

Demystifying Orchestration with Patterns

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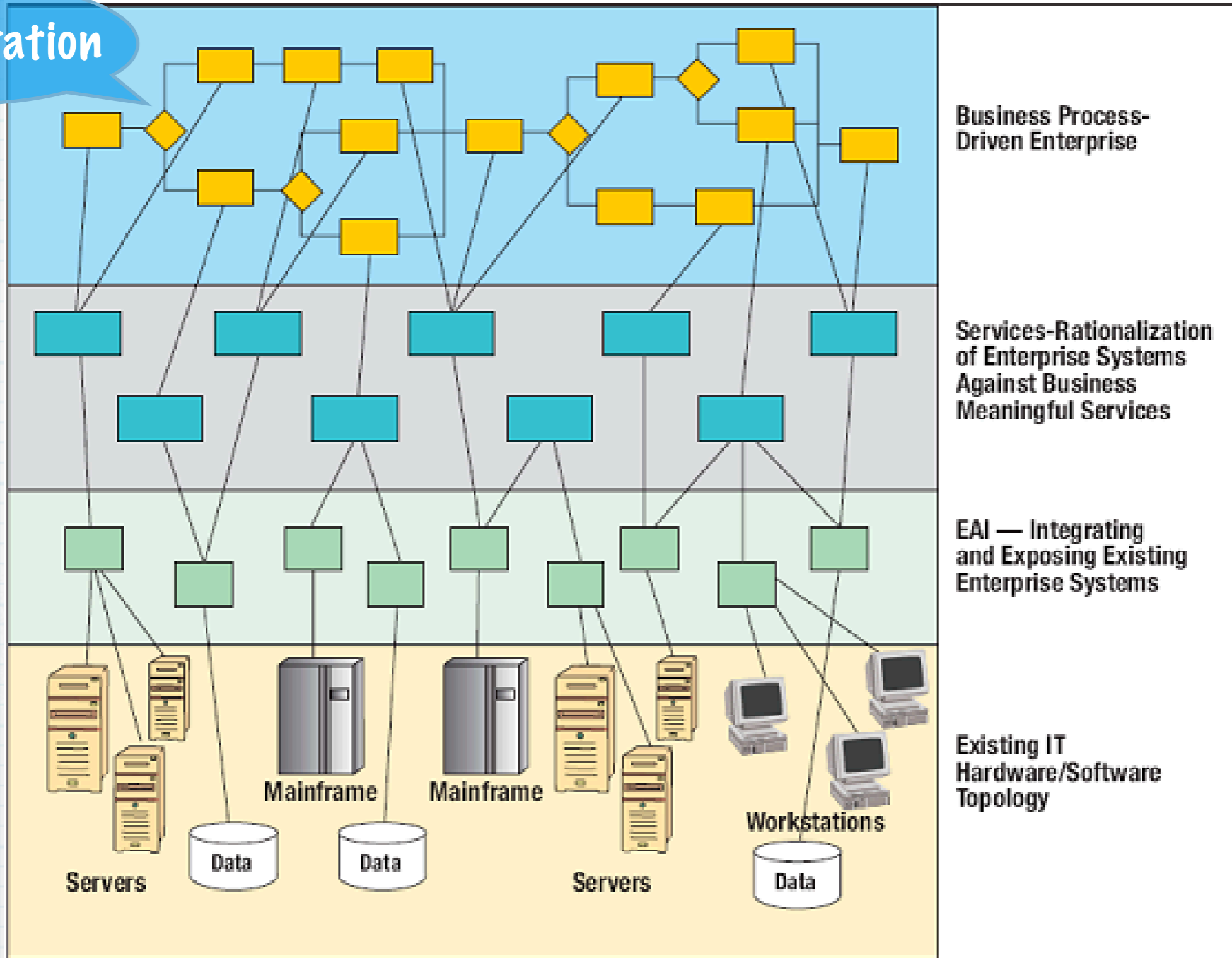
Outline

- * Technical Context
- * Motivation
- * Objectives and Method
- * An Example
- * Five Orchestration Patterns
- * Next Steps and Summary

Technical Context: SOA

- * SOA is ... <space intentionally left blank>
- * Built to last: services
- * Built to change: orchestration
- * An orchestration-oriented business model

Orchestration



Orchestration Layer

State of the Art

- * Better alignment with the business
- * Focus on core competency
- * Improved flexibility
- * Increased ability to specialize
- * Better manageability

State of the Practice

- * Must use SOA somehow
- * Web Services:
 - * Distributed system technology
 - * The ultimate API
- * People jumped on the bandwagon unprepared

