



Architecture Deep Dive

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Take Credit Code: ARCHDD

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What is Architecture?

The fundamental organization of a system embodied by its components, their relationships to each other and to the environment and the principles guiding its design and evolution. (IEEE P1471/D5.3)

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In Particular, SOA is Enterprise Architecture

Enterprise architecture includes:

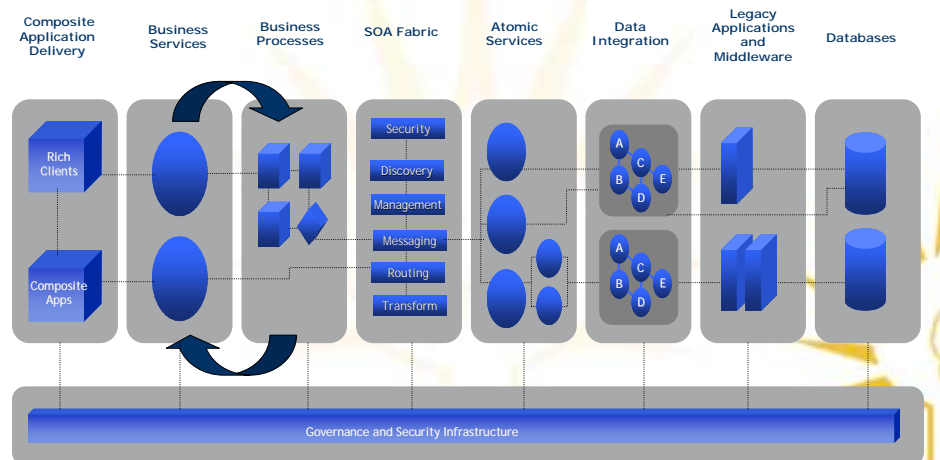
- An aggregated architecture of all the individual IT systems within an organization
- The human element within the enterprise
- Systems, people, and organizational constructs at other companies that have relationships with the enterprise
- Individual consumers who are that enterprise's customers
- Corporate governance

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A closer Look at SOA



Source: MW2 Consulting

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SOA Foundation: Model-Driven Architecture

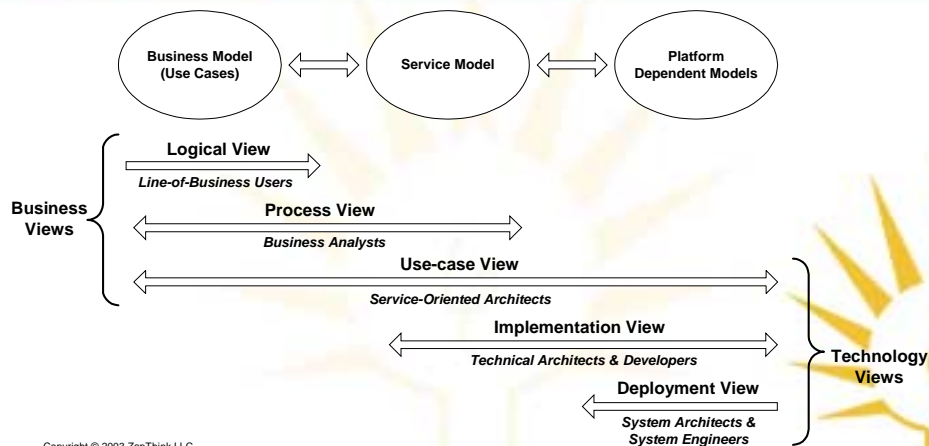
- Object Management Group (OMG) initiative
- Concepts of *models*, *metamodels*, and the Meta-Object Facility, which is a *meta-metamodel*
- Platform independent model and platform dependent models
- Model-driven development
- Weakness: Doesn't (yet) take into account changing requirements

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The SOA Metamodel



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SOA *Idées Fortes*: Loose Coupling

- Consumer and Provider of Services controlled by different people
- Changing one doesn't break the other
- Build one without being aware of the other
- Loose coupling on various levels:
 - Application interface
 - Data formats
 - Security
 - Governance and Policies



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SOA *Idées Fortes*: Asynchrony

- The Web is synchronous: click a button and wait for a response
- Services can also be asynchronous: allow for long-running processes
- SOA should be event-driven
 - SOA vs. EDA is an inappropriate distinction

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SOA *Idées Fortes*: Coarse Granularity

- Technical sense + business sense
- Business-oriented requests and responses
- Blocks of information exchanged
- Encapsulate APIs into fine-grained, atomic Services and compose them into coarse-grained, business Services
- Coarse granularity implies *composability*

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Top-Down & Bottom-Up Approaches

