



Service Oriented Patterns and Anti-patterns

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Agenda

- Introduction**
- Technology Patterns
- Technology Anti-patterns
- Human Patterns
- Human Anti-patterns
- Review

Shameless Plug

□ Who is Kyle Gabhart?

- ❖ Technology strategist and enterprise architect with a broad range of relevant experience
- ❖ Currently working with several Fortune 500's on their SOA strategies, including EDS as well as a handful of state and federal agencies
- ❖ Author of nearly 100 articles, white papers, books, and training programs

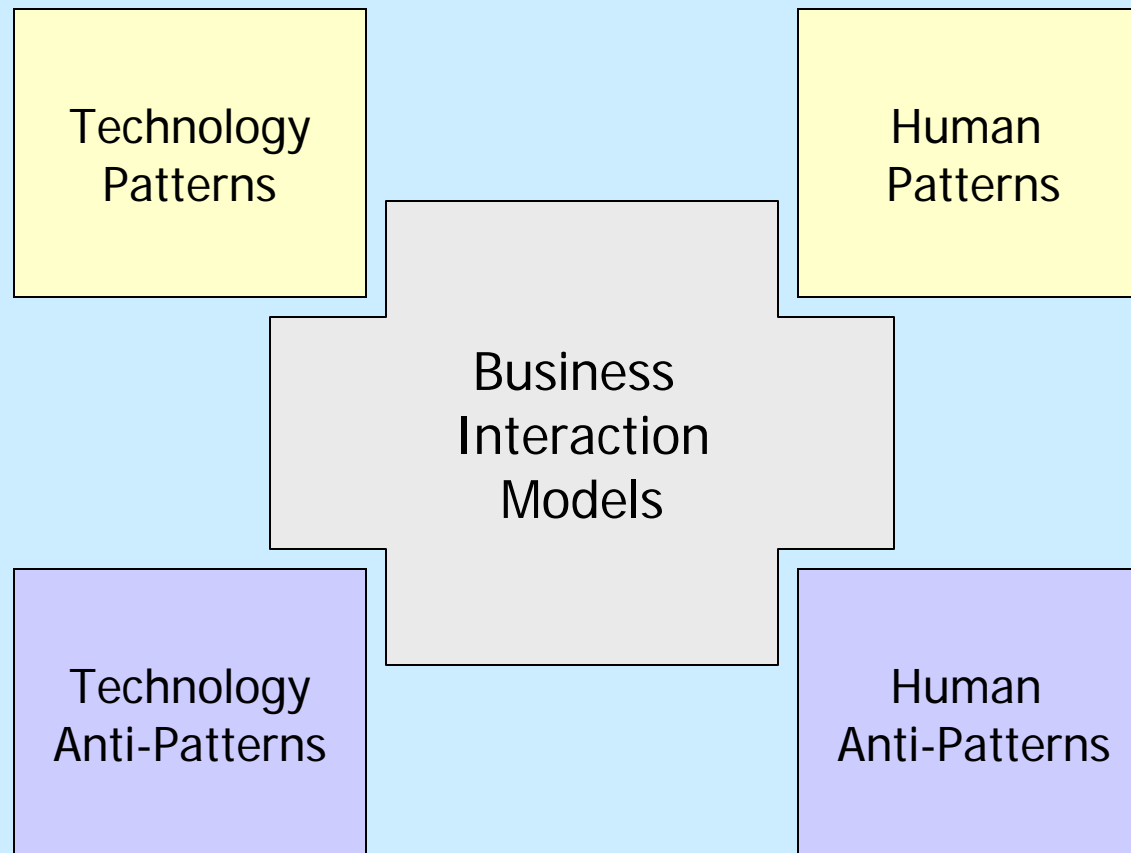


- ❖ Open source contributor, consultant, architect and strategist on SOA and Web services since 2001
- ❖ Lead author of *soamatters.com*
- ❖ SOA Practice Lead for Web Age Solutions, a leading education and mentoring firm