Motivation

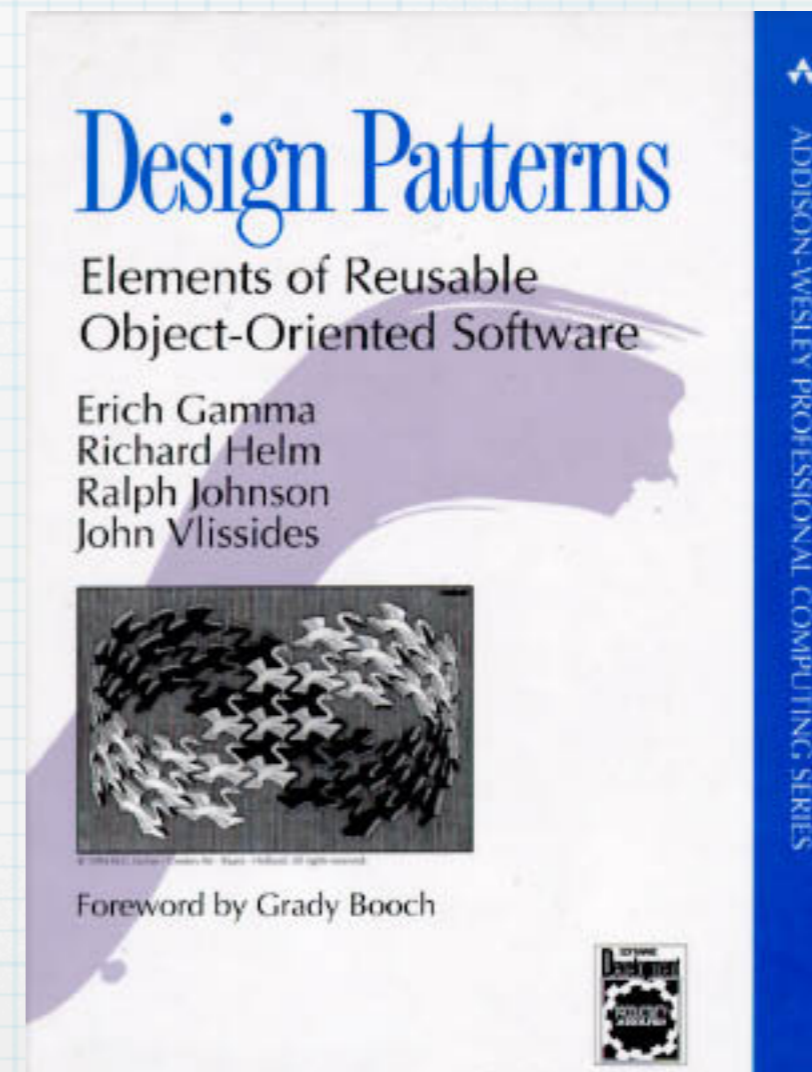
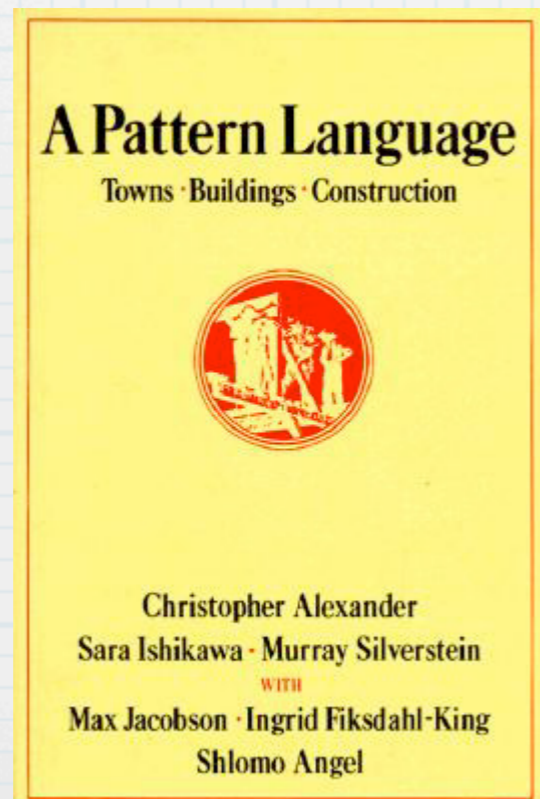
- * **Misunderstanding of SOA**
- * **Stuck in the first stage of SOA adoption**
- * **How to use orchestration**
- * **How to evaluate orchestration products**

Objectives and Method

- * Architects: improve SOA design
- * Evaluators: ask the right questions
- * Explain orchestration with patterns:
 - * Patterns passed the test of time
 - * Patterns distill expert knowledge
 - * Patterns establish a shared vocabulary

Patterns

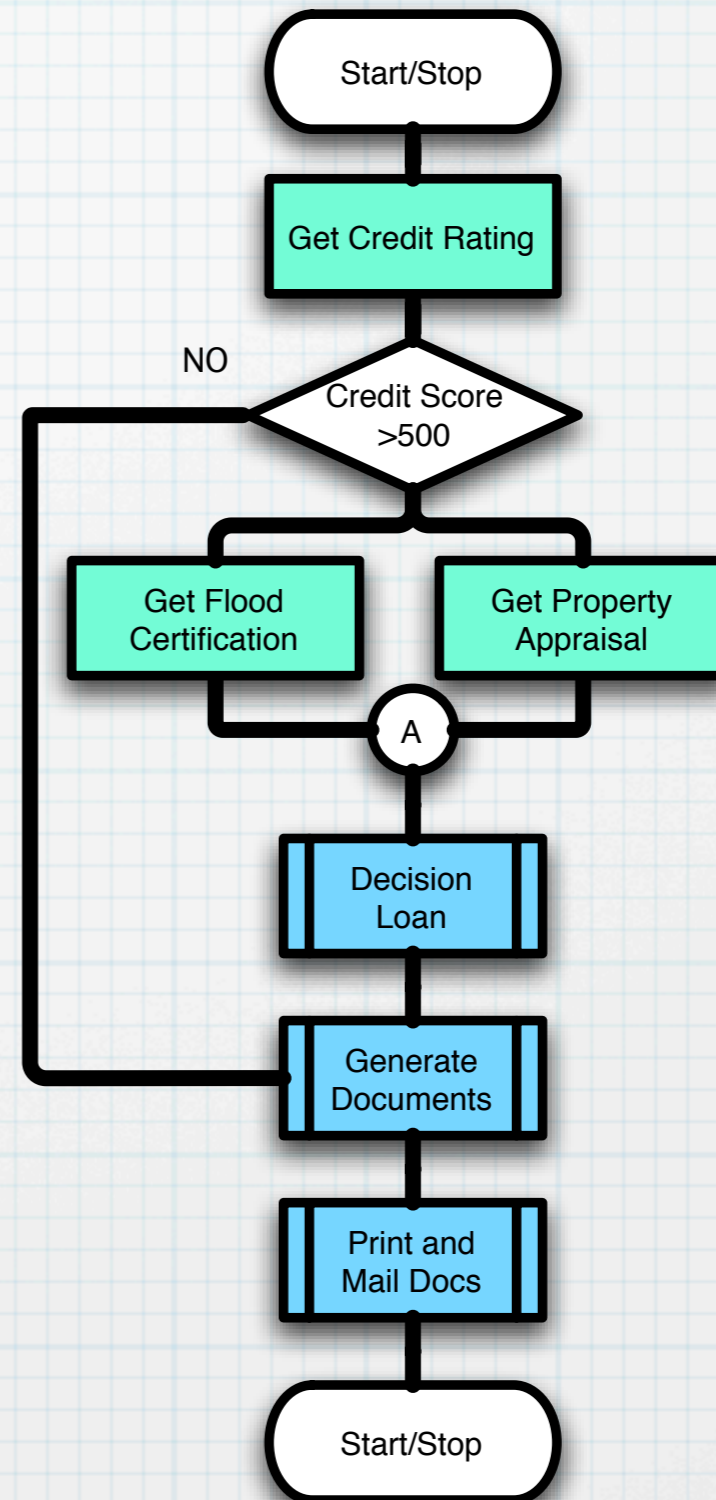
“Each pattern is a three-part rule, which expresses a relation between a certain context, a problem, and a solution.” (Christopher Alexander)