- Top-down only: have the plan, may not be able to execute
- Bottom-up only: build Services, may not be reusable
- SOA planning *must* be both
 - Develop the vision (but not the details) ahead of time
 - Service development should be iterative

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Contract-First Development

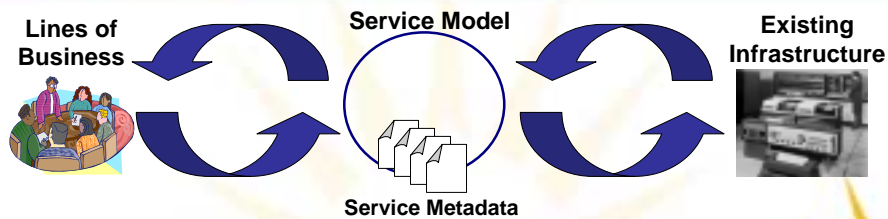


- Service contracts specify required functionality to IT and provided functionality to the business
- Service model represents the clearinghouse for information about IT environment
- Contracts go beyond WSDL:
 - Usage policies
 - Security policies
 - Consumer delivery contracts
 - Service-level agreements, etc.

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The Role of the Registry



- Design time ↔ Runtime
- Role of repository/registry
- UDDI and beyond

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Metadata Management Requirements

- In an SOA, business logic is in *metadata*, not code
- Types of metadata
 - Service interfaces
 - Business process flows
 - Policy definitions
 - Event messages and types
 - Schema and semantics
- Need: development tools and methodologies

This is the state of the art for SOA

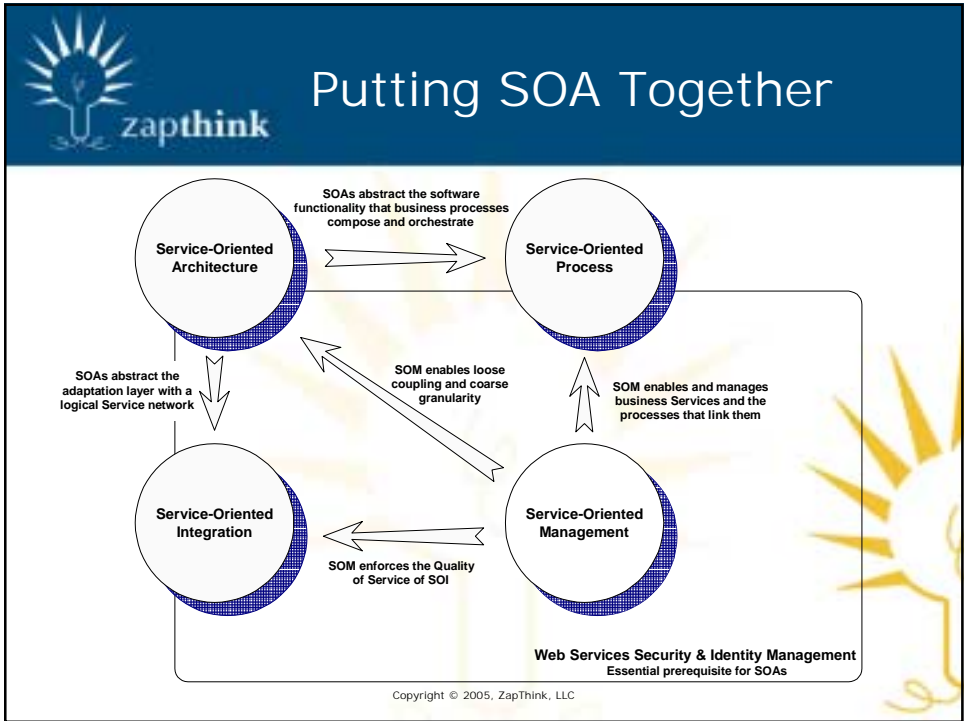
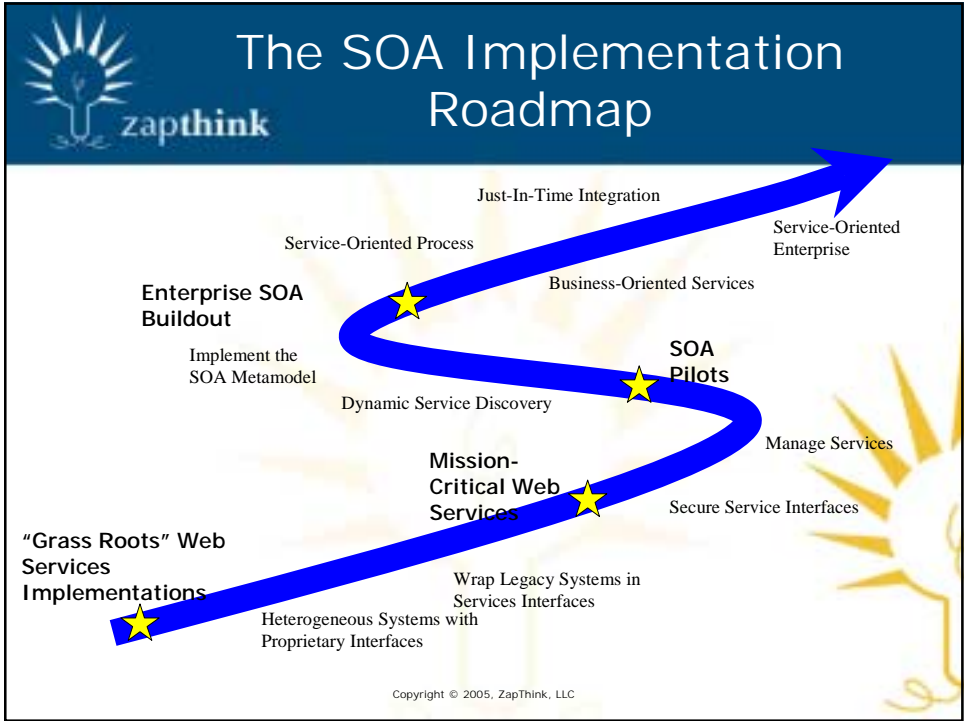
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Enterprise Governance: Managing the People of SOA