Service Oriented Patterns Framework

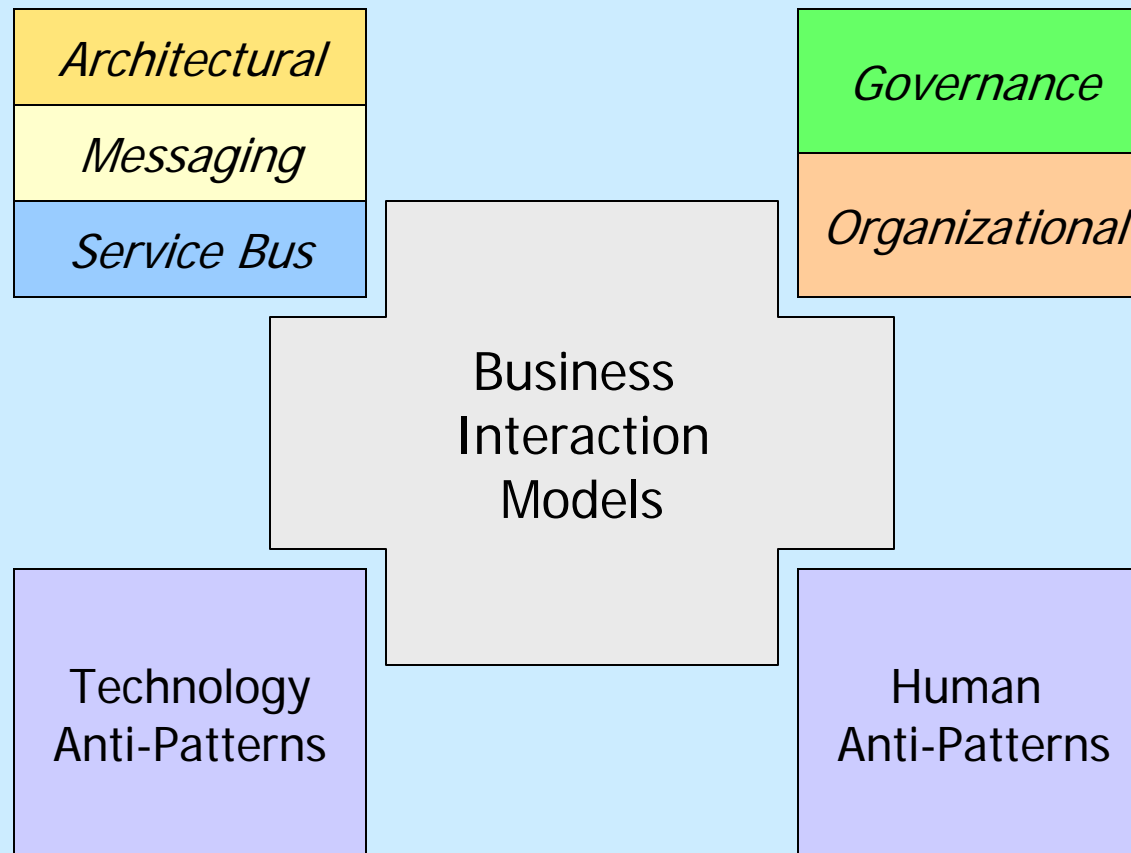
- ❑ Four pattern categories build off of a core set of business interaction models





Service Oriented Patterns Framework

- The Technology Patterns and Human Patterns categories are further divided





Business Interaction Models

Pattern	Model	Description	Examples
Self-service	User-to-Business	Users interact directly with a business	<i>Simple Web sites and Kiosks</i>
Information Aggregation	User-to-Data	Users pull information from one or more data volumes	<i>BI/data mining, CMS, Wikis, Search engines, mashups</i>
Information Subscription	Data-to-User	Users identify data of interest and opt-in to receive information	<i>Atom/RSS, MOM, opt-in email</i>
User Collaboration	User-to-User	Users engage other users through some type of facilitated exchange	<i>E-mail, forums, virtual workspace, P2P network</i>
Extended Enterprise	Business-to-Business	Business processes span multiple businesses within a single value chain	<i>EDI, supply chain management, partner gateways</i>

Based largely upon "Patterns: Service Oriented Architecture and Web Services" by IBM



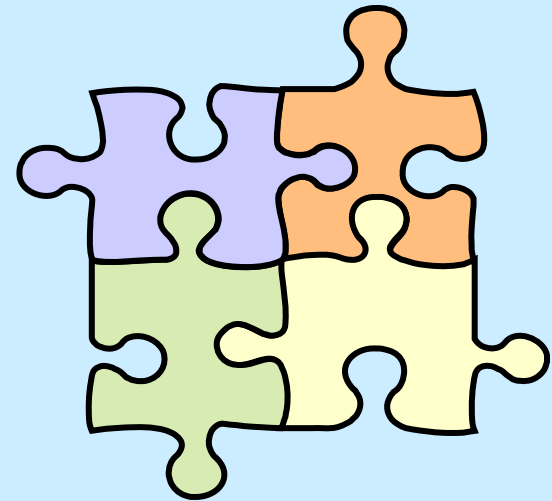
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Architectural Design Patterns