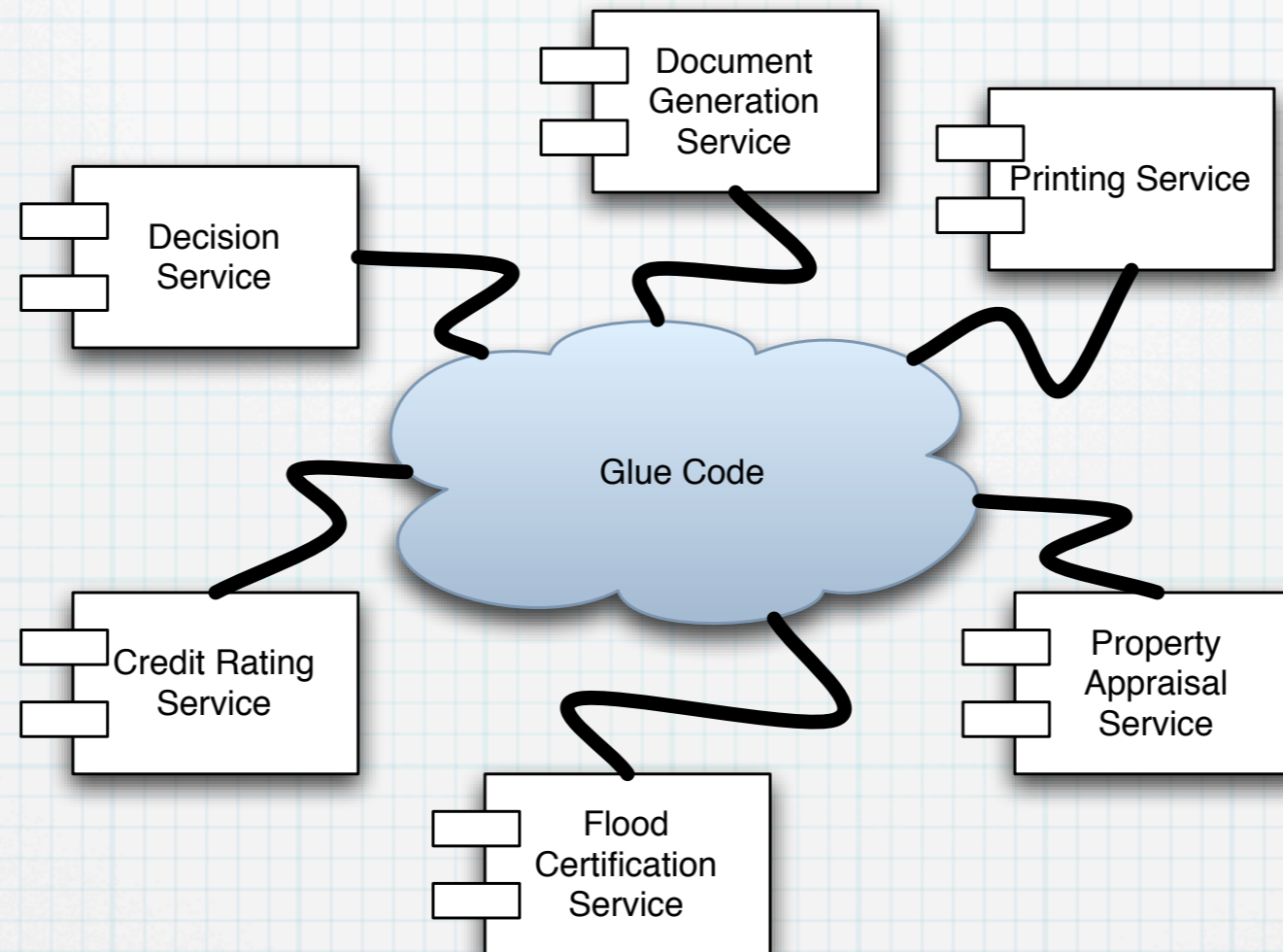
An Example

Mortgage Decisioning Process:

