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Leichter ohne Bus

Alternative Ansätze für Integration

Eberhard Wolff

adesso AG

adesso business. people. technology.

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Architecture and Technology Manager

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08.09.11

About me

- Eberhard Wolff
- Architecture & Technology Manager at adesso
- adesso is a leading IT consultancy in Germany
- Speaker
- Author (i.e. first German Spring book)

- Blog: http://ewolff.com
- Twitter: @ewolff
- http://www.slideshare.net/ewolff
- eberhard.wolff@adesso.de

- We are hiring

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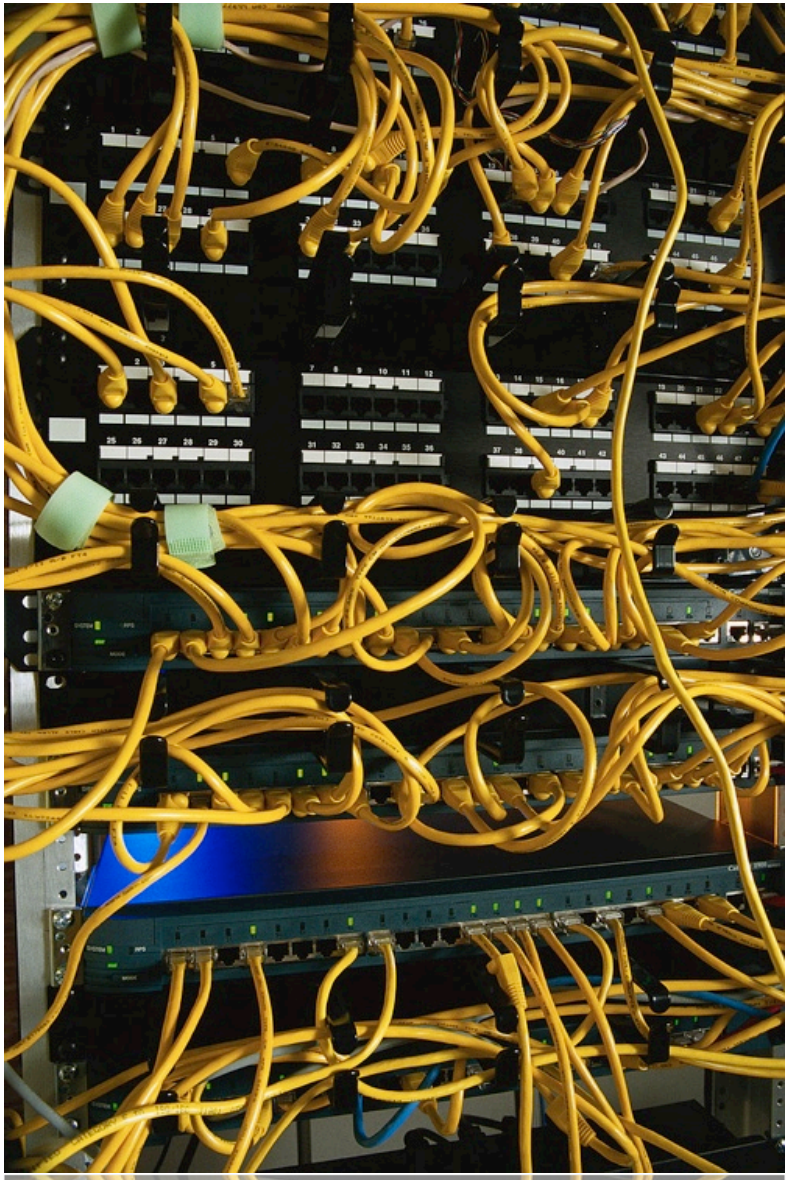
Enterprise Service Bus

- A piece of software
- To integrate several systems
- Talks several network protocols and application protocol
- Data transformation
- Orchestration (Process Engine)
- Service Registry
- The Final Solution For All Problems Integration Related ™