- Governance: the new business mandate
 - Establish and communicate policies that employees must follow
 - Give employees the tools they need to be compliant with those policies
 - Provide visibility into the levels of compliance in the organization
 - Mitigate any deviations from established policy
- SOA-enabled Governance:
 - Policy management
 - SOA configured & controlled via metadata, including policy
 - Visibility
 - Services abstract heterogeneous data sources, providing necessary business intelligence
 - Flexibility
 - Ability to build Services that address compliance issues and adjust them as regulations or business needs change

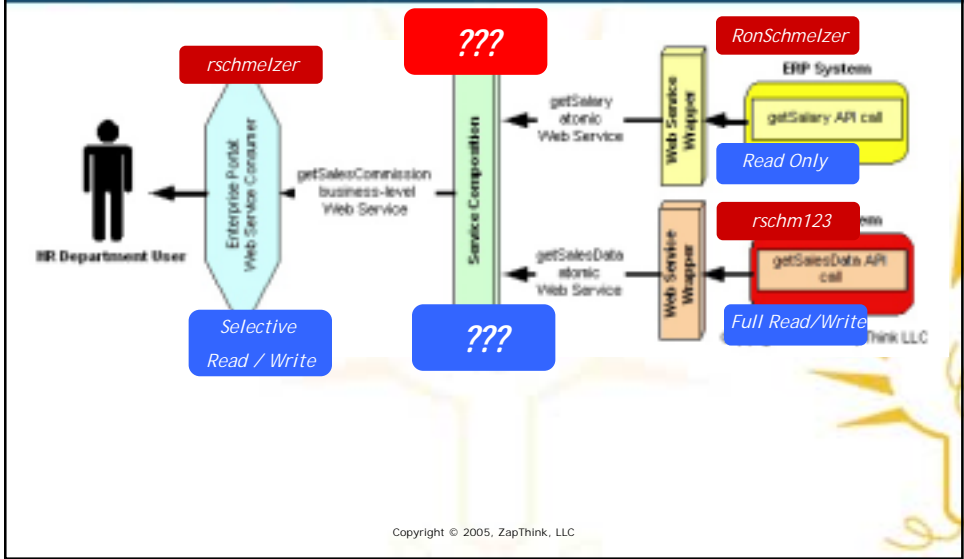
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The Security Context Challenge

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Identity Management: Kill Two Birds...

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- Many enterprises already dealing with "Single Sign-On"
 - "Sticky Note" problem: too many passwords for too many systems
 - Problems administering users
 - Too many people with root access
 - Unknown security holes
- Now: need enterprise ID & access management to prepare for an SOA



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Service-Oriented Management

- Are your Services up and running?
- Are the right consumers accessing the right Services?
- How do you keep consumers & producers of Services loosely coupled when Services change?
- How do you fix things when something goes wrong?
- Are you providing the required quality of Service?
- *SOA enablement...*

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SOA Enablement...