- * External services
- * Internal services



Orchestration Engine

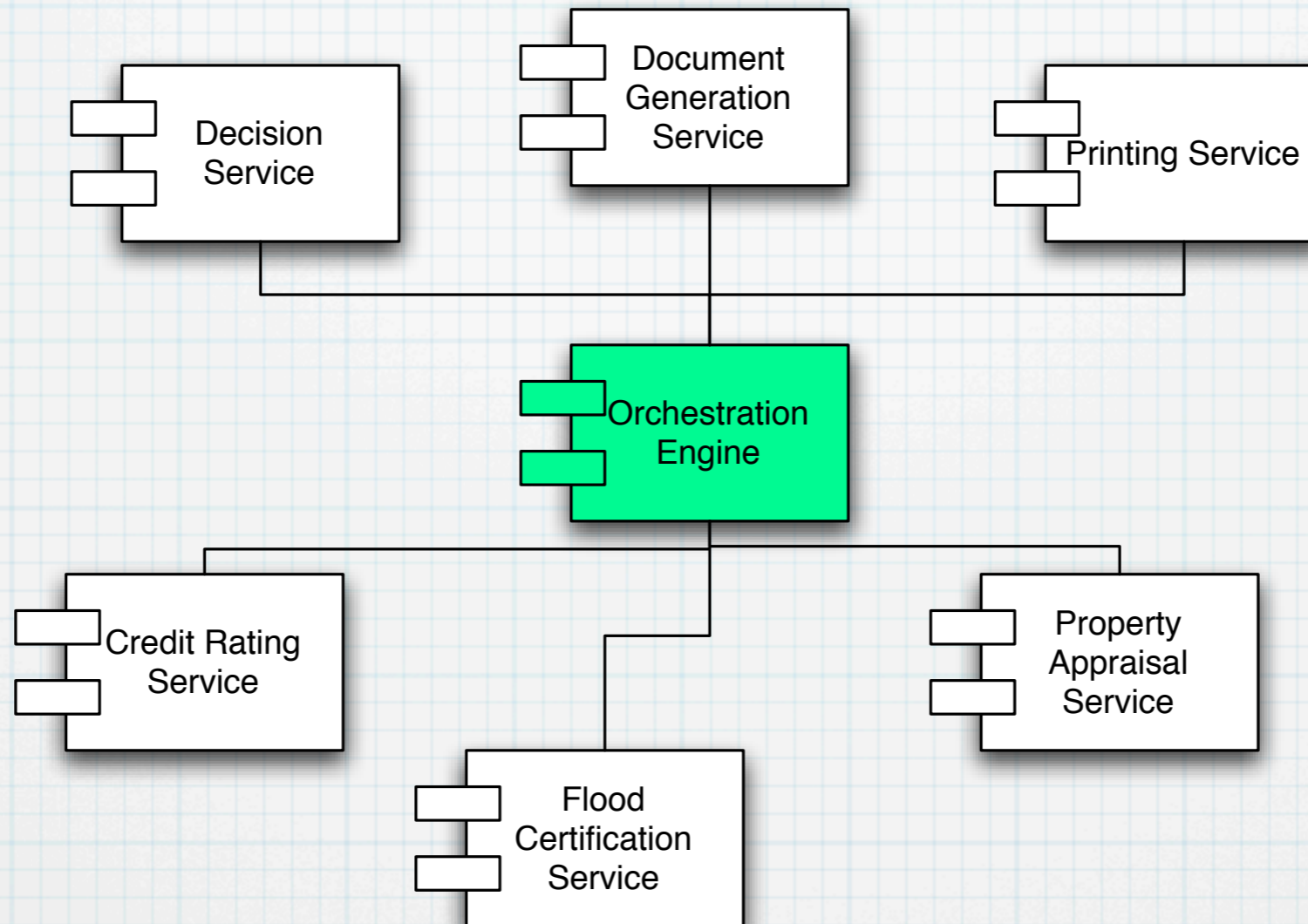


- Implement with SOA
- How do you compose the services in a flexible way?

Forces

- * The business changes trading partners and the way they interact with them
- * Agility is critical to business survival
- * Service interfaces do not guarantee interoperability

Solution



Factor out service coordination into a specialized component

Consequences

- * Improves modifiability
- * Simplifies application code
- * Increases sensitivity to architectural mismatch
- * Requires specialized expertise

Known Uses: FiveSight PXE, Microsoft BizTalk Server, Oracle BPEL Process Manager.

Orchestration Language

Automobile
Decisioning
Business
Process

Mortgage
Decisioning
Business
Process

?

Orchestration
Engine

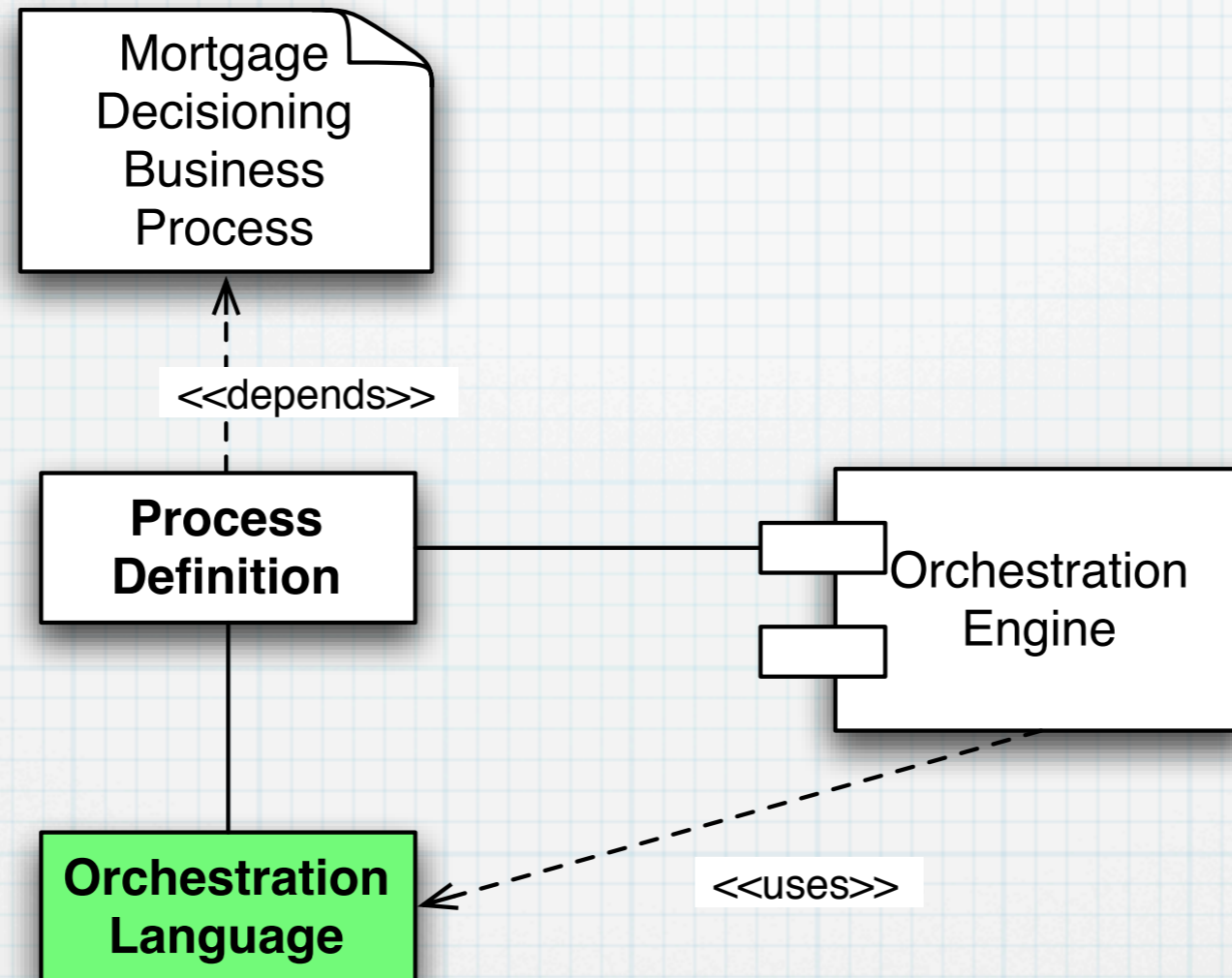
Sell Loans
Business
Process

- Generic orchestration engine
- How do you specify service coordination?

