# Web Services:
# - What are Users Really Expecting?
# - What are Real Challenges?

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# Agenda

- Use Cases
- Summary of Use Cases
- Anticipated Solutions
- Conclusion

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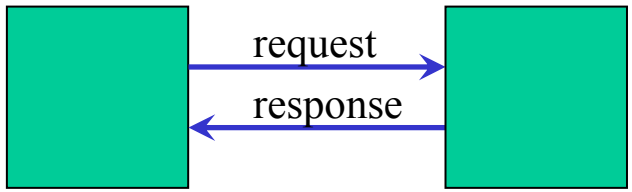
# Simple Request-Response




- Query
  - Stock query
  - Weather, Temperature query
  - Earthquake, Environment monitoring
  - Daily/weekly sales data query
- Update (rare)
  - Customer contact daily reporting
- Conversion
  - Word to PDF

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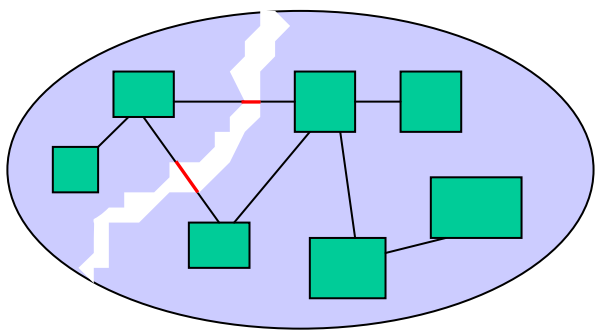
- Portal
  - Web portal
  - Mail portal
  - Mobile phone portal
- Fat client
  - Windows form applications
  - Etc.
- Distributed object/component system partially across public internet
  - Enterprise internal systems



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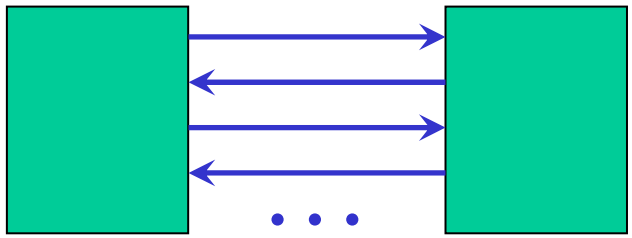
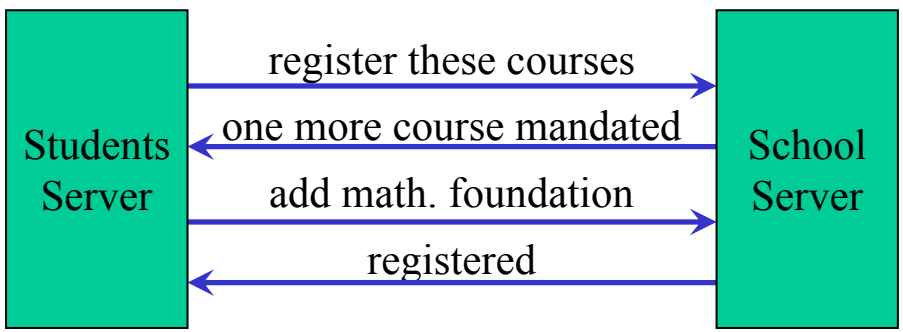
# Conversation