- Provide and enforce the SOA layer of abstraction
- Combine fine-grained APIs into coarse-grained business Services
- Mask complexity of underlying technology: message protocols, adapters, APIs, etc.
- Handle quality of service, scalability, etc. "behind the scenes"

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The State of the Market

- All balls must be in the air at once
- Web Services do not create a permanent, distinct market
- New entrants jockeying for position while incumbents wait/build/acquire



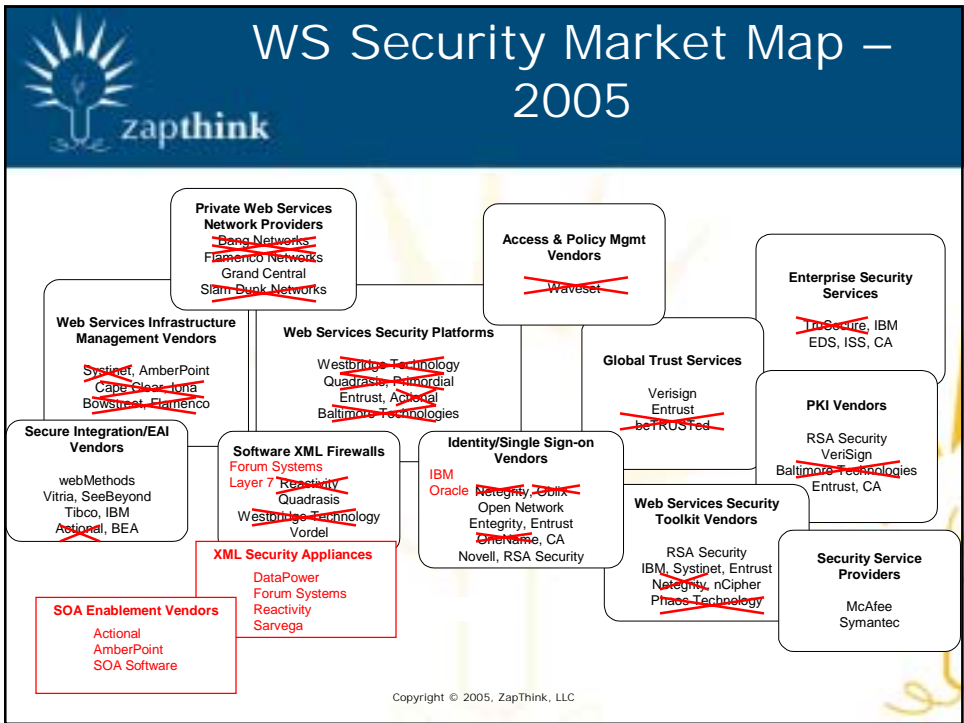
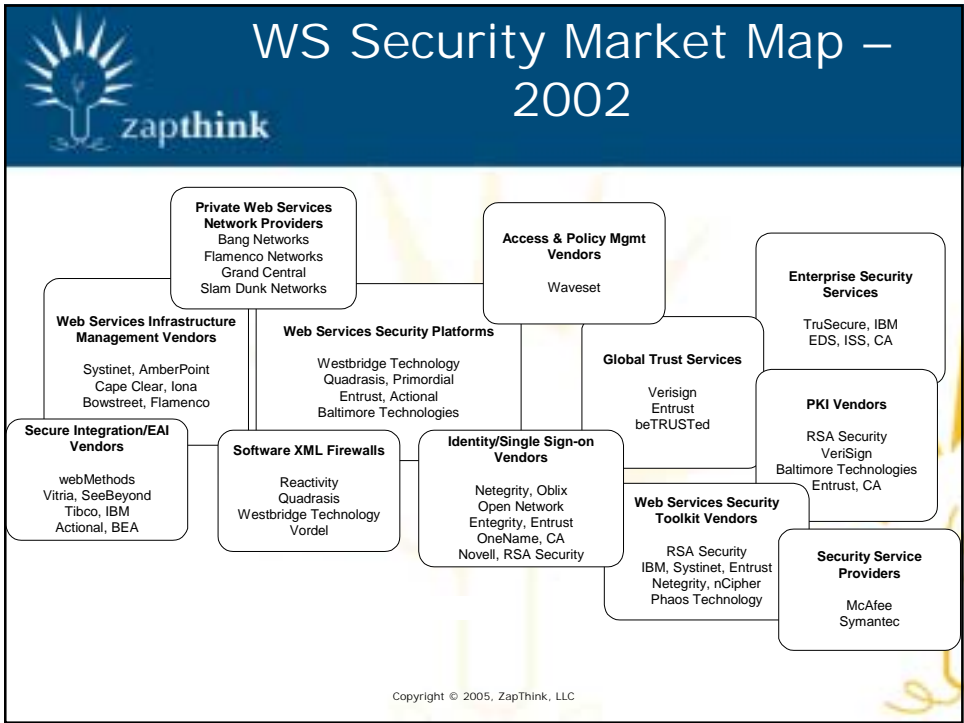
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Introducing the SOAIF...