Forces

- * Business experts want an unambiguous specification
- * Orchestration involves different abstractions than general-purpose languages
- * Often-times the business processes are ill-defined

Solution



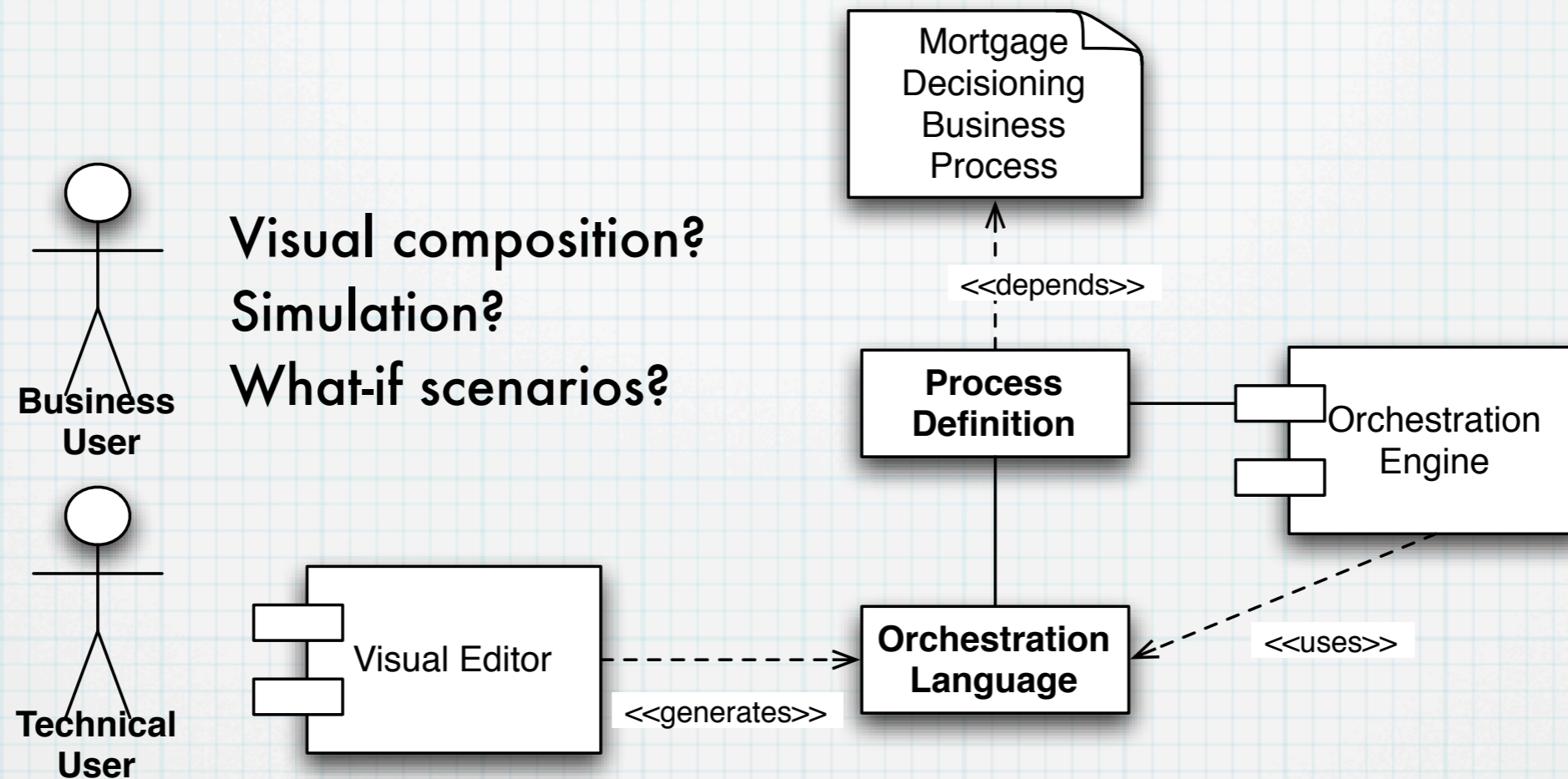
Use a language specialized in coordination

Consequences

- * Improves correctness
- * Improves flexibility
- * Increases interface complexity
- * Provides insufficient constructs

Known Uses: BPMN, BPEL, BPEL-J,
FusionWare, Orc

Visual Modeler



- Technical users employ a Visual Editor
- How can non-technical users participate?