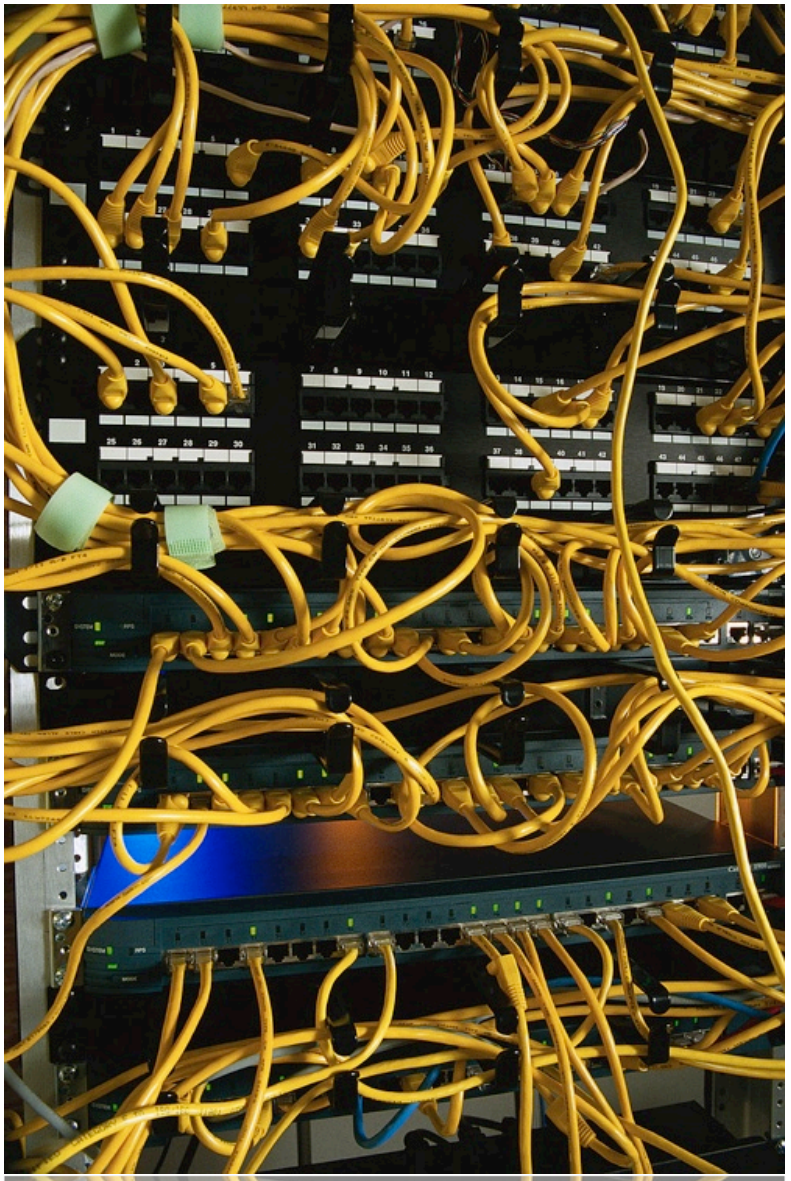


Part

- Asynchronous communication
- Decoupling: Events, not methods
- i.e. “order arrived”, not “create invoice”
- Decoupling concerning time: Can / will be handled later
- High reliability: Store-and-forward

Why Enterprise Service Bus?

- The Final Solution For All Problems Integration Related ™
- Sometimes a strategic Decision
- That is:
  A decision that has no justification by itself
- Seemingly easy solution to a complex problem
- Safe bet: lots of large providers
- The other CIOs have one, too!



Challenges: Common Data Model

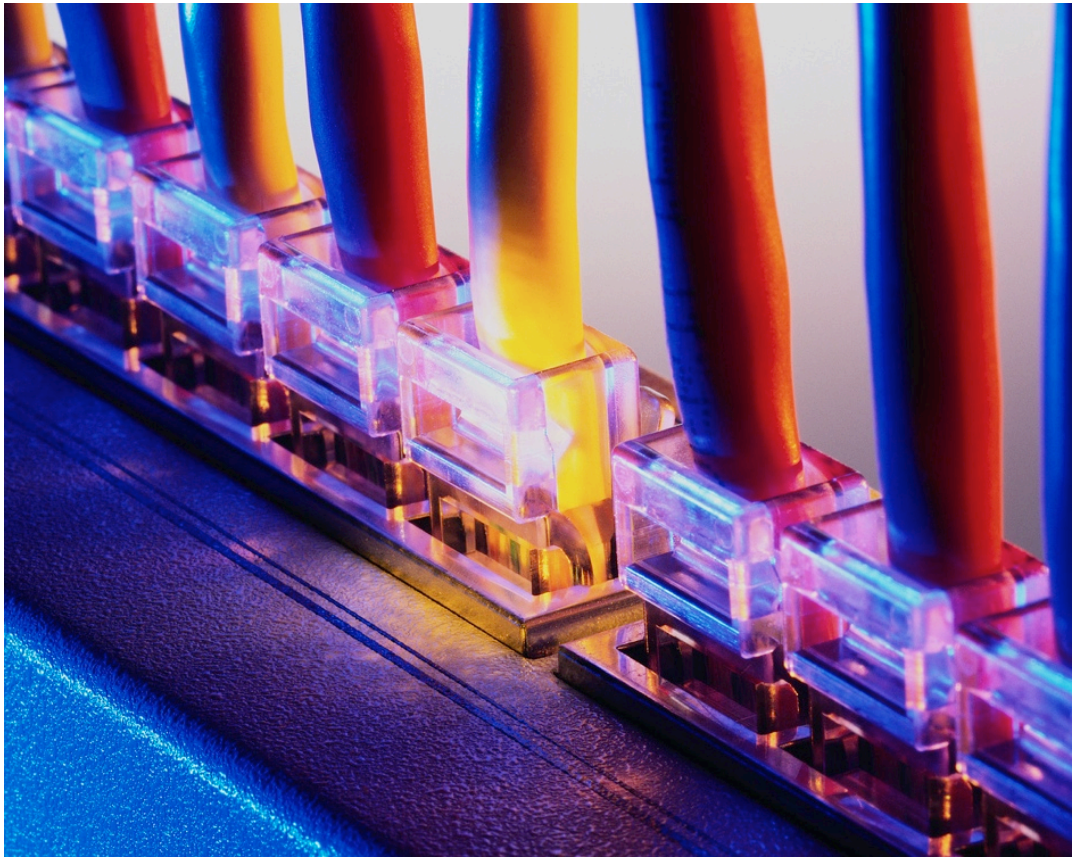
- Services must have a common data model
- But: Services might have different views on common data
- …and need different parts