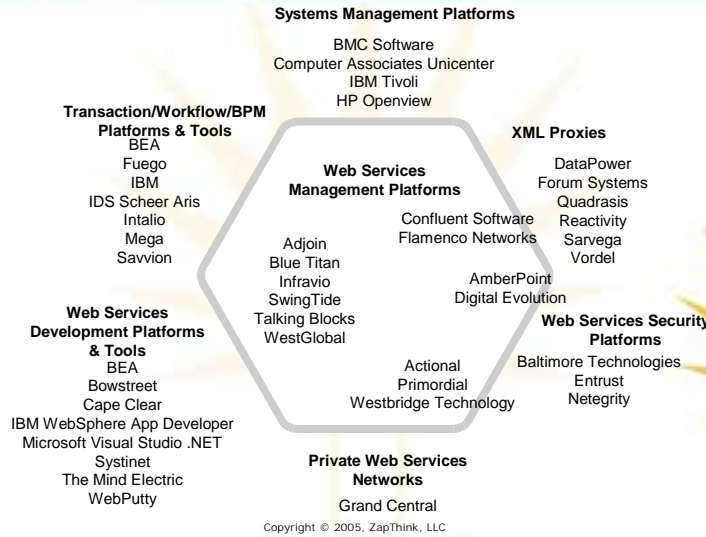
- The SOA implementation framework is a product or set of products that offer everything companies need to build, run & manage their SOA
- No vendor offers a complete SOAIF (yet)
- Leverages Service orientation for modularity
- Today's markets are converging on the SOAIF

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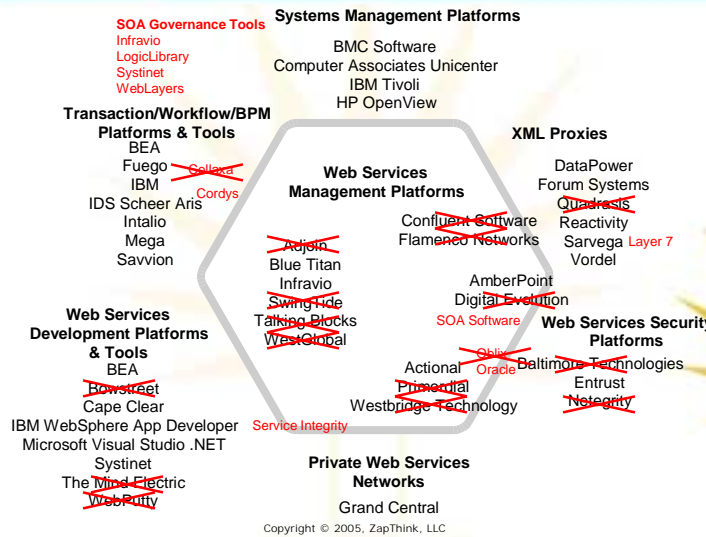




WS Management Market Map - 2002



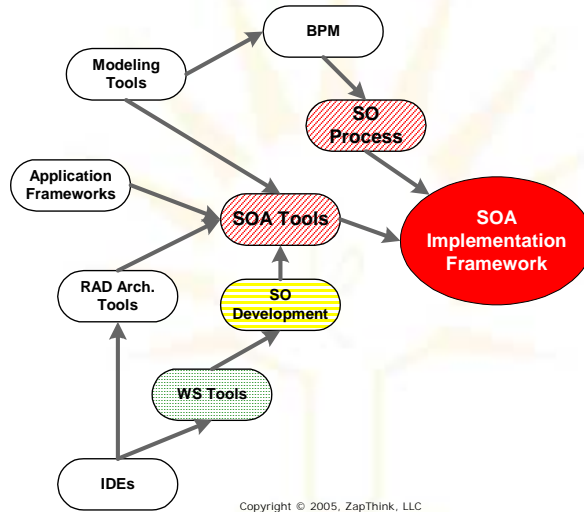
WS Management Market Map - 2005





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Arch., Devt. Tools & SOAIF



- Established Markets
- Traditional WS Markets
- Markets Remaining Distinct
- Core SO Markets