Toolbox

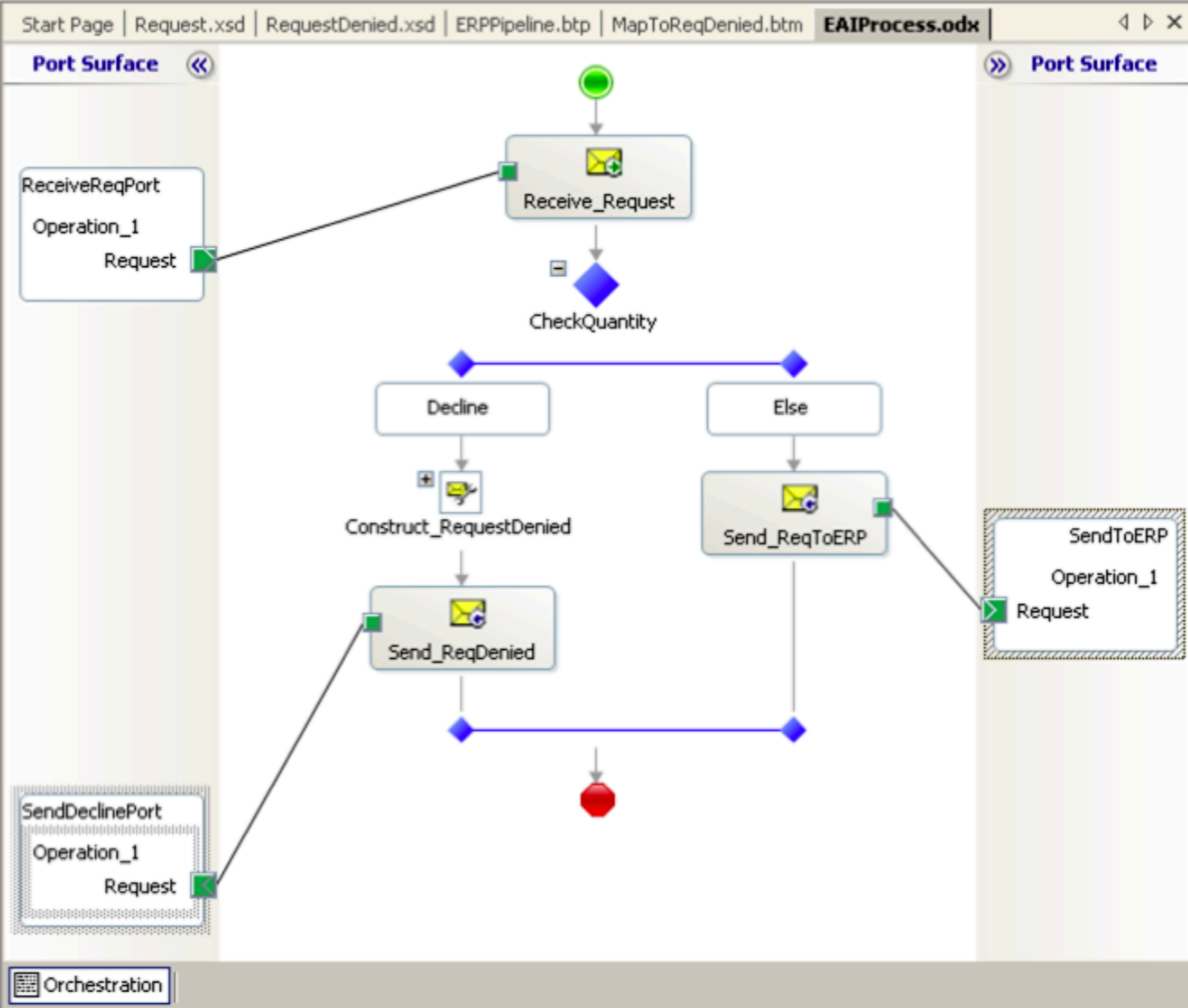
BizTalk Orchestrations

- Pointer
- Group
- Send
- Receive
- Port
- Role Link
- Transform
- Message Assignment
- Construct Message
- Call Orchestration
- Start Orchestration
- Call Rules
- Expression
- Decide
- Delay
- Listen
- Parallel Actions
- Loop
- Scope
- Throw Exception
- Compensate
- Suspend
- Terminate

Clipboard Ring

General

BizT... Tool...



Orchestration View

- EAIProcess
 - Orchestration Properties
 - Orchestration Parameters
 - Ports
 - ReceiveReqPort
 - SendDeclinePort
 - SendToERP
 - Messages
 - Variables
 - Correlation Sets
 - Role Links
- Types
 - Port Types
 - ReceiveReqType
 - SendDeclineType
 - Operation_1
 - Request
 - SendToERPTyp...
 - Operation_1
 - Request
 - Multi-part Message Types
 - Correlation Types

Properties

SendToERP Port

BizTalk

Binding	Specify I
Communication Direction	Send
Communication Pattern	One-Wa
Delivery Notification	None
Description	...
Identifier	SendToE
Object Type	Port
Ordered Delivery	False
Port Type	EAIOrch
Report To Analyst	True

Description

User comments.

Output

Build

----- Done -----

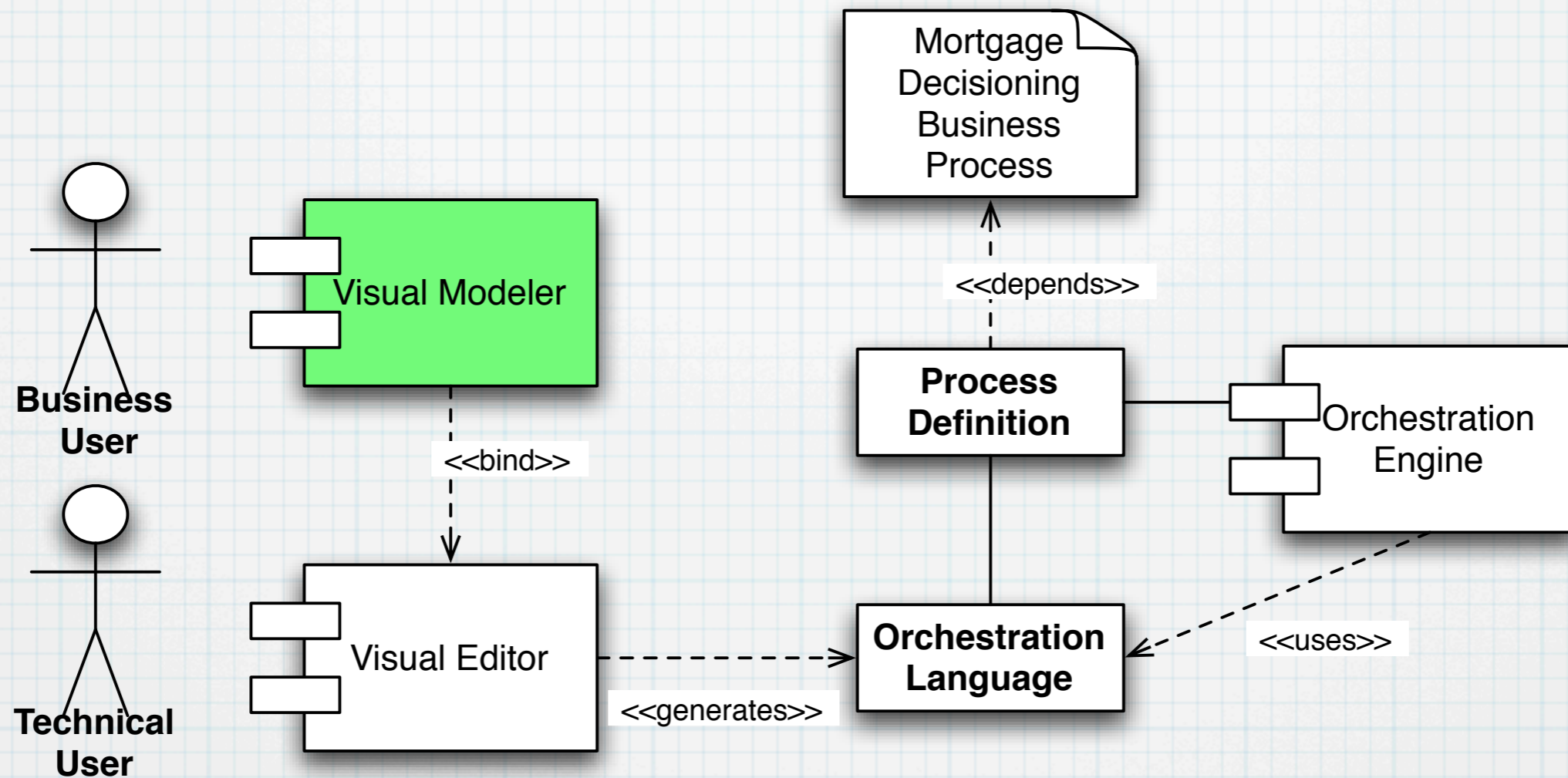
Build: 2 succeeded, 0 failed, 0 skipped

Task List Output

Forces

- * Business analysts understand flow charts
- * Flexibility is worthless without prompt feedback
- * Simulation and what-if scenarios require data that is not always available

