Distributed Application Design Patterns, Part 1

Scott Seely
http://www.pluralsight.com/

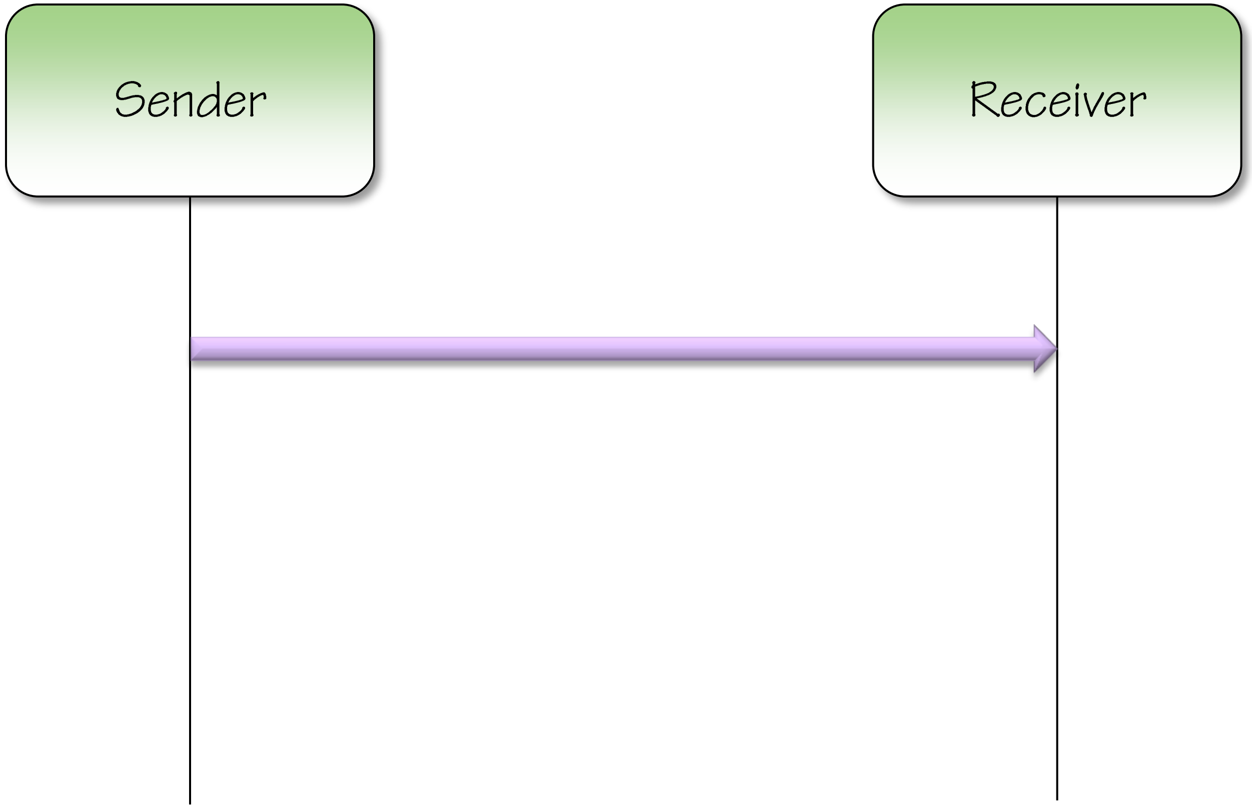
Outline

- Message Exchange Patterns
- Validation of Request
- Sanitizing Response
- Routing Patterns
- Workflow Patterns