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SOA Tools Market Map - 2003

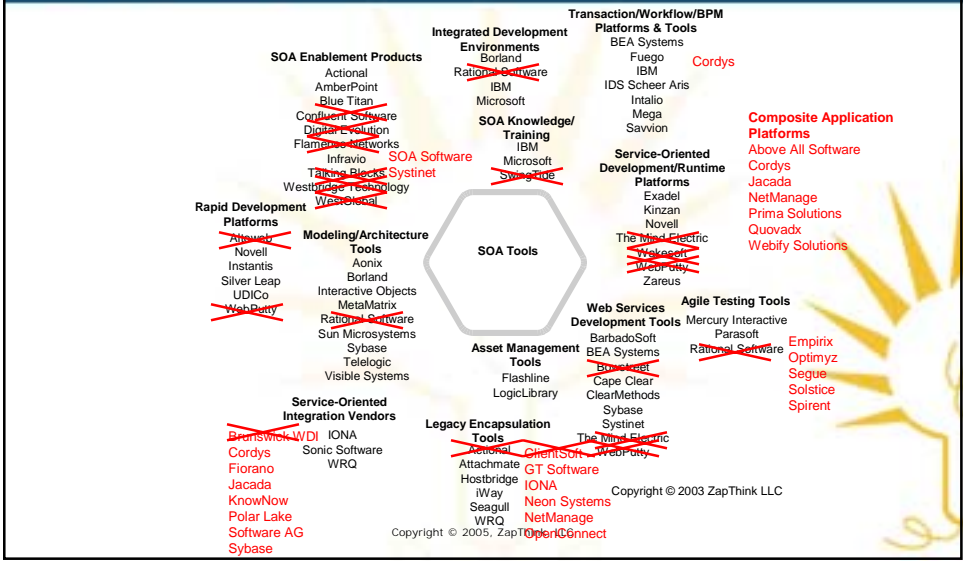


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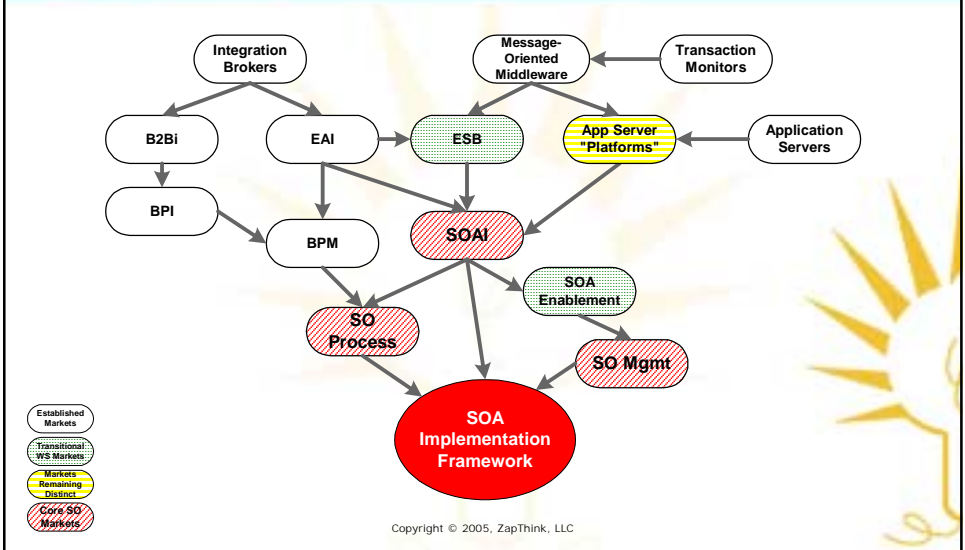
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SOA Tools Market Map - 2005

