Service oriented architecture
SOA – its use in the state and public administration
SOA – uplatnenie v štátnej a verejnej správe

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Customers & Analysts Agree:
SOA Enables Rapid & Incremental Change Leading to Innovation

Innovation That Matters *

The IBM and GenXus SOA-based solution has made our product more innovative, expanded our market and made us more competitive. It will let us grow our business significantly in the years to come."

“SOA is the heart of the next wave of innovation. The leaders that do this well are able to rapidly change ...”

“SOA is critical for ... executing the on-demand vision and in preparing ... for the incremental changes ... over time. Companies ... make better decisions.”

AMR

IDC
SOA and Web Services Management

- IBM
- BEA systems
- Oracle
- Microsoft
- SAP
- SUN Microsystems
- Tibco Software
- Progress Software
- Amber Point
- HP
- CA
- ...

- IBM
- Accenture
- CapGemini
- Deloitte
- TCS
- Infosys
- T-Systems
- ...

> Comparison by analysts...
SOA …

• Why this?
• What is SOA?
• Who does it need and want?
• Why?
• What are benefits?
• How to approach it?
• What are traps?
• What’s next?
Productivity at state and public institutions

- Productivity increase
- New services
- Changes of legislation
- New laws
- Implementation of organisation and process changes

> All need to be implemented fast ...
Productivity growth required

Breakthroughs occur with maturity and convergence of multiple technologies and related activities.
Long time ago,
there was Client / Server.
Then came e-business and dot.com.

Today, SOA is comming.
Is a universal tool available?
SOA

What is . . . ?

... a service?
A repeatable business task – e.g., check customer credit; open new account

... service orientation?
A way of integrating your business as linked services and the outcomes that they bring

... service oriented architecture (SOA)?
An IT architectural style that supports service orientation

... a composite application?
A set of related & integrated services that support a business process built on an SOA
Why?

- Complex processes
- Fast & frequent changes (business, legislation)
- Complex environment (many participants)
- Public – private interaction and collaboration
- Public
  - Social securities
  - Taxation
  - Health insurance
- Business
  - Banks
  - Insurance services
  - Telco services
Why SOA?

- Economics and business processes changes
- Growth and flexibility
- Reusable assets
- Information management
- Becoming an on demand business
Expected (required) benefits

- Short time to implementation (new service or change)
- Cost of development & integration of IT support (function) decreased
- Data, application, process integration
- Reliability
- Consistency
- Reusability
- …
The Challenge: Bringing People, Process, and Information Together for True SOA Value
More details …
Definition of SOA and SOA Infrastructure

SOA and Web Services are the tools that enable IT to accommodate business requests for flexibility while optimizing enterprise application investments.

What is the impact of SOA on current Enterprise Architectures?
- Alignment of Business and IT Architectures
- SOA Reference Models
- SOA Governance

How do you develop SOA with a business focus?
- Componentizing the business
- Service-oriented Modeling and Architecture
- Business Process Management

How do you reuse applications in the context of SOA?
- Reuse of existing applications
  - Service registries
  - Connectivity

How do you leverage information in an SOA?
- Information as a Service
  - Separation of function and data
  - Master Data Management

How does my infrastructure support SOA?
- Quality of Service
  - Security
  - Service Management

SOA Infrastructure is required in order to effectively apply service orientation to an enterprise or large scale software component.
Business Centric SOA Starts with Your Most Critical Business Pain and Enables You to Build for Flexibility

- Enable **human and process interaction** with consistent levels of service
- Deliver trusted information in **business context** to enable innovation
- Achieve greater efficiency and effectiveness with **business model innovation**

"Pick business processes with pain points that the business clearly recognizes — processes for which the business most clearly needs end-to-end visibility, control, insight, and flexibility"
SOA Entry Points Help Customers Get Started

*Both Business Centric and IT Focused*
The SOA Lifecycle

- Discover
- Construct and test
- Compose
- Integrate people
- Integrate processes
- Manage and integrate information
- Retain mainframe QOS
- Connect applications across all platforms enterprise wide
- Manage applications and services
- Manage identity and compliance
- Monitor business metrics
- Use the latest middleware and management tools to reduce operational overhead

Maximize re-use and avoid the cost and risk of new application development projects.
SOA Governance Lifecycle

**Establish the Governance Need**
- Document and validate business strategy for SOA and IT
- Assess current IT and SOA capabilities
- Define/Refine SOA vision and strategy
- Review current Governance capabilities and arrangements
- Layout governance plan

**Define the Governance Approach**
- Define/modify governance processes
- Design policies and enforcement mechanisms
- Identify success factors, metrics
- Identify owners and funding model
- Charter/refine SOA Center of Excellence
- Design governance IT infrastructure

**Monitor and Manage the Governance Processes**
- Monitor compliance with policies
- Monitor compliance with governance arrangements
- Monitor IT effectiveness metrics