- Simple conversation
  - School course registration

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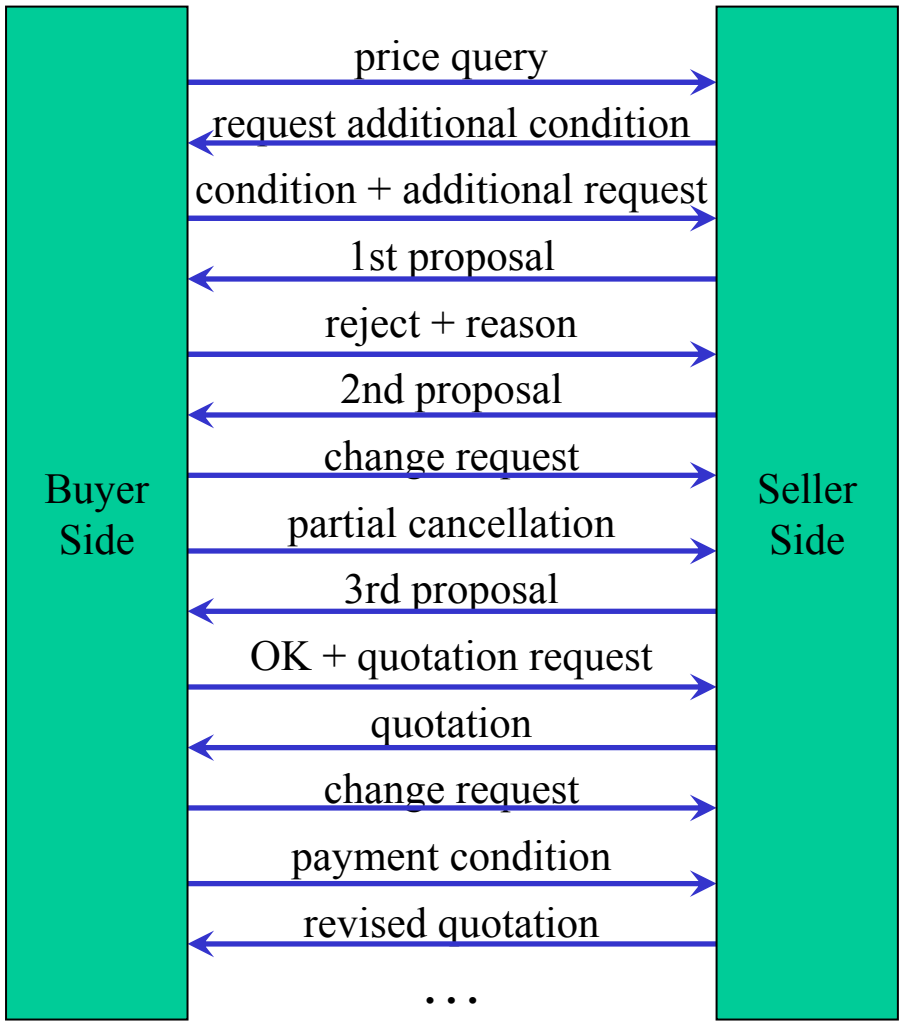
# Dynamic conversation

- Ordering

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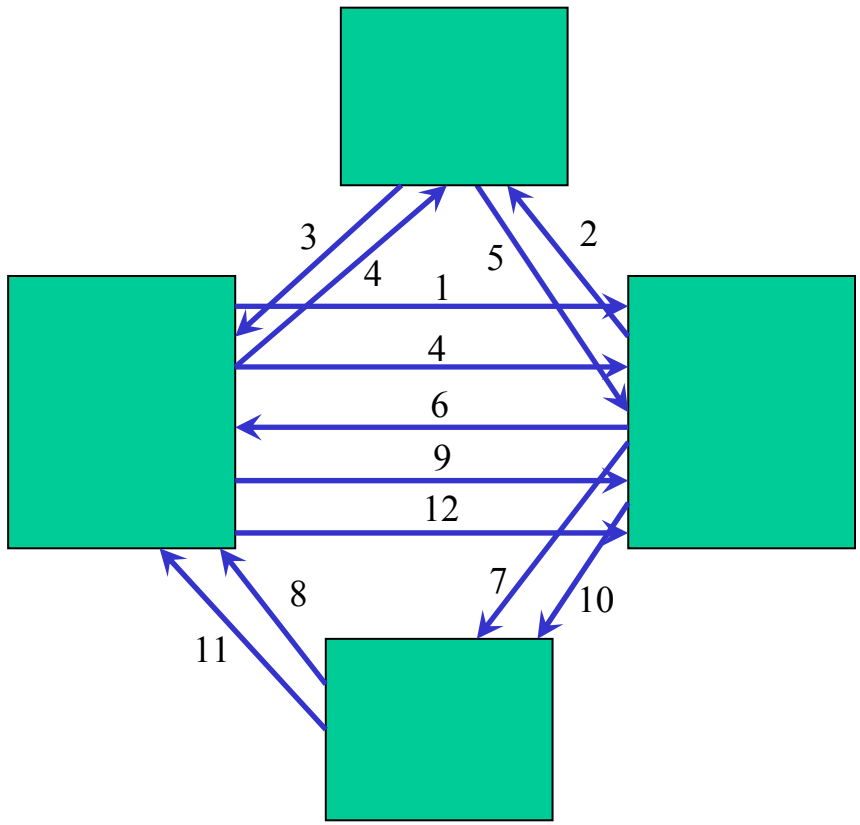
# Complex Conversation