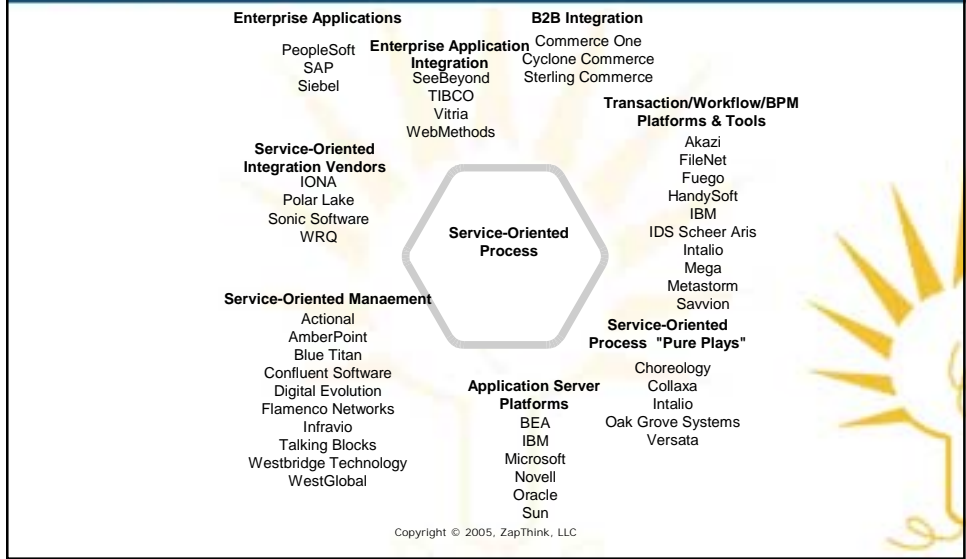


App. Integration, Process & SOAIF

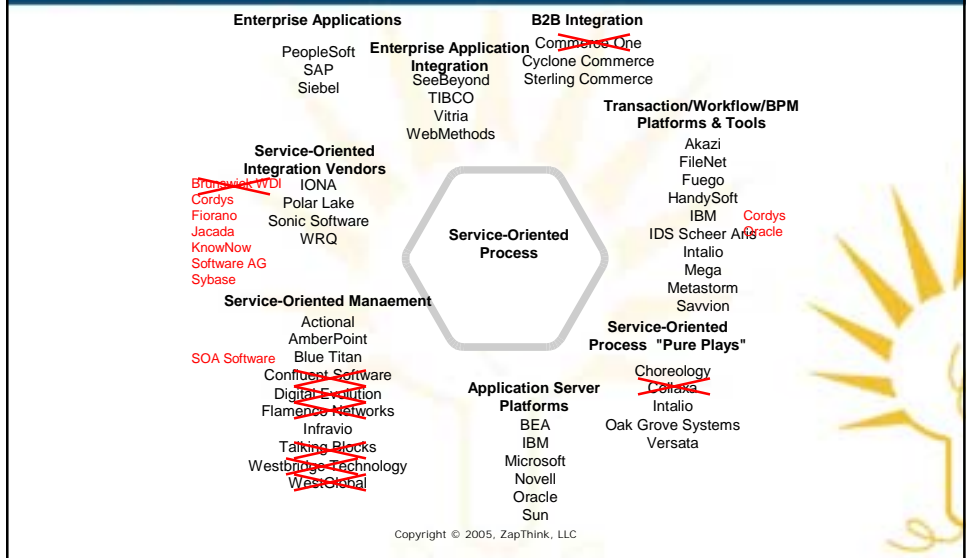




SOP Market Map - 2003



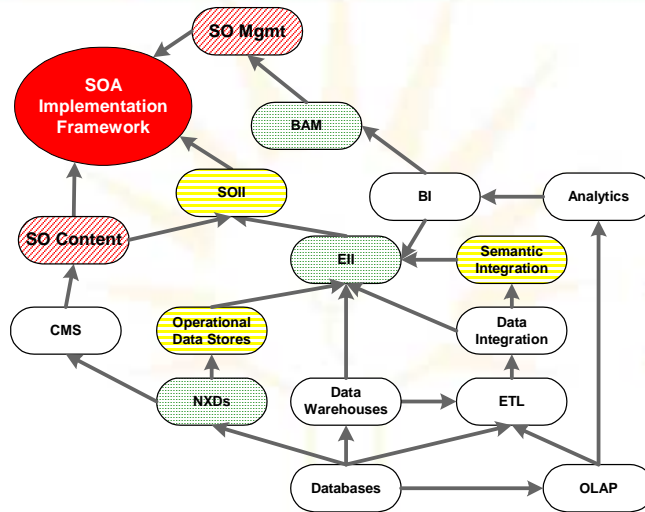
SOP Market Map - 2005





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Info. Integration, Content & SOAIF



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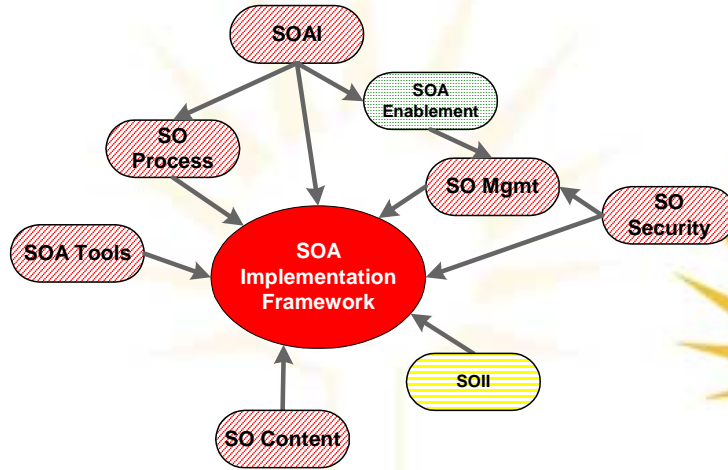
Next Steps?