- Common model might not even make sense

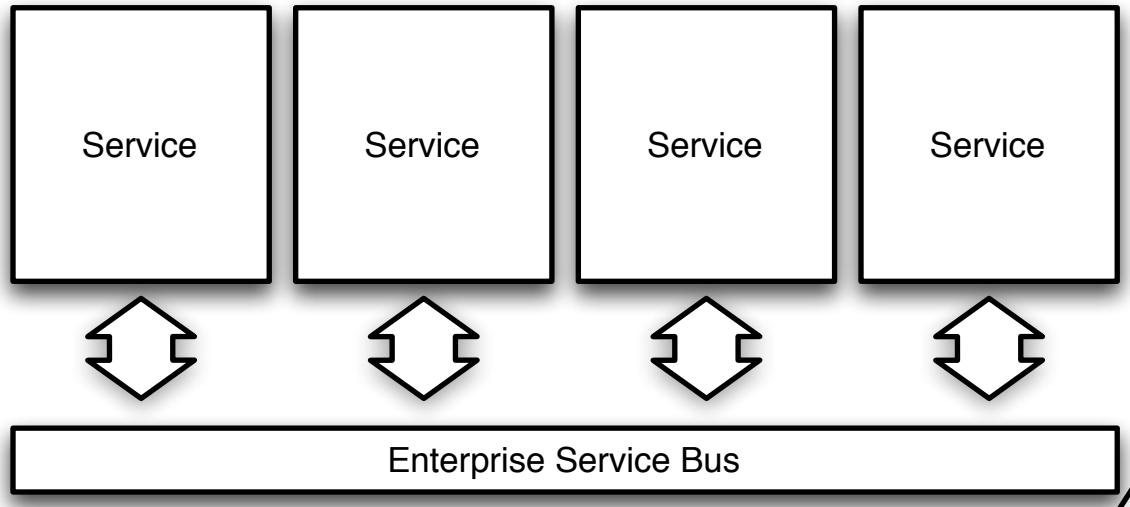
- Example:
  - Customer data for the delivery of an order
  - vs. customer data for the payment