Solution



Add a tool specialized in visual composition, simulation, and running what-if scenarios

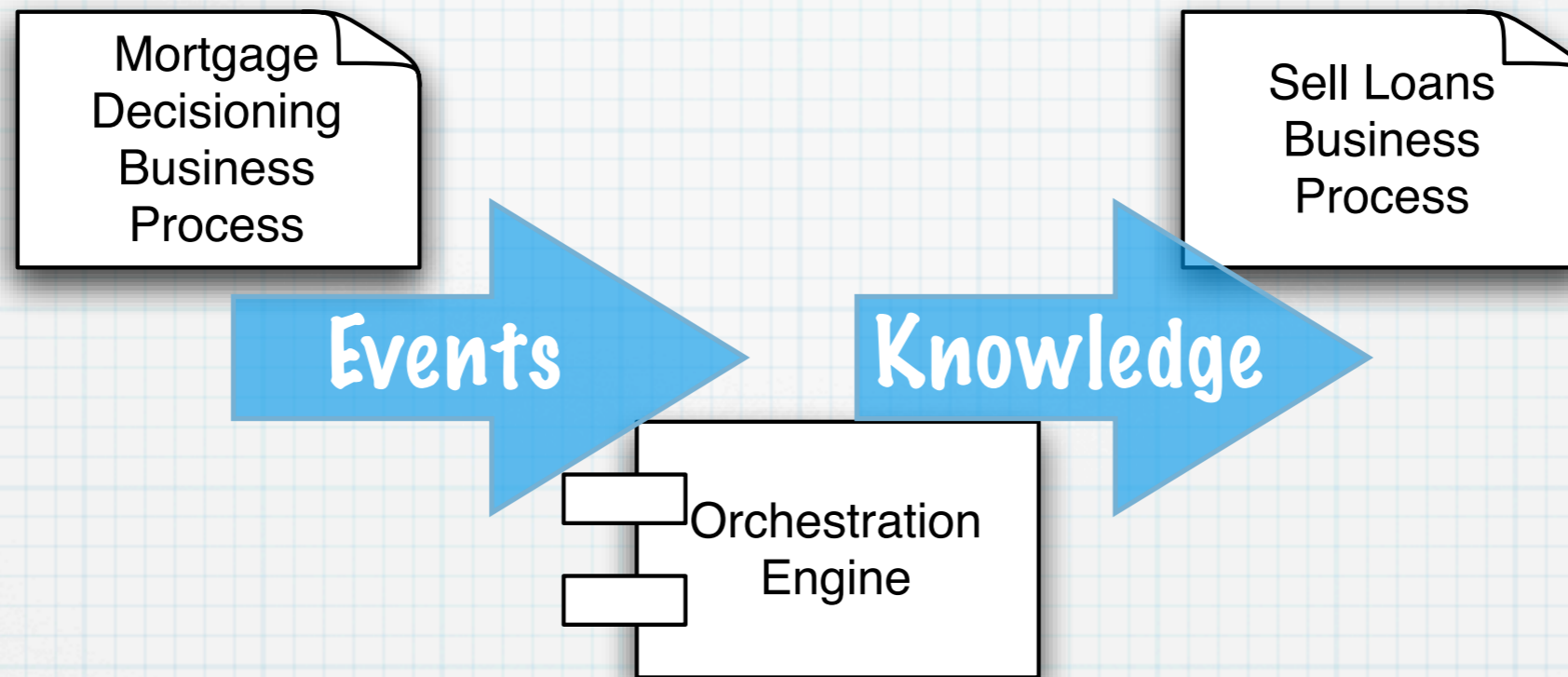
Consequences

- * Orchestration users leverage flexibility
- * Improves communication between business analysts and technical users
- * As accurate as the available data
- * Can be computationally intensive

Known uses: IBM WebSphere Business Integration Modeler, Staffware Workflow

Business Activity Monitoring

(BAM)



- The Orchestration Engine lies at the focal point
- How do you obtain and act upon business process information?

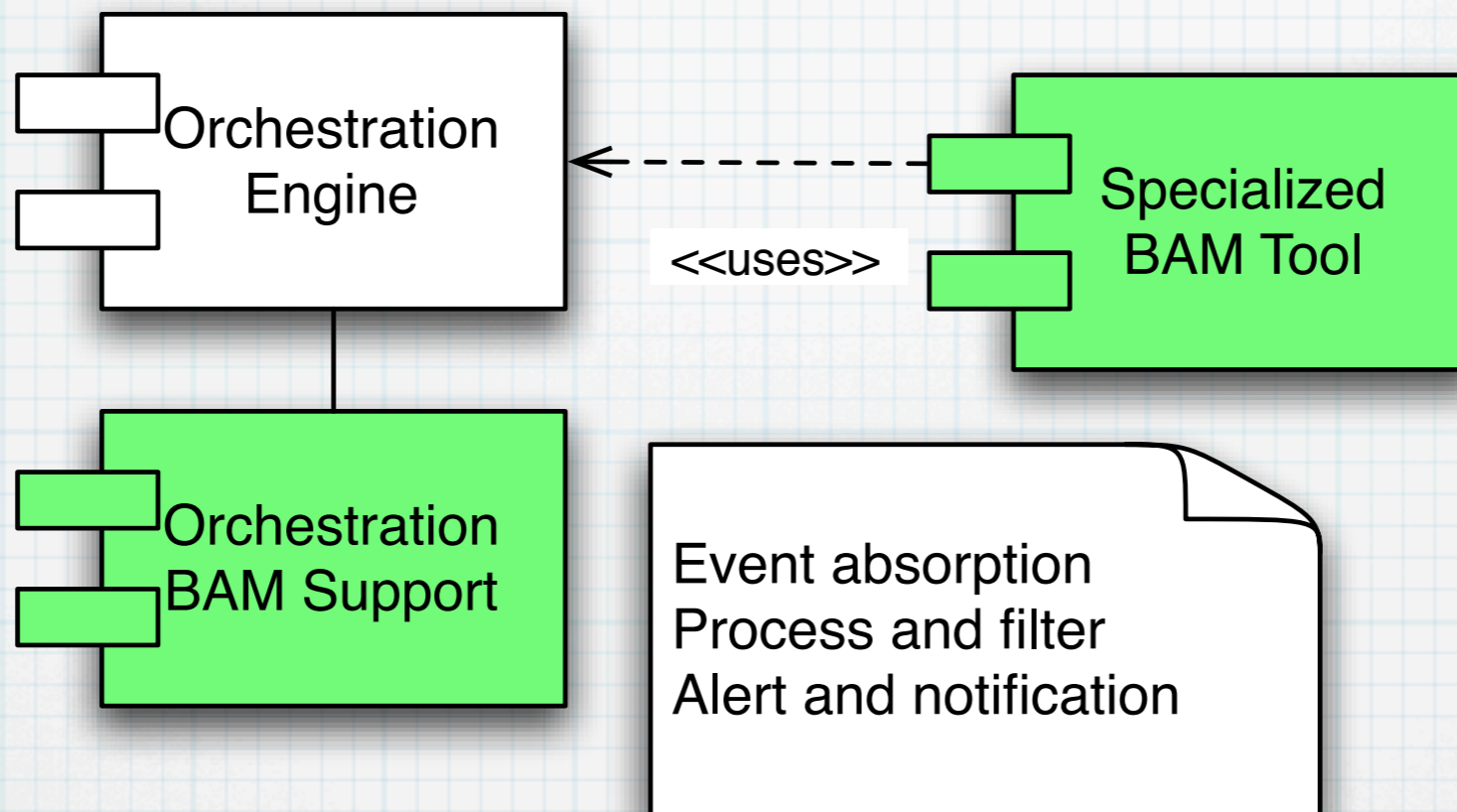
Nothing exists until it
is measured.