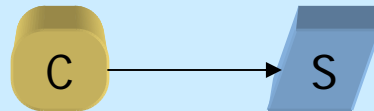
- ❑ When designing a Service Oriented Architecture, many of the standard EAI and BPM patterns apply
- ❑ Although SOA certainly is more than just a fancy approach to EAI and BPM, it encompasses and builds upon previous enterprise strategies
- ❑ In the following patterns you'll see the influence of previous enterprise strategies and perhaps a few new elements
- ❑ We'll explore two categories of architectural design patterns
 - ❖ Connection patterns
 - ❖ Messaging patterns



Connection Patterns

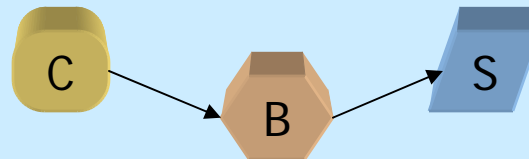
□ Direct Connection

- ❖ Client invokes service operations directly



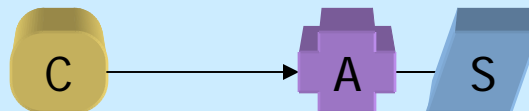
□ Brokered Connection

- ❖ Client invokes operations via a broker (bus or registry)



□ Adapter Connection

- ❖ Client engages an adapter which then directly invokes the service via native APIs

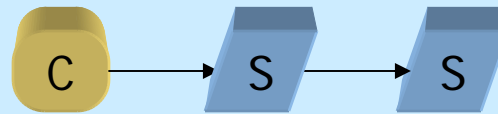




Connection Patterns (continued)

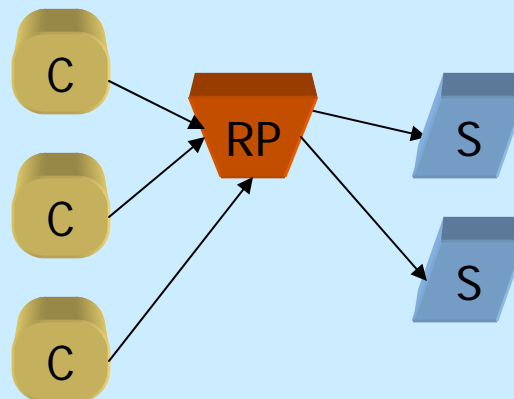
□ Service Mediator

- ❖ Client invokes service operations on an intermediary service which processes the message and then calls another service



□ Reverse Proxy / Gateway

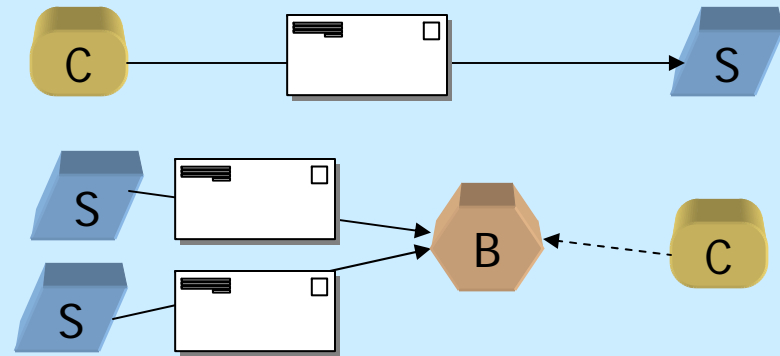
- ❖ All client requests are intercepted by a single logical gateway which serves as a proxy for enterprise services