Challenges: Network

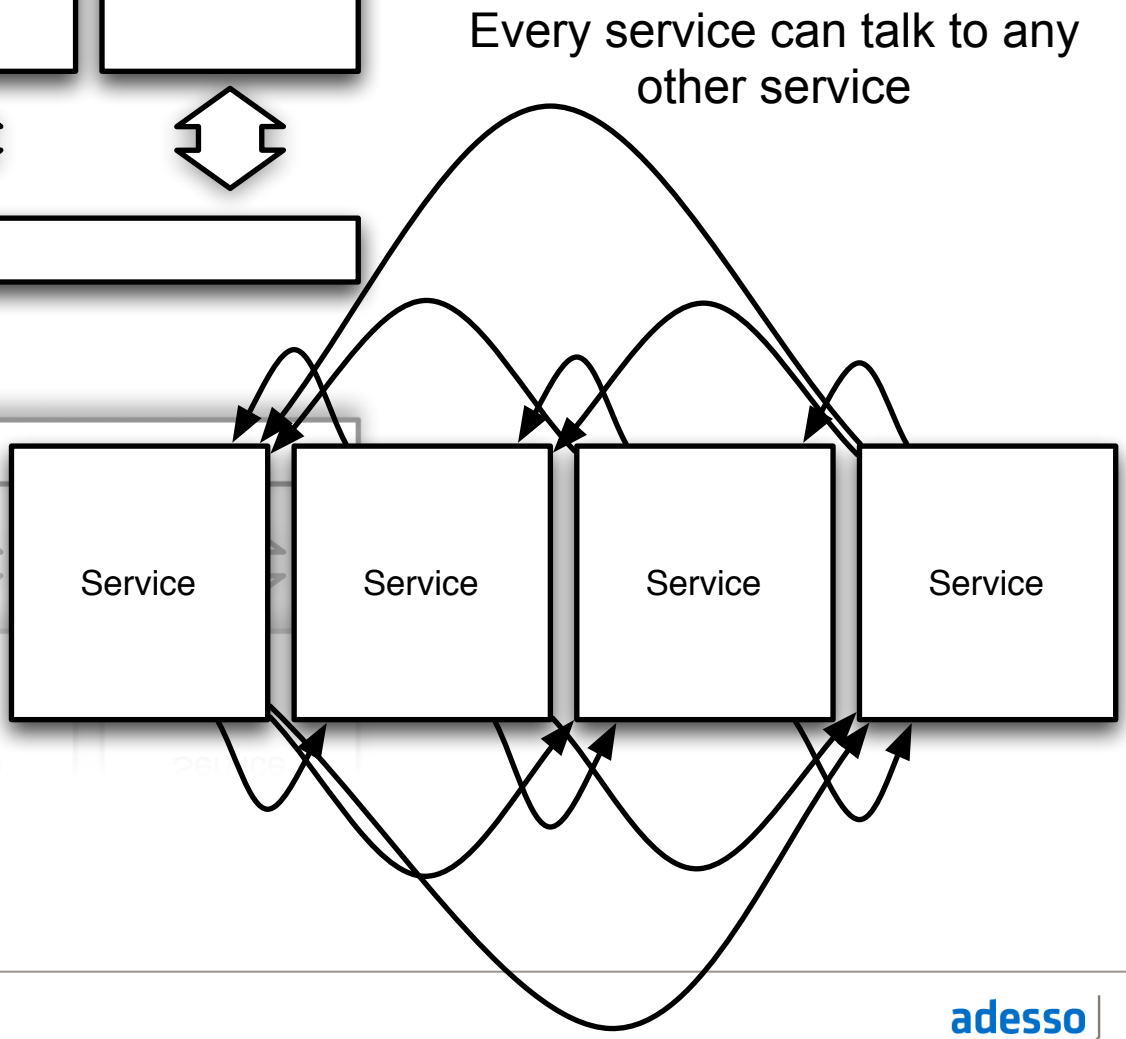
- Typically a networked services
- Doesn’t conform to the First Rule of Distributed Objects
  “Don’t Distribute Your Objects!”
- Latency / throughput
- Centralized communication infrastructure – scaling?



Challenge: Dependency Chaos



Technical view



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Solution To the Dependency Chaos

- Note: Dependency chaos makes it actually harder to change anything!
- Note: Dependency management is the foundation of all software architecture!

- Dependencies on Business Events, not services

- I.e. “New order arrived”

- Component might create an invoice, start the fulfillment etc.

- Easy to add new functions (e.g. bonus program)

Challenges: Architecture

- Monolithic
  - Many services
  - All paid for
- Complex
  - 40 different Web Services standards
  - Countless application protocols

http://www.thinkgeek.com/geektoys/collectibles/e1e0/

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ESB And SOA

- ESB are considered an enabler for SOA

- Service Oriented Architecture
- Deconstruct IT into several services
- Enable easier customization and creation of new services by orchestration

- But:
  - SOA creates no value by itself, just better agility
  - Hard to do: completely change the IT in your enterprise
  - So: Low and slow ROI