Niels Henrik David Bohr

Forces

- * Business process information critical to tuning the business
- * Transforming business events into business knowledge requires zero-latency environments
- * Specialized BAM tools already exist
- * Business processes might not be the best source for BAM

Solution



Extend the engine with BAM functionality;
integrate it in the BAM response mechanism

Consequences

- * Convergence of orchestration and BAM tools
- * Increases the implementation complexity (real-time processing, analytics, alerts)

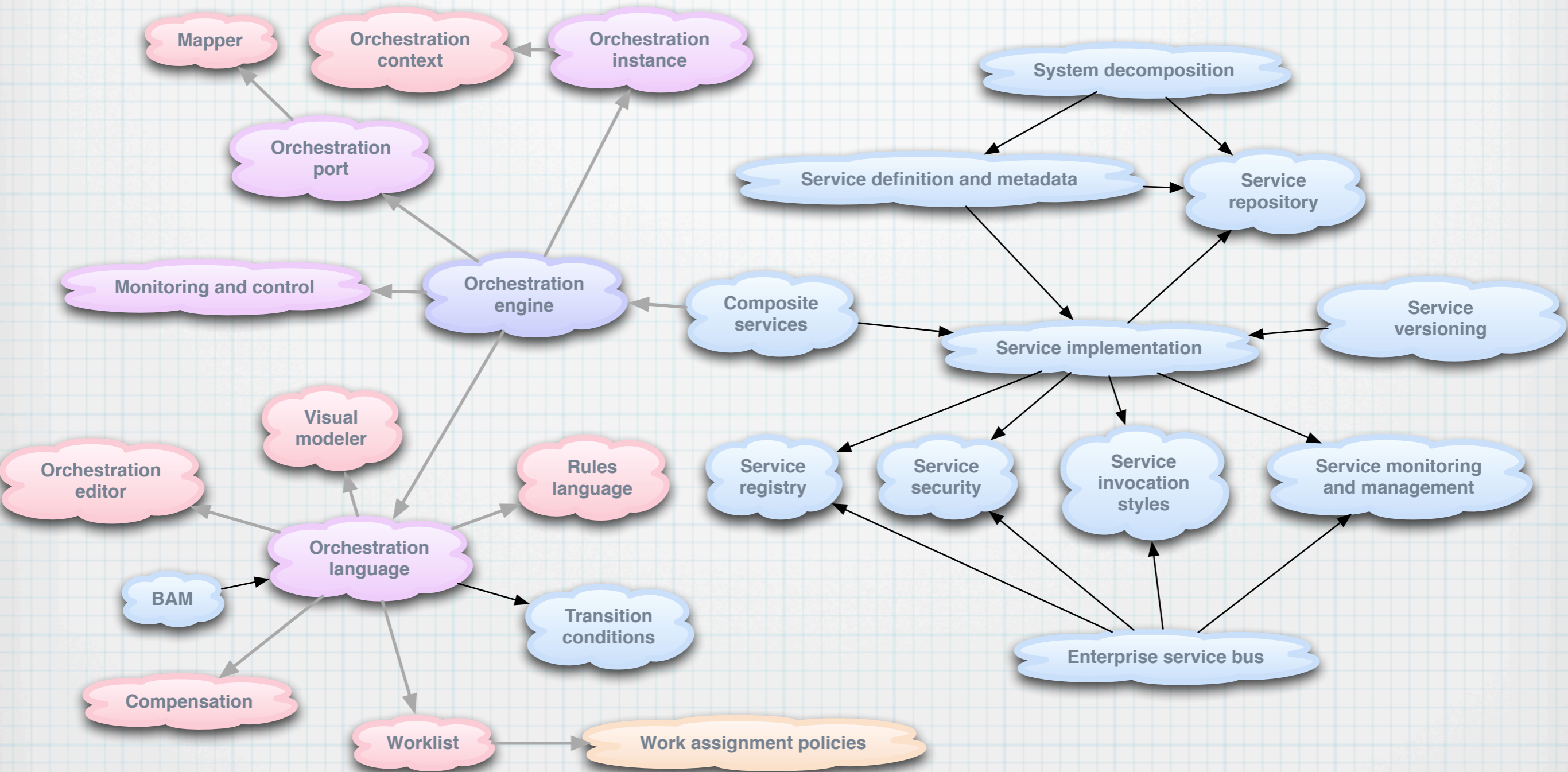
Known uses: Microsoft BizTalk Server

What's Next?

Orchestration



Orchestration and SOA



Summary

- * SOA: beyond building (Web) services
- * Orchestration: “built to change” SOA
- * Orchestration patterns:
 - * Improve design
 - * Help evaluate platforms and tools

For More Information

- * Web site: orchestrationpatterns.com
- * Yahoo! group: orchestrationpatterns-book

Tak (thank you).