- Take iterative approach to reduce risk
- Security & management usually come first
- Build SOA top-down (architectural plan) *and* bottom-up (build Services from existing resources)





SOAIF Futures...



- Established Markets
- Traditional W3C Markets
- Markets Remaining Distinct
- Core SO Markets

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Thank You!



ZapThink is an industry analysis firm focused exclusively on XML, Web Services, and Service-Oriented Architecture.

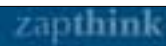


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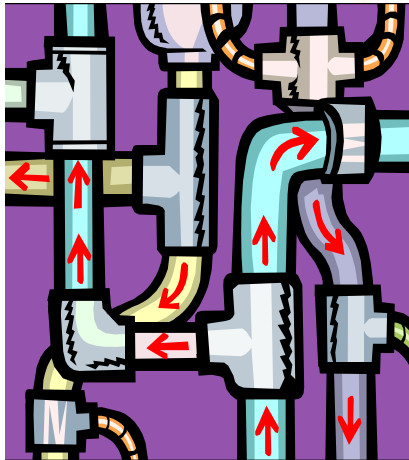
A slide with a dark blue header and a white body. The header contains the ZapThink logo (a stylized sun with rays and a signature) and the text "zapthink" in lowercase. To the right of the logo, the text "SOA is a discipline..." is written in white. The body of the slide contains a bulleted list of five points. A large, faint, stylized sun graphic is visible in the background of the white area. At the bottom center, there is a small copyright notice: "Copyright © 2005, ZapThink, LLC".

SOA is a discipline...

- Implementing a Service-Oriented Architecture is a *journey*
- Moving from proprietary interfaces to standards-based ones is just the first step...
- SOAs require a combination of security, management, integration, process, and architecture tools
- What are the right steps to guarantee overall success?
- How can you guarantee an ROI while reducing risk?



SOA Abstracts the Plumbing



- Goal is reusable, composable business Services
- But what kind of infrastructure enables loosely coupled, composable, asynchronous Services?
- Many different approaches to implementation

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Don't Get Lost in the Terminology

ESB? SOA Infrastructure? EAI?
 Abstraction?
 Service Network? EDA?
 Service Grid? SOA?
 Fabric?

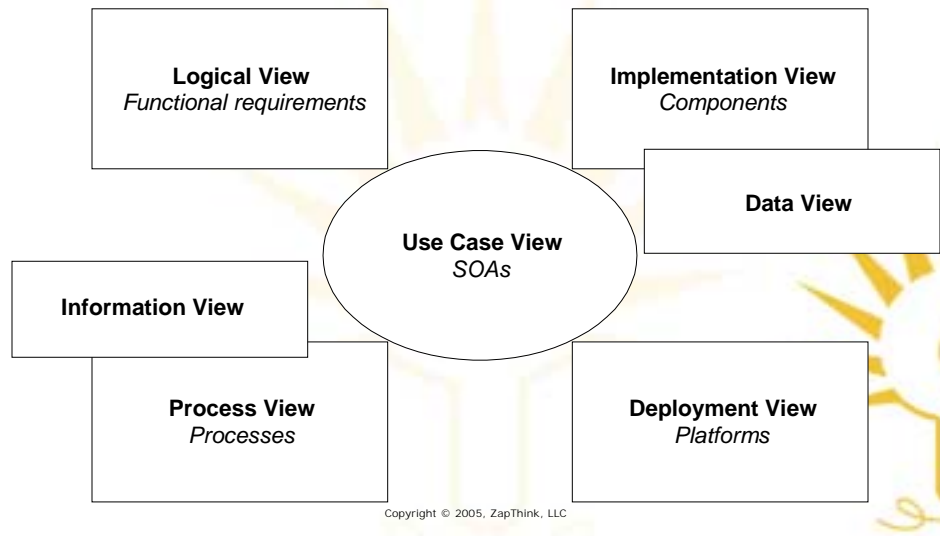
- There are many styles for SOA implementation
- Focus on your goals: Reuse? Governance? Reduced integration cost? Agility?

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The 4+1 View Model of SOA



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SOA Enablement...

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Important Points: Managing Services

- You need management when you offer your first “mission critical” Web Service (don’t wait!)
- Management is critical for building and running enterprise-class SOAs
- The Service-Oriented Management space is still in flux

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Enterprise Governance: Managing the People part of SOA

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Mandatory, Urgent, & Non-Negotiable

~~Return On Investment~~

Risk Of Incarceration