Service Messaging Design Patterns

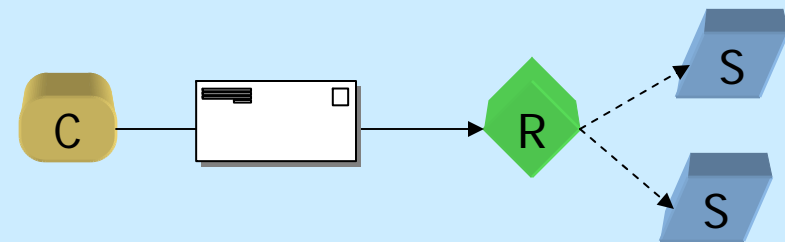
□ Messaging Models

- ❖ Direct messaging
- ❖ Pub/sub messaging



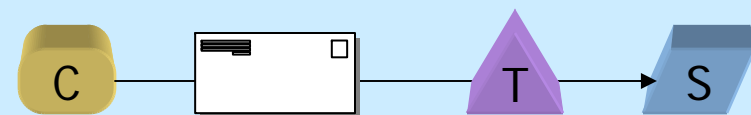
□ Routing patterns

- ❖ Simple router
- ❖ Dynamic router
- ❖ Content router



□ Transformation patterns

- ❖ Content aggregator
- ❖ Content filter
- ❖ Content normalizer





Service Bus Patterns

- ❑ The “Enterprise Service Bus (ESB)” is a popular focal point for many enterprise SOA initiatives
 - ❖ While several vendors have an ‘ESB’ that you can deploy, the notion of an ESB is more a pattern or set of capabilities comprised of an entire platform suite
- ❑ The service bus often brings together connection patterns and service messaging design patterns to solve enterprise problems
- ❑ The following patterns apply to the service bus:
 - ❖ Single Logical Bus
 - ❖ Directly Connected Bus
 - ❖ Brokered Bus
 - ❖ Hub/spoke Bus





Service Bus Patterns (continued)

- ❑ Single Logical Bus – One bus (mediation components and/or service registry) within the same global namespace
- ❑ Directly Connected Bus – One logical bus per business unit, all interaction is bus-to-bus
- ❑ Brokered Bus – One logical bus per business unit with one central bus to facilitate bus-to-bus interaction (via broker)
- ❑ Hub/spoke Bus – Local busses mediate requests and then route to hub as needed

Applying Technology Patterns

- Identify Applicable Patterns and Models
 1. Identify the business interaction model
 - Self-service / Information Aggregation / Information Subscription / User Collaboration / Extended Enterprise
 2. Select a connection pattern
 - Direct, broker, adapter, mediator, gateway
 3. Select a messaging pattern
 - Direct, pub/sub, simple/dynamic/content routing, content aggregation/filtering/normalization
 4. Identify appropriate service bus topology
 - Single logical bus, Directly connected bus, Brokered bus, Hub/spoke bus
- Document High-level Design
 1. Document identified and selected patterns
 2. Highlight service and component interaction model
 3. Note any assumptions regarding infrastructure support



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Technology Anti-Patterns

- When good architects go bad...
 - ❖ Stateful service
 - ❖ Über service
 - ❖ Gilded point-to-point
 - ❖ Data replication
 - ❖ Stovepipe





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Human Patterns

- ❑ The carbon interfaces involved in the SOA adoption process are far more important to successful adoption than the technical interfaces
- ❑ These patterns reflect successful behavior and strategic approaches organized into two broad categories
 - ❖ Human Governance Patterns
 - ❖ Human Organizational Patterns



Human Governance Patterns

□ Center of Excellence / Competency Center

❖ Key features

- Establish and provide knowledge transfer around standards, frameworks, tools, and methodologies
- Facilitate the development and effective implementation of corporate governance (model, lifecycle, project roles, etc.)
- Provide common infrastructure and resources to facilitate enterprise-wide adoption of SOA
- Provide strategic SOA leadership

❖ Recommendations

- Include both technology and business stakeholders
- Establish early but keep it lean and grow it incrementally



Human Governance Patterns

□ SOA Champions

❖ Key features

- Energetic, persuasive change agents
- Visionaries that understand the current environment and how to move the organization toward a service oriented paradigm
- Facilitators that can assist the organization with understanding and utilizing the new governance framework

❖ Recommendations

- Each division or line of business should have its own champion to help them understand SOA's unique impact to their domain
- Engage the SOA champions in developing a dialogue within the organization around how to effectively govern the adoption of SOA



Human Organizational Patterns

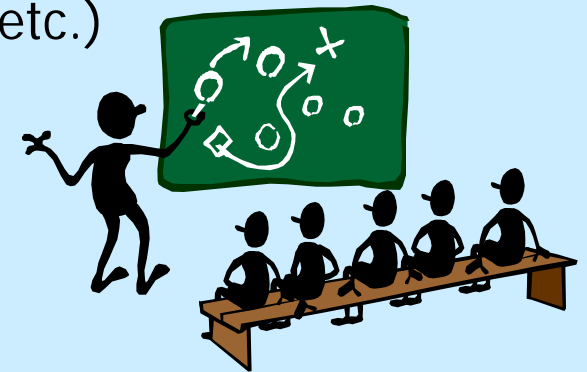
□ Collaborative Enterprise

❖ Key Elements

- Open dialogue around service orientation, process orchestration, governance, and best practices
- Collaborative tools designed to facilitate knowledge transfer and preserve intellectual capital

❖ Recommendations

- Develop an on-going dialogue regarding “what does SOA look like for us”
- Deploy one or more collaboration mechanisms (wiki, forum, weblog, knowledge base, etc.)