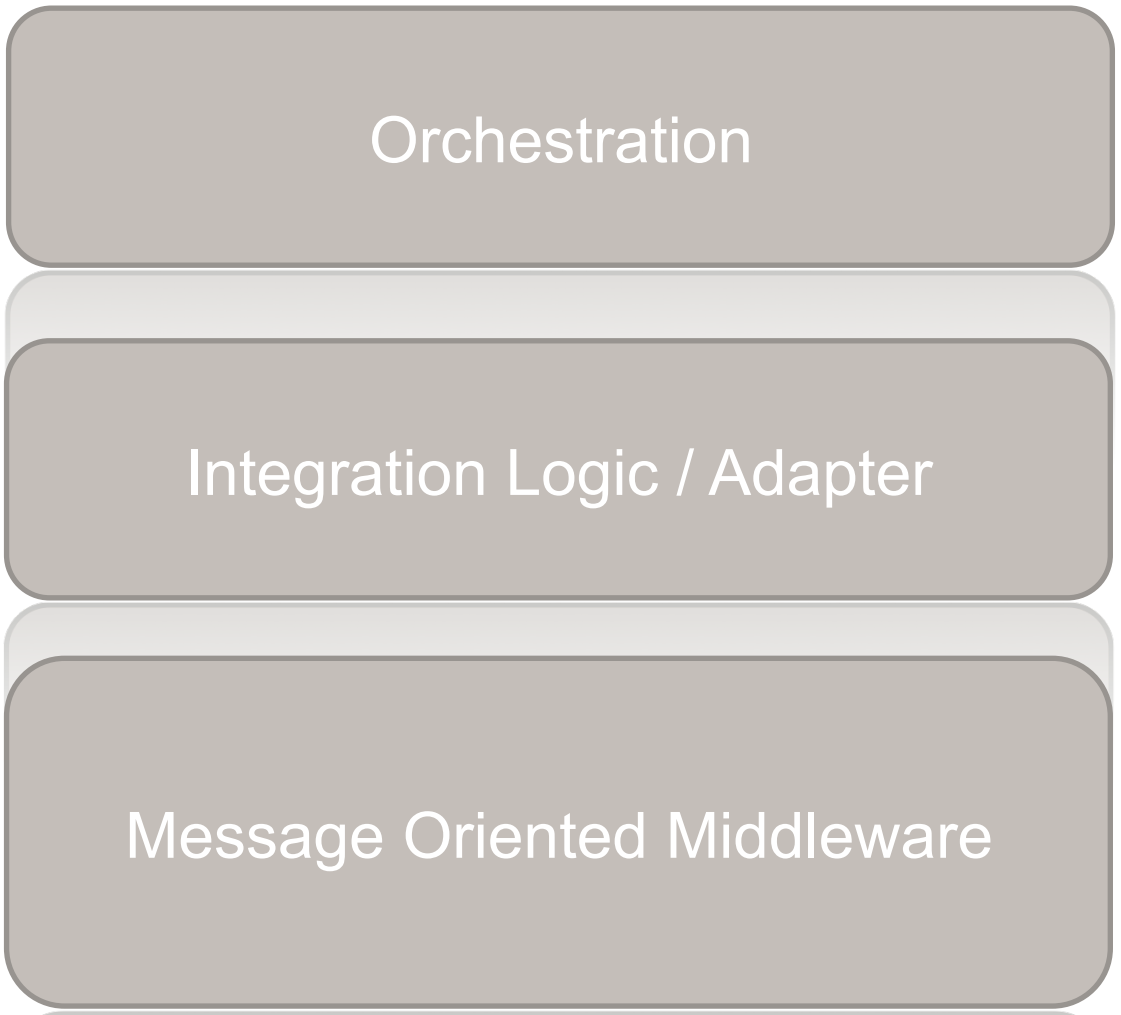
- SOA as an architectural pattern still useful
- But: Stay away from completely redoing your IT!
- http://apsblog.burtongroup.com/2009/01/soa-is-dead-long-live-services.html

Enterprise Service Bus Is No Technology

- ESB is an integration *architecture*
- Not a specific product!

- I.e. create your own technology stack!

My Own ESB!



