

People Report

Type: Key Contacts, Constituents, Other | □ All Persons
Select People List
○ Individuals By Legislator
○ Legislators By Individual

Personalization

Built on Web Part Framework

Passive Session Extender (HEARTBEAT)

AJAX In Place Refresh (ATLAS)

Role Based Security

Modular design with extensive use of User Controls

Built in .net 2.0 with SQL 2005 as backend

Use of Datasets as middle tier

Allows Expansion and addition of New Web parts

What's Missing?

- SEER built on concepts of loose-coupling, reuse, and interoperability
- No Dynamic Discovery
  - Have not implemented a registry to support discovery
- Have not incorporated a Service Bus
  - Master control layer for all services in the enterprise
- There is no master SOA infrastructure road-map

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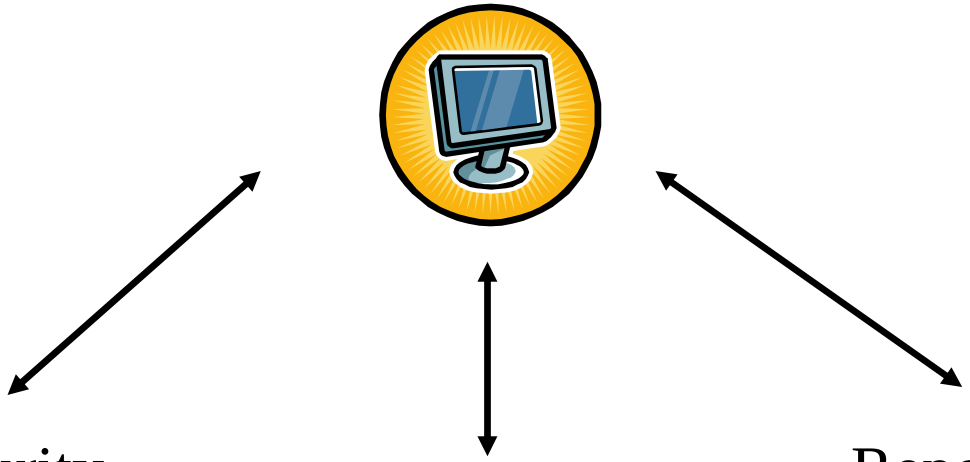
NCTA Results

- SEER serves as the pivot for future applications
- Authentication, Data Validation, Error Logging, Search, Reporting (among others) can all be used by other applications
  - They are in effect services available for consumption by other NCTA applications



Security

Error Logging

Reporting

Take Aways

- Defining SOA policies and procedures is a big deal and very time-consuming
- You can implement SOA from the ground-up
- Small shops can successfully adopt SOA
- This approach can work for any sized business or government agency
- SOA road-mapping is important
  - However, don’t let it delay forward progress

Thanks!!

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