**Deploy the Governance Model Incrementally**
- Deploy governance mechanisms
- Deploy governance IT infrastructure
- Educate and deploy on expected behaviors and practices
- Deploy policies
SOA Infrastructure for Enterprise-wide Service Orientation
SOA Infrastructure for Enterprise-wide Service Orientation

Processes
Services
Applications

Virtualized Infrastructure

Physical Infrastructure

SOA Infrastructure

Virtualized Infrastructure
SOA – Processes, Services, Applications - layers in detail

- Consumers
- Business Process: Composition; choreography; business state machines
- Services: atomic and composite
- Service Components
- Operational Systems

- Channel
- B2B

- Service Consumer
- Service Provider

- Governance
- Data Architecture (meta-data) & Integration (Enterprise Service Bus)
- Business Intelligence
- QoS Layer (Security, Management & Monitoring Infrastructure Services)
SOA Infrastructure for Enterprise-wide Service Orientation

Processes
Services
Applications

Physical Infrastructure

Virtualized Infrastructure

Middleware

SOA Infrastructure

Enables collaboration between people, processes & information
Orchestrates and automates business processes
Manages diverse data and content in a unified manner
Connect with trading partners
Build on a robust, scalable, and secure services environment
Facilitate interactions with existing information and application assets
Optimizes throughput, availability and utilization

Development Services
Integrated environment for design and creation of solution assets

Enterprise Service Bus

Management Services
Manage and secure services, applications & resources
SOA reference architecture (IBM)

- **Business Services**: Supports enterprise business process and goals through businesses functional service.
- **Interaction Services**: Enables collaboration between people, processes & information.
- **Process Services**: Orchestrate and automate business processes.
- **Information Services**: Manages diverse data and content in a unified manner.
- **Partner Services**: Connect with trading partners.
- **Business App Services**: Build on a robust, scaleable, and secure services environment.
- **Access Services**: Facilitate interactions with existing information and application assets.
- **Infrastructure Services**: Optimizes throughput, availability and utilization.

**Development Services**: Integrated environment for design and creation of solution assets.

**Management Services**: Manage and secure services, applications & resources.
SOA Infrastructure
Required for Enterprise-wide Service Orientation
What the Analysts Are Saying

“Half of all companies and 77% of large enterprises reported that they are or will be using SOA by the end of 2005. Why? Evidence is mounting that SOA provides real benefits for business integration and flexibility.”


CIOs continue to struggle to align business and IT in meaningful, measurable ways. More effective IT governance processes and tools are becoming top priorities among business-savvy CIOs.

Five Ways the Rise of IT Governance Will Change How Enterprises Buy IT, Summit Strategies, December 2005

In 2006, lack of working governance mechanisms in midsize-to-large (greater than 50 services) post-pilot SOA projects will be the most common reason for project failure (0.8 probability).


With the widespread adoption of SOA, the challenges associated with SOA projects are emerging. SOA governance isn't optional — it's imperative. Without it, return on investment will be low and every SOA project out of pilot phase will be at risk.

Service-Oriented Architecture Craves Governance, Gartner, Inc., Paolo Malinverno, January 20, 2006
All technology used and … SOA spaghetti

**Characteristics include:**

- Duplicated applications, processes and functions
- Business processes embedded into business logic
- Business logic and function dedicated to a single application
- Point-to-point integration between applications resulting in many-to-many connection points
- No distinct integration layer
- Initial efforts with Web services are hard to manage or maintain
- Lack of adequate governance processes
How to approach SOA implementation

During all phases the coordination between the projects and the compliance to defined standards is assured by the SOA Governance Team. For the test and cut-over to production a joint project team is required.
Awareness of scope and of a business case
BPM Enabled by SOA offering: deliverables dependency map

WWPMM deliverables

IBV POV

Business architecture → Business impact assessment

Change management strategy

Current organization assessment

Current IT assessment

High-level SOA reference architecture

SOA BPM review

Current-state process definition

Current (as is) business process flows in WBM

Business process transformation requirements

BPM runtime environment

Target (future) organization design

Future-state process definition

Measurement framework

Future business process flows in WBM

First-level BPEL for future process flows

Optimized future-state process definition

Optimized future business process flows in WBM

Service model

High-level service model

Deployed business processes

SOA Strategy

SOA Implementation Planning

SOA Lifecycle Services

BPM Enabled by SOA

SOA Diagnostics

Deliverables from other methods

Inputs from other methods
FIGURE 1.
Current process to prepare for a financial assessment with four retirement accounts.

Source: IBM Institute for Business Value.
FIGURE 2.
The revised retirement pension management process using an SOA-enabled portal and integrated account management system. Information can be made available where and when it's needed.

Source: IBM Institute for Business Value.
Connectivity between your applications is what powers your business; over time these connections become very complex.

- Fundamental to the success of SOA is the improvement of the connectivity throughout the business.
- Decoupling these links between applications, systems, servers, storage networks, mobile devices and services is complex and time-consuming.
- Integration of the SOA technologies into your test and production IT environment requires extensive resources and deeply skilled professionals.