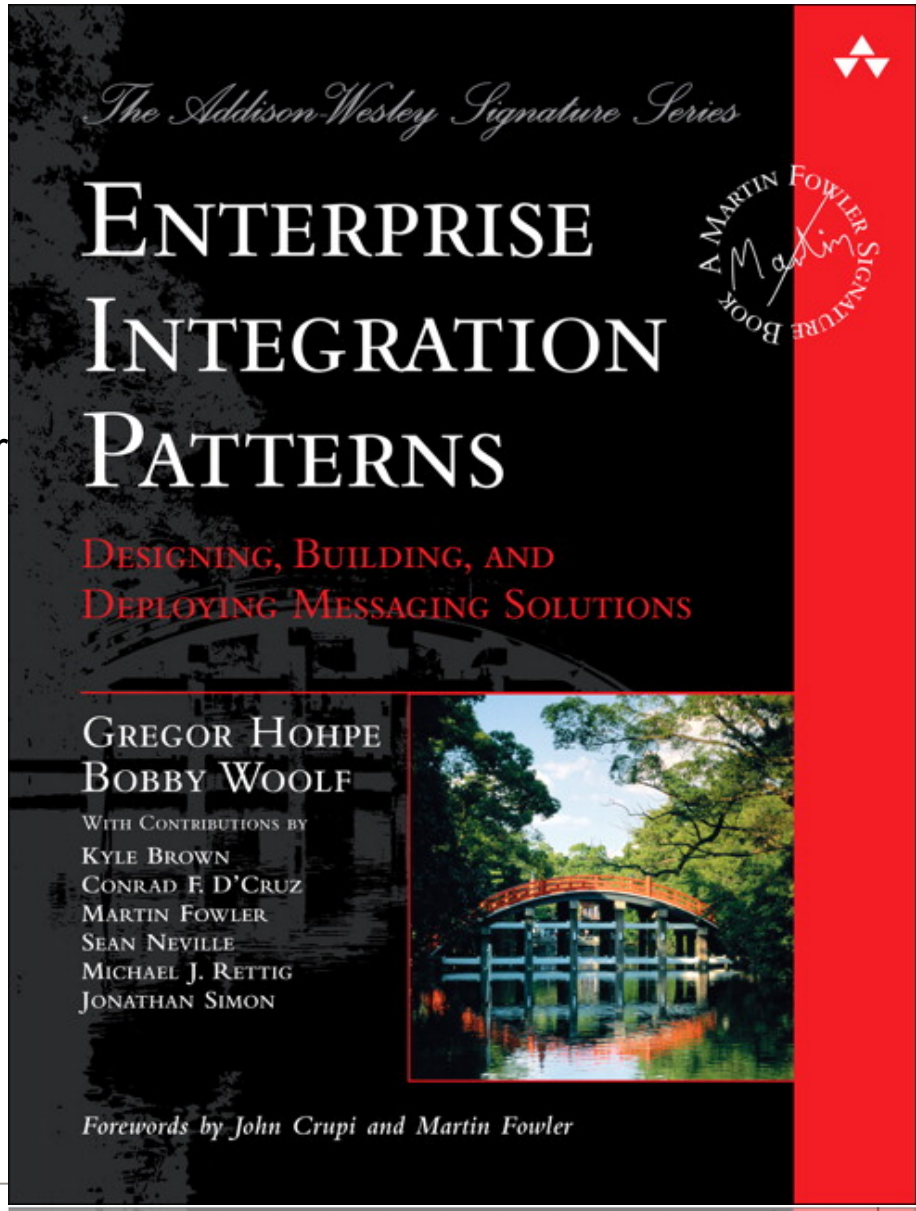
- jBPM
- Activiti
- Scripting (Groovy) (?)

- Spring Integration
- Apache Camel

- Apache ActiveMQ
- IBM WebSphere MQ
- SonicMQ
- HornetQ (JBoss)
- RabbitMQ
- Apache Qpid

Nice Guideline

- Enterprise Integration Patterns
- By Gregor Hohpe und Bobby Woolf
- http://www.eaipatterns.com/
- Contains Patterns like Router, Translator or Adapter
- Direct support in Spring Integration and Apache Camel
- Good reference for more inspiration



Integration Is Asynchronous?

- Enterprise Integration Patterns are really asynchronous patterns
- Sometimes integration is really a batch
- I.e. transfer today's order for fulfillment tomorrow
- Might use Spring Batch instead
- + cron / Quartz as scheduler
- What about completely different approaches for integration?

REST

- Integration using completely different approaches
- REST: Representational State Transfer
- Clients and server
- Request and Responses
- Representation of the state of a resource
- i.e. a document (XML, JSON…)

- Example: HTTP
- Resources addressed by URLs
  http://adesso.de/customer/42
- Requests: GET, POST, PUT, DELETE, HEAD
- Representation with accept header or
  file extension http://adesso.de/customer/42.xml

REST & Reliability

- Safe i.e. no side effects:
  GET, OPTIONS
- Idempotent i.e. can be done multiple times without changing the state:
  PUT, DELETE, GET, HEAD
- Only problem: POST
- Multiple request might result in multiple new resources
- But why bother with REST for integration?