- Conversation among multiple stakeholders
  - Preparation for transportation

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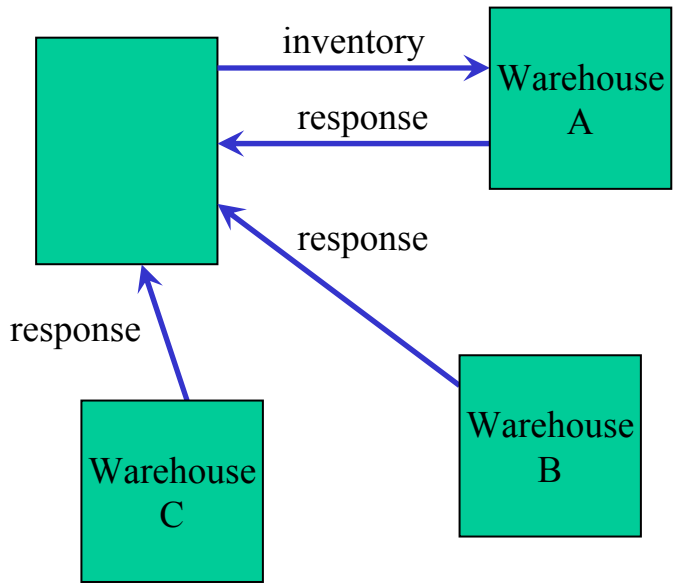
# Non-determinism

- Inventory of stock




- Which system will respond and continue the conversation is non-deterministic.

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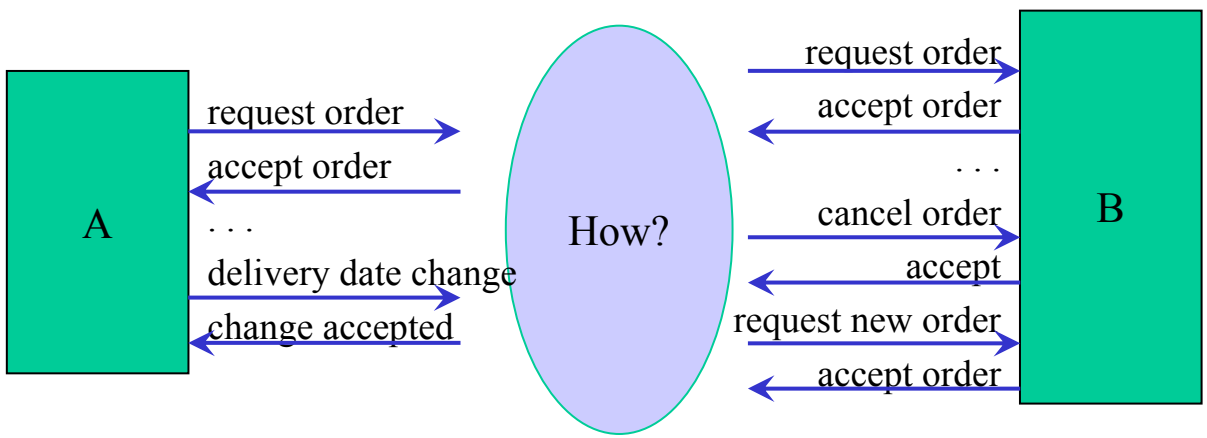
# Conversation between independently designed systems

- Incompatible choreography
  - Delivery date change
    - A: Delivery date change is designed as an simple request.
    - B: Delivery date change is expected to be cancellation and re-ordering with a same order#.

