NC STATE UNIVERSITY

ENGINEERING ONLINE

Lecture Notes

Course Number: CSC 513

Instructor: Dr. Singh

Lecture Number: 3

In an Open Environment: 1