REST & Integration

- Built in support for multiple representations
- i.e. each client can request its own data format

- Libraries for any programming language and platform

- URLs allow globally unique identifier
- Easy to refer to data stored on a different system
- i.e. http://adesso.de/order/42 might link to http://adesso.de/customer/17
- Easy to have different system handle different URLs

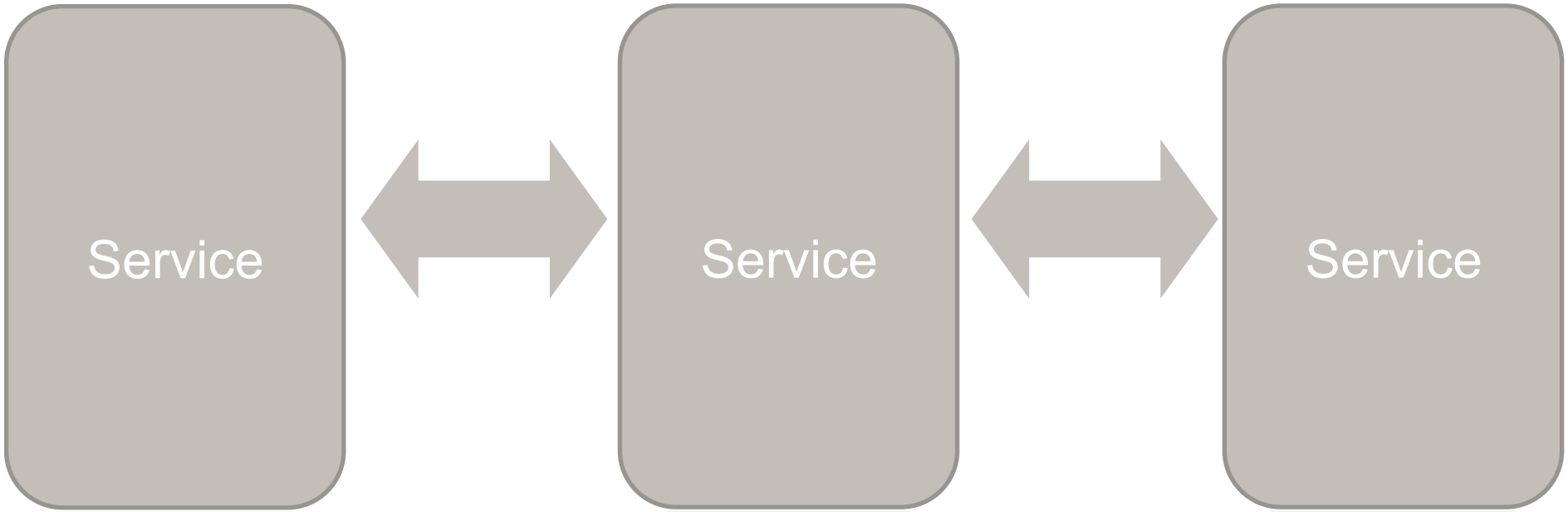
- Foundation for largest integration project known (i.e. World Wide Web)

- Lots of optimizations (i.e. caching)

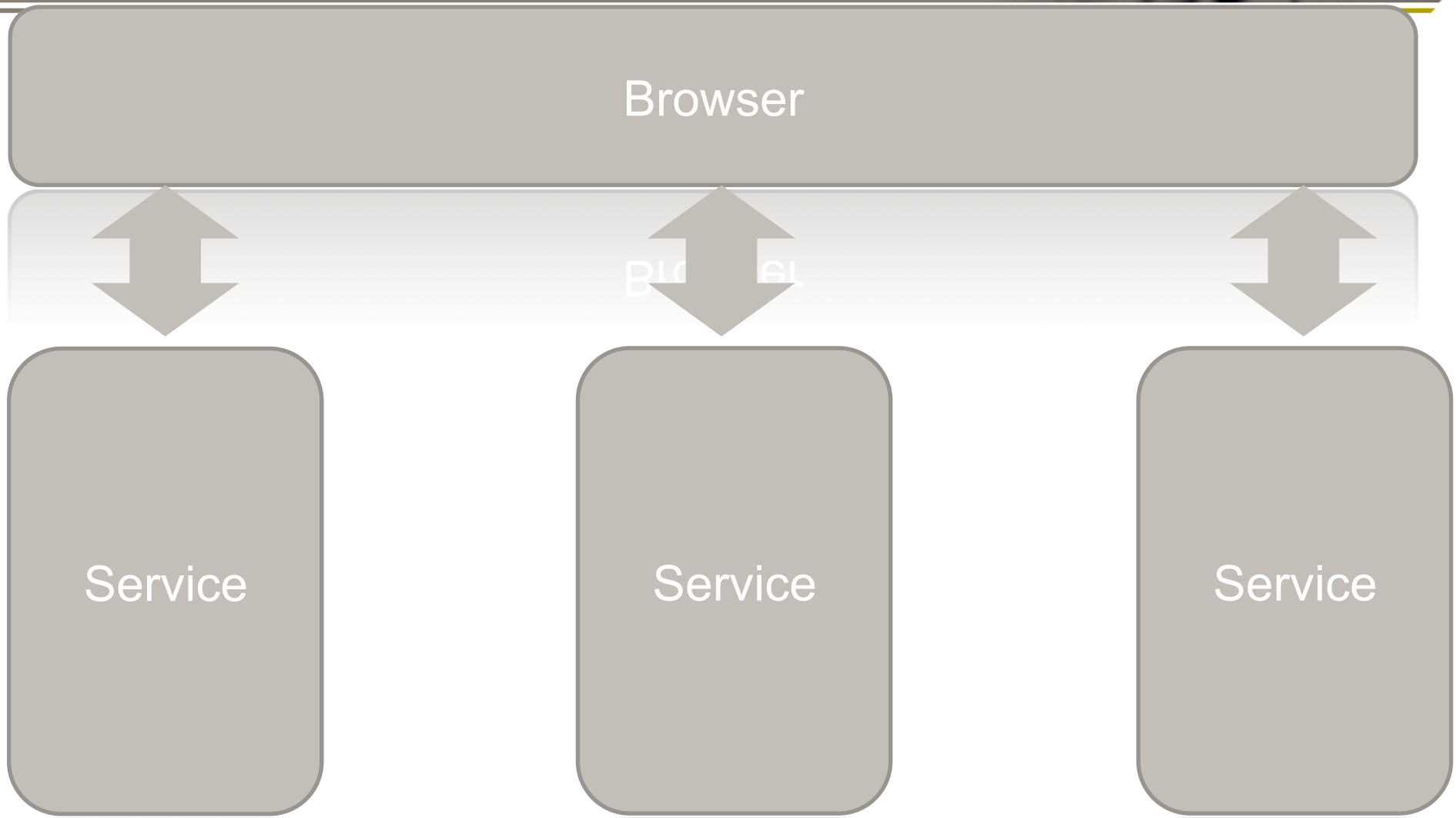
Ein Buch!