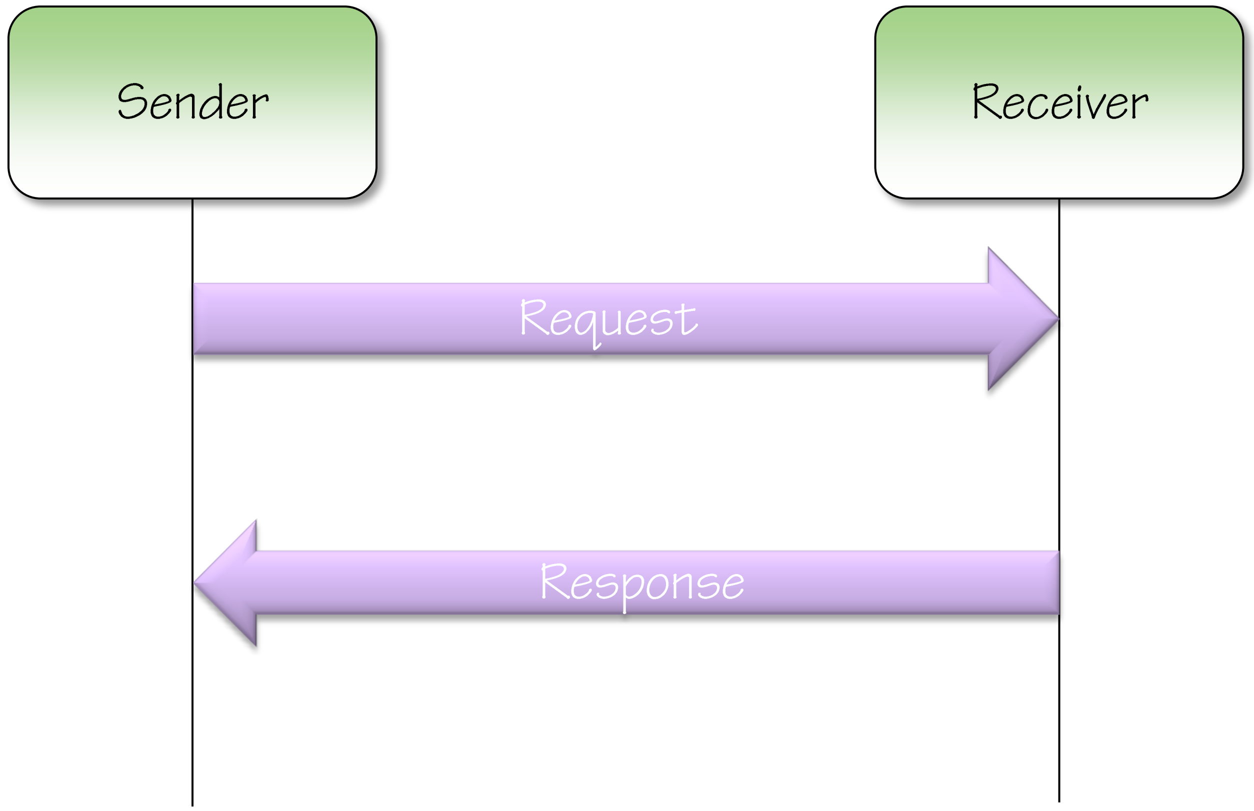
Message Exchange Patterns

- One-way
- Request Response
- Duplex

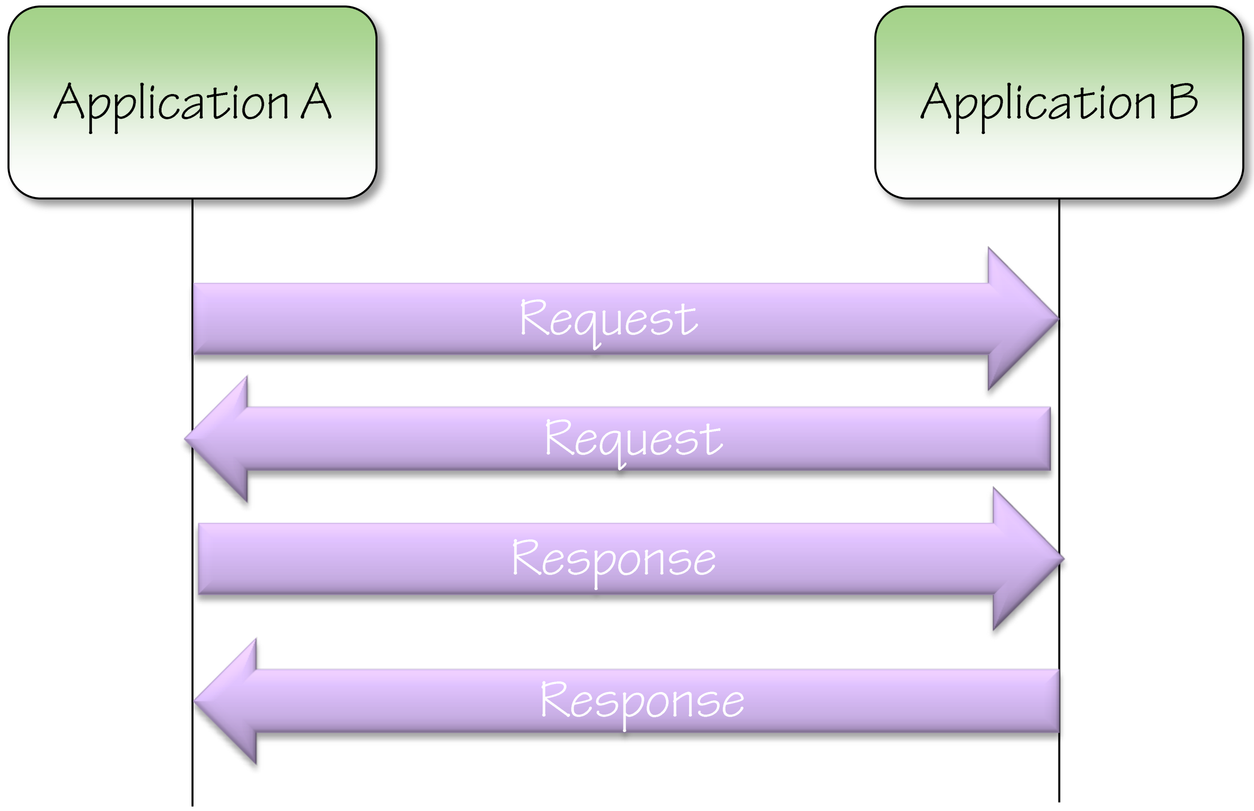
MEP: One-way



MEP: Request Response



MEP: Duplex


Application A
Application B
Request
Request
Response
Response

Validation of Request

- **All requests MAY be wrong**
  - Wrong data representation
  - Wrong values
  - Wrong encoding
  - Request called in wrong order
  - Invalid data