Ensuring that the ESB does everything it needs to do for your business requires a good plan and consistent, reliable execution.
Why does it matter? - As the application transformation occurs, the Infrastructure *transformation* needs to proceed in parallel.
Pilot successful, what’s next …

Why SOA Governance matters

- Realize business benefits of SOA
  - Business process flexibility
  - Improved time to market
- Mitigate business risk and regain control
  - Maintaining quality of service
  - Ensuring consistency of service
- Improved team effectiveness
  - Measuring the right things
  - Communicating clearly between business and IT
Assessing your SOA maturity

Use the (IBM) Services Integration Maturity Model (SIMM)

<table>
<thead>
<tr>
<th>Business</th>
<th>Isolated business-line driven</th>
<th>Business process integration</th>
<th>Componentized business</th>
<th>Componentized business offers services</th>
<th>Processes through service composition</th>
<th>Geographical independent service centers</th>
<th>Mix and match business and location capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization</td>
<td>Application-specific skills</td>
<td>IT transformation</td>
<td>IT governance</td>
<td>Emerging SOA governance</td>
<td>SOA and IT governance alignment</td>
<td>SOA and IT infrastructure governance alignment</td>
<td>Governance through policy</td>
</tr>
<tr>
<td>Methods</td>
<td>Structured analysis and design</td>
<td>Object-oriented modeling</td>
<td>Component-based development</td>
<td>Service-oriented modeling</td>
<td>Service-oriented modeling</td>
<td>Service-oriented modeling</td>
<td>Business grammar-oriented modeling</td>
</tr>
<tr>
<td>Applications</td>
<td>Modules</td>
<td>Objects</td>
<td>Components</td>
<td>Services</td>
<td>Process integration via services</td>
<td>Process integration via services</td>
<td>Dynamic application assembly</td>
</tr>
<tr>
<td>Architecture</td>
<td>Monolithic architecture</td>
<td>Layered architecture</td>
<td>Component architecture</td>
<td>Emerging SOA</td>
<td>SOA</td>
<td>Grid-enabled SOA</td>
<td>Dynamically reconfigurable architecture</td>
</tr>
<tr>
<td>Information</td>
<td>Application specific</td>
<td>LOB or enterprise specific</td>
<td>Canonical models</td>
<td>Information as a service</td>
<td>Enterprise data dictionary and repository</td>
<td>Virtualized data services</td>
<td>Semantic data vocabularies</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>LOB platform specific</td>
<td>Enterprise standards</td>
<td>Common reusable infrastructure</td>
<td>Project-based SOA environment</td>
<td>Common SOA environment</td>
<td>Virtual SOA environment</td>
<td>Dynamic sense and respond</td>
</tr>
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Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 | Level 7
Providing an objective perspective on your current SOA status with the SOA Maturity Assessment

The SOA Maturity Assessment from IBM provides the framework for you to:

- Define the scope and boundaries of the assessment
- Conduct interviews with your subject matter experts
- Review your challenges and goals
- Assess your current and planned IT transformational initiatives
NYS Dept of Taxation and Finance increased efficiency and mitigated risk with BPM

*High Volume Business process modeling delivered*

<table>
<thead>
<tr>
<th>Objectives</th>
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<tbody>
<tr>
<td>▪ Update aging technology</td>
<td></td>
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<tr>
<td>▪ Transform their systems to be more flexible and cost efficient</td>
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</table>

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<tr>
<th>Actions</th>
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<tr>
<td>▪ Leveraged SOA and business process modeling and business activity monitoring to rapidly transform their systems, data, people and processes</td>
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<tr>
<td>▪ Manual processes are now automated</td>
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<td>▪ Real-time business activity monitoring replaced daily printed run reports</td>
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<tr>
<th>Results</th>
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<tr>
<td>▪ Rapid modernization of legacy batch systems to transactional</td>
<td></td>
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<tr>
<td>▪ High component reuse, lowered costs</td>
<td></td>
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<tr>
<td>▪ Reduced errors and business exceptions</td>
<td></td>
</tr>
<tr>
<td>▪ Higher value business metrics</td>
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</table>
Information

- IBM Federal SOA Institute
  http://www-03.ibm.com/industries/government/doc/content/resource/thought/2844152109.html?re=federal_soa_smartspot&ca=6N2CB?&ca=qapromo&me=w&met=qapromo-s0gi-b0gi-l0-d0fedSOAinstitute-n023-o0-g0usen

- IBM Institute for Business Value
  From possibility to actuality – Why social organisations are turning to SOA
  SOA – A practical guide to measuring return on investment

- SMART SOA
  http://www-306.ibm.com/software/solutions/soa/launch/?S_CMP=smartspot&ca=qapromo-s0swg-b0swg-l0-d0swgmer-n0241-o0soa-g0usen

- ...

...
Thank You