- Stefan Tilkov
- REST und HTTP
  Einsatz der Architektur des Web für Integrationsszenarien
- dpunkt

So Far



Client Side Integration



Client Side Integration

- Mash Ups
  - Pictures from Flickr
  - Maps from Google Maps
  - Videos from YouTube

- Reuses ideas from the Web for Enterprise applications

- i.e. show orders for the customer selected in a different application

- Easiest way: Pass in the customer id in the link
- Might consider REST
- Link handled by different application

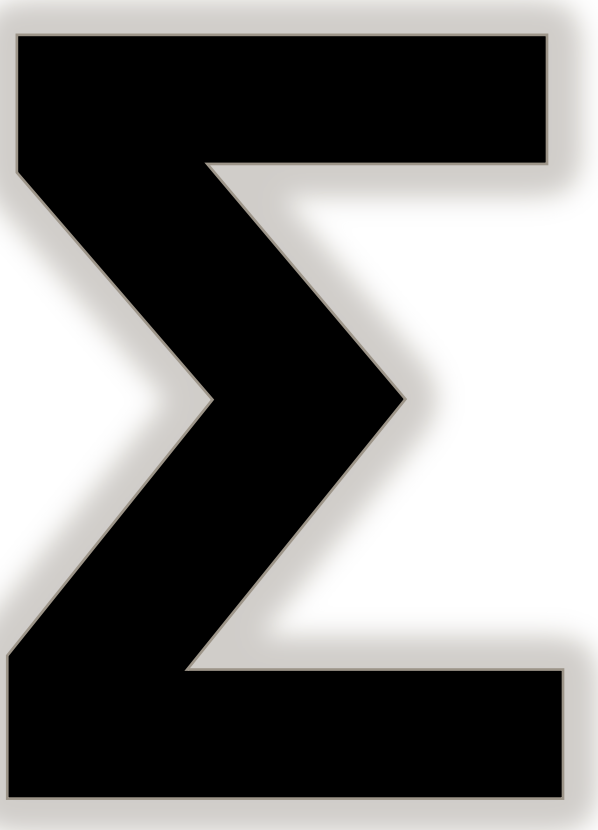
Client Side Integration

- More complex: Integration logic in JavaScript
- I.e. store the customer id and access it using JavaScript
- Automate across applications

- More examples
  - Google Apps Scripts allows for automation of Google App
  - Views and queries in CouchDB (NoSQL)
- More and more services offer JSON (JavaScript Object Notation)
- JavaScript can talk directly to a backend (Web Sockets)

Sum Up

- Enterprise Bus is a Pattern, not a product
- Use with care
  - Performance considerations
  - Dependency hell
  - Consider your creating a customized stack
  - SOA's promises are hard to reach
- REST and HTTP might be a lightweight and practical alternative
- Client side integration allow a completely different perspective
- Learn from the cool Web kids!
- Know the alternatives and use the best tool for the job!



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