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# Summary of Use Cases

- Simple Request-Response
  - Mostly simple query and portals
  - Natural extension of intranet to internet
  - Limited usage
  - Something different from users expectation for "Web" services
- RPC-centric vs Document-centric
  - Conversational collaboration is expected

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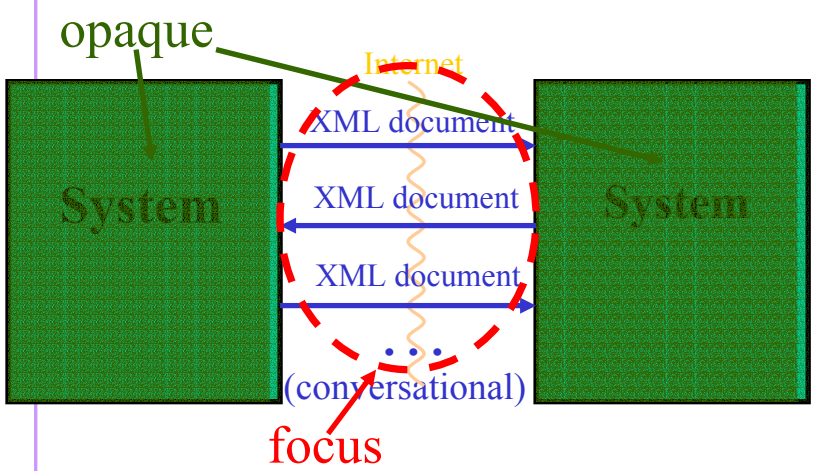
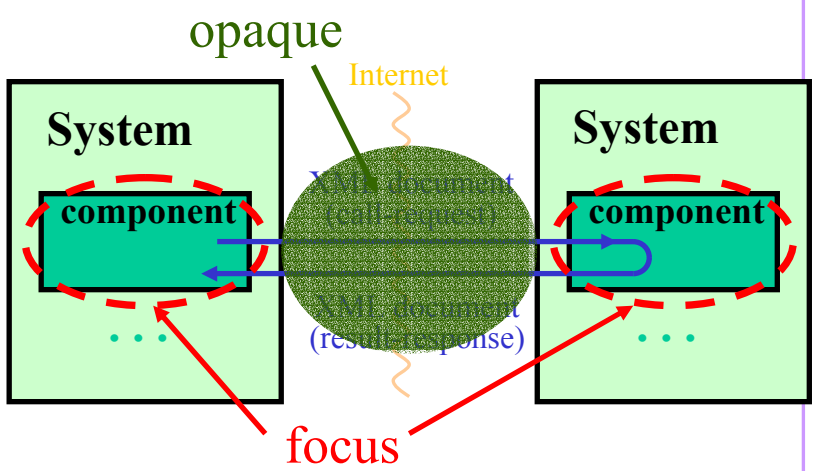
## ● *"Document-centric"*




- Focus on information flow between information systems.
- Based on document/data interchange model.
- Primary viewpoint is a systems' boundary. Each system inside implementation is opaque.
- Advanced EDI and not "middleware" product based.

## ● *"RPC-centric"*




- Focus on connection between components across internet.
- Mainly based on programming model.
- Primary viewpoints are components. Systems boundary protocol is rather opaque.
- Natural extension of current "Application server" technology.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- Simple conversation
  - Messaging
  - Conversation token exchanged
- Dynamic conversation
  - Conversation scenario dynamically changes
  - Sometime inconsistent
- Complex conversation
  - Multiple stakeholders, but not necessarily be workflow
  - Conversation scenario is non-deterministic
  - Each system is independently develop having different choreography. Autonomously managed as well.