Human Organizational Patterns

□ Process-driven Business

❖ Key Elements

- Drive towards a top-down strategy for service orientation
- Organize teams and customer solutions along business process lines
- Leverage Business Process Management (BPM) in concert with service orientation as a key enabler for enterprise agility

❖ Recommendations

- Deploy BPM infrastructure, framework, and education
- Engage business analysts as process champions and key stakeholders in governance





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Human Anti-patterns

- ❑ Not all SOA is good SOA...
 - ❖ Silos and Towers
 - ❖ Resume Padding
 - ❖ Death by Acronym
 - ❖ Green Grass Fallacy
 - ❖ More is Better



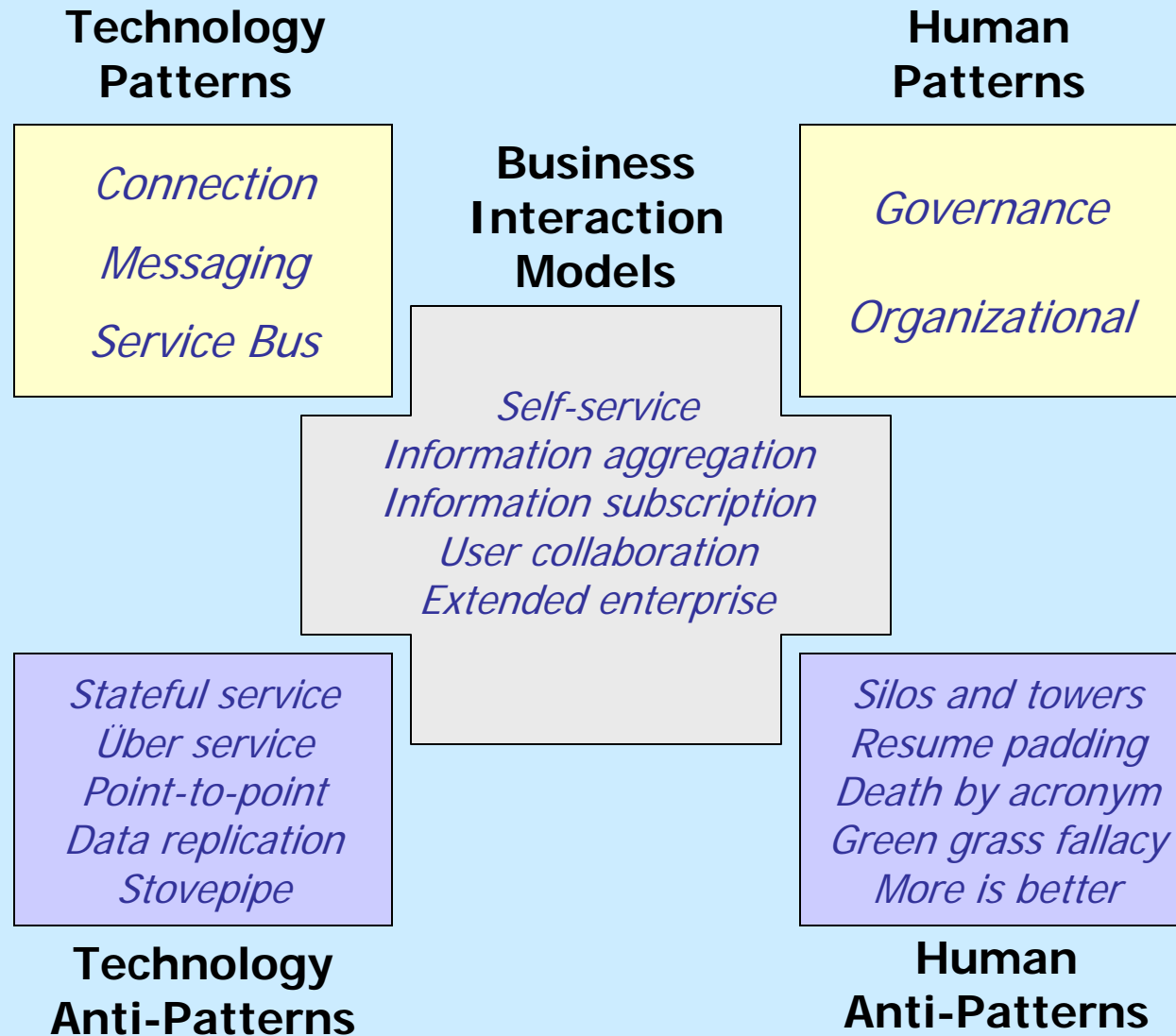


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Review





Wrap-up

- ❑ Questions, comments, thoughts or concerns?



- ❑ *To explore these and other patterns further, stop by my SOA blog, SOA Matters – <http://www.soamatters.com>*