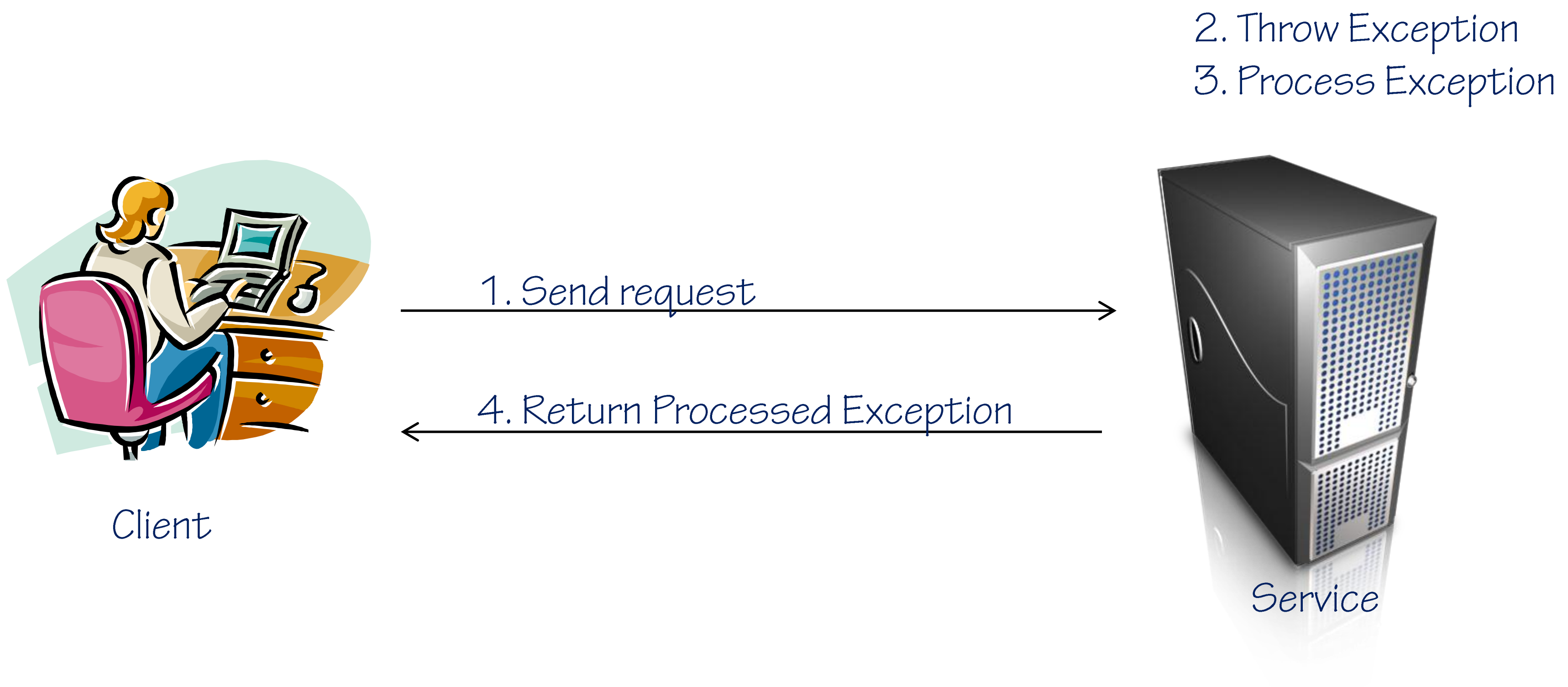
Validation of Request

- **Validation saves**
  - Resources
  - Time

Validation Pattern

- **Handle authentication and authorization first**
- **Validate incoming request**
- **Validate units of work**
  - Do not validate against all possible errors.
  - Combinations will bite you.
- **Return enough data to help caller fix error**

Sanitizing Response



Sanitized Response

- Capture content and context: what was sent and how
- Log information to central store
- Create identifier (ideally, short, alphanumeric)

Sanitized Responses: Default Behavior

- Tell caller “Something went wrong”
- HTTP: 5xx Error
- SOAP: Server Fault
- Body of message: Message ID and info to contact support

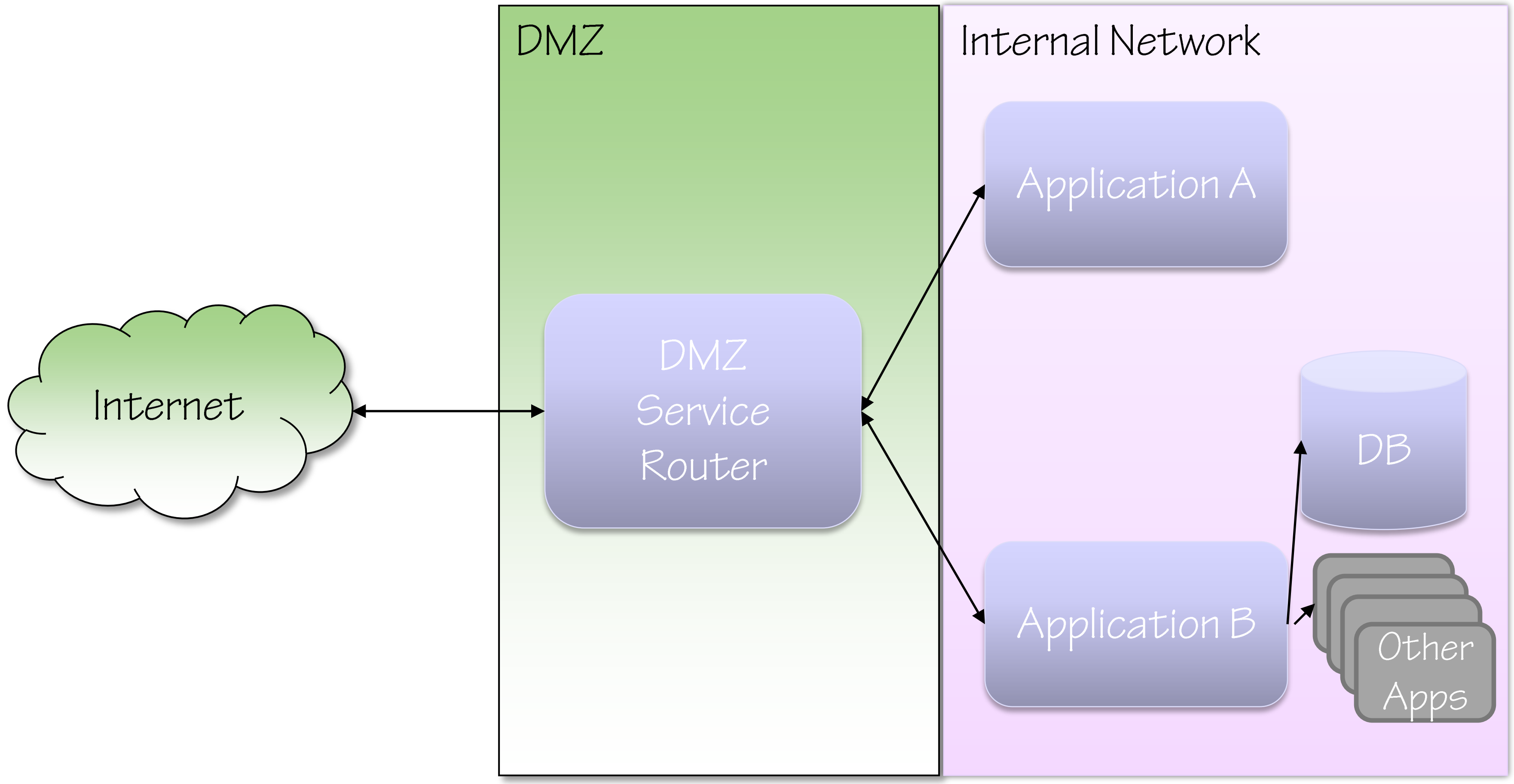
Example:

```
<html>
  <body>
    <input type="hidden" id="errorId" value="1337" />
    Contact support at (425) 555-1212
  </body>
</html>
```

Routing Patterns

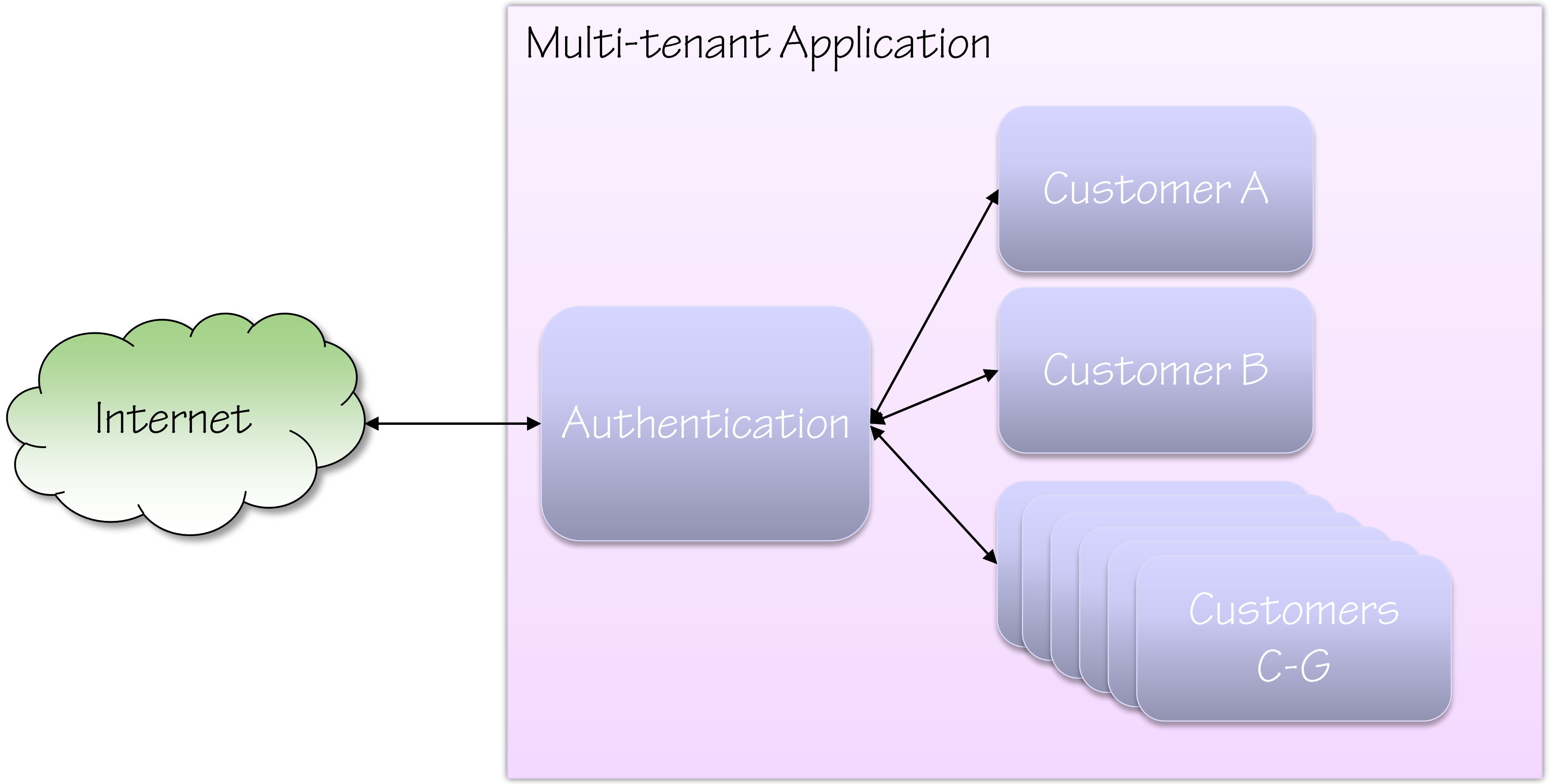
- Perimeter Service
- Identity Based Router
- Content Based Router
- Intermediary

Perimeter Service

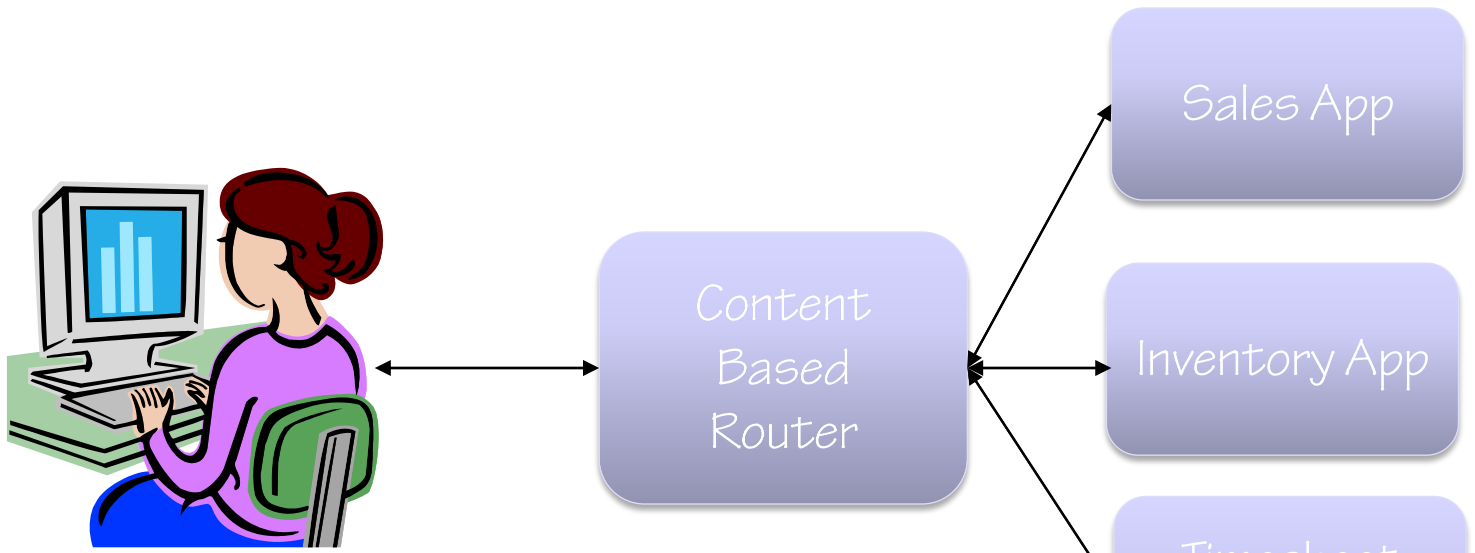


Identity Based Router

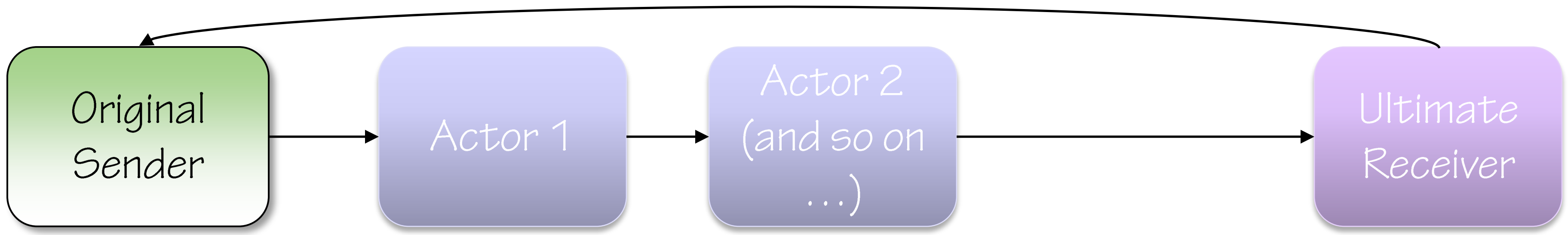
Based on who you are, go to an application instance



Content Based Router



Intermediary



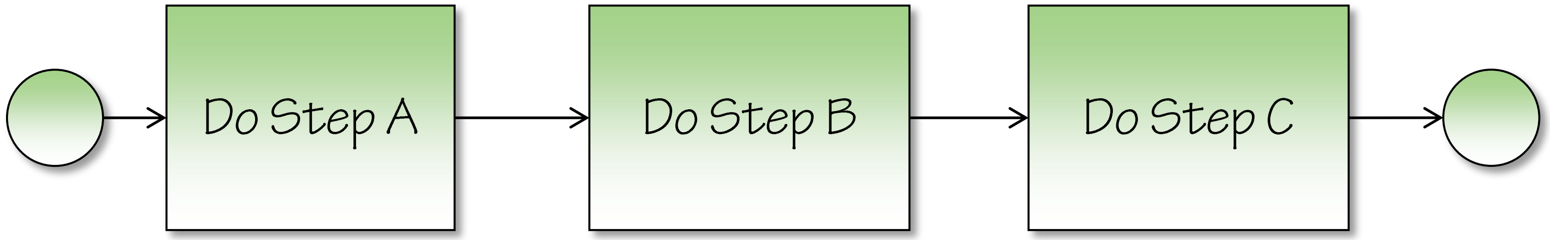
- Interesting idea from SOAP 1.2 spec, part 1, section 2.7.3: Active Intermediaries
- Makes sense when combined with routing

Workflow Patterns

- Control-Flow
- Data
- Resource
- Exception Handling
- http://www.workflowpatterns.com

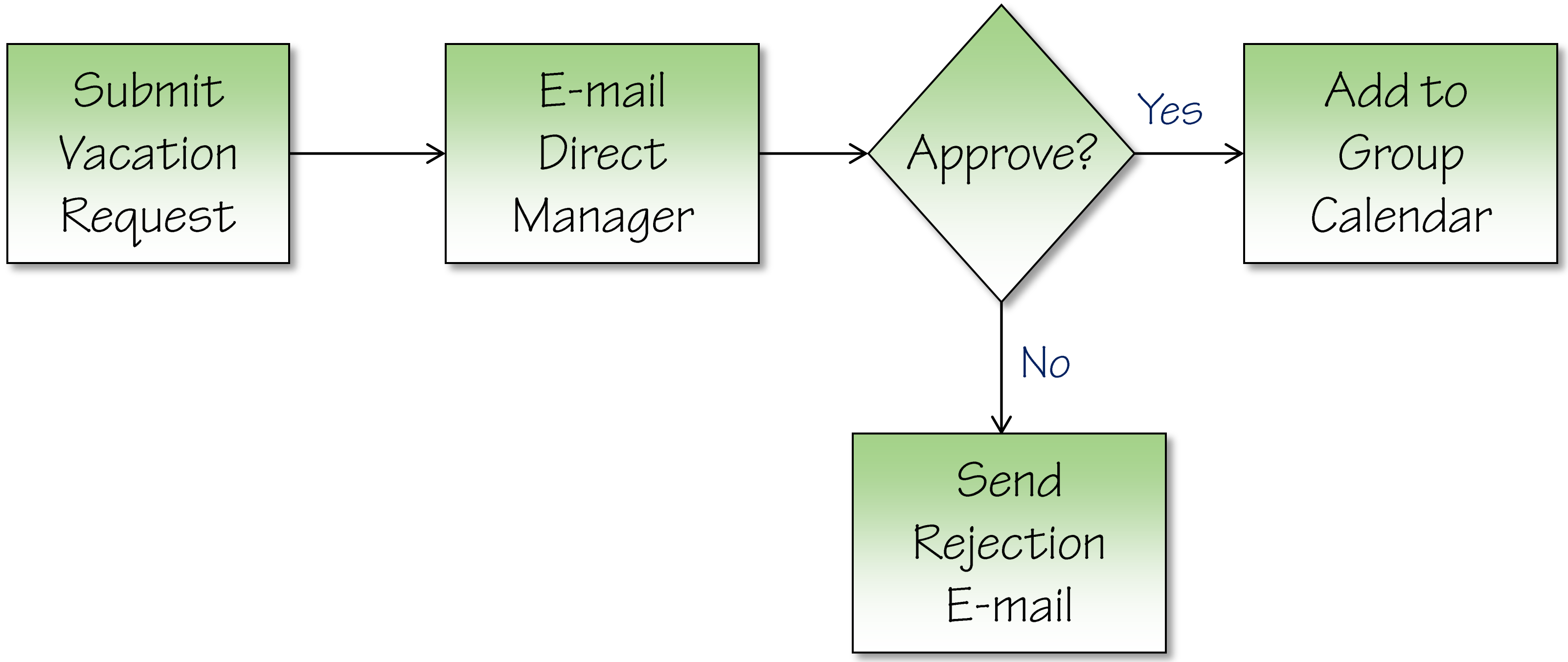
Sequential

- Step oriented
- State transition == Completion of current step



Flow Chart

- Decision Oriented
- Example: Approval process



Summary

- Message Exchange Patterns
- Validation of Request
- Sanitizing Response
- Routing Patterns
- Workflow Patterns