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# Anticipated Solutions

- Core functions
  - Basic protocols: SOAP, Messaging
  - Dynamic discovery
- Loosely managed internet
  - G0: Not managed
  - G1: Loosely managed
  - G2: Tightly managed
- G1 level
  - Instantiation and managing mechanism of "internet objects"
  - Management functions: Identity management, Accounting, Monitoring, Trace & logging, Policy/SLA management, configuration/resource management

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- Description Language
  - Choreography description
    - Message formats
    - Message exchange patterns
  - SLA/Policy description

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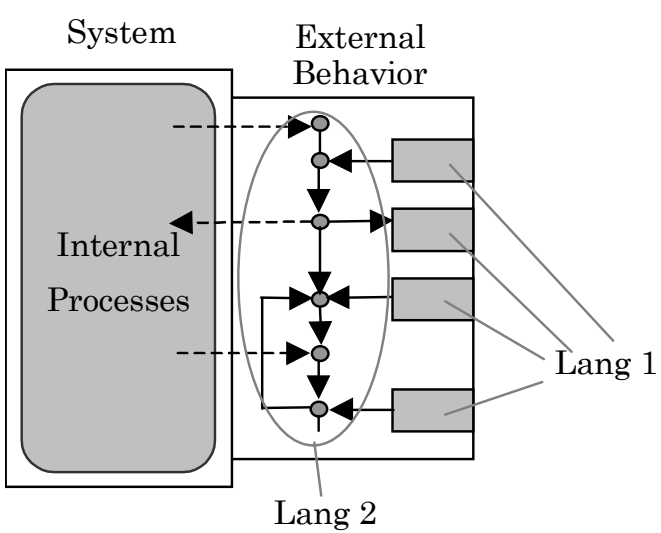
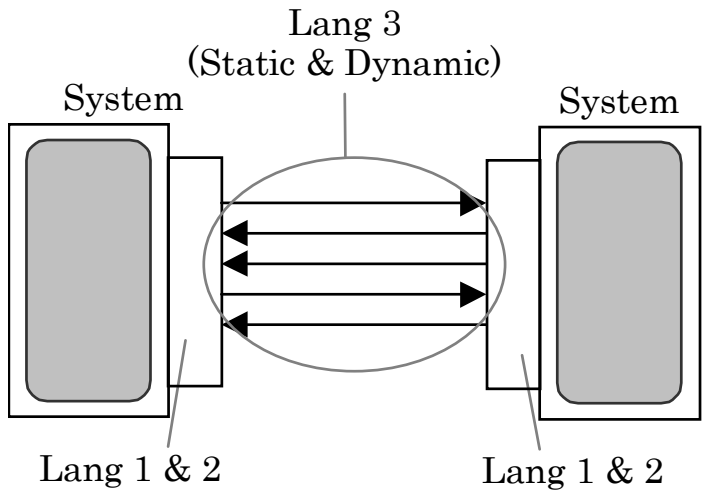
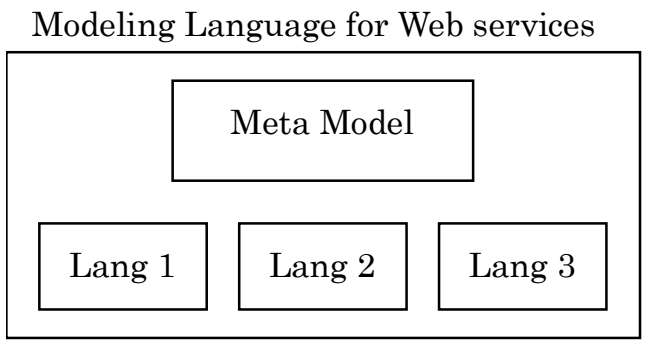
# Choreography Language

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# MDA

- Biggest problems
  - Choreography definition of each system is independently designed and developed even when same results are aimed.
  - Global choreography is applied only in limited cases.
- MDA
  - Each choreography definition is a PSM (Platform Specific Model).
  - Dynamically defined PIM unifies these PSMs.

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# Conclusion

- RPC (simple request-response) is useful but limited.
- What users are expecting is flexible comunication among systems just like "WWW".
- WWW is characterized like this:
  - A mechanism to browse documents on internet.
  - Each server site is individually and autonomously managed and maintained.
  - Each user (i.e. each browser side) is also individually and autonomously managed and maintained.
  - Although all server sites and all client systems are independently managed, they are interoperable each other as if “unseen” threads exist.
  - Suitable means in the free market in free society.

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- Flexible conversation among autonomous systems is a key.
  - Core functions
  - Loosely managed internet
  - Choreography languages and modeling language based on meta model technology
  - Dynamic and static scenario
- MDA is essential for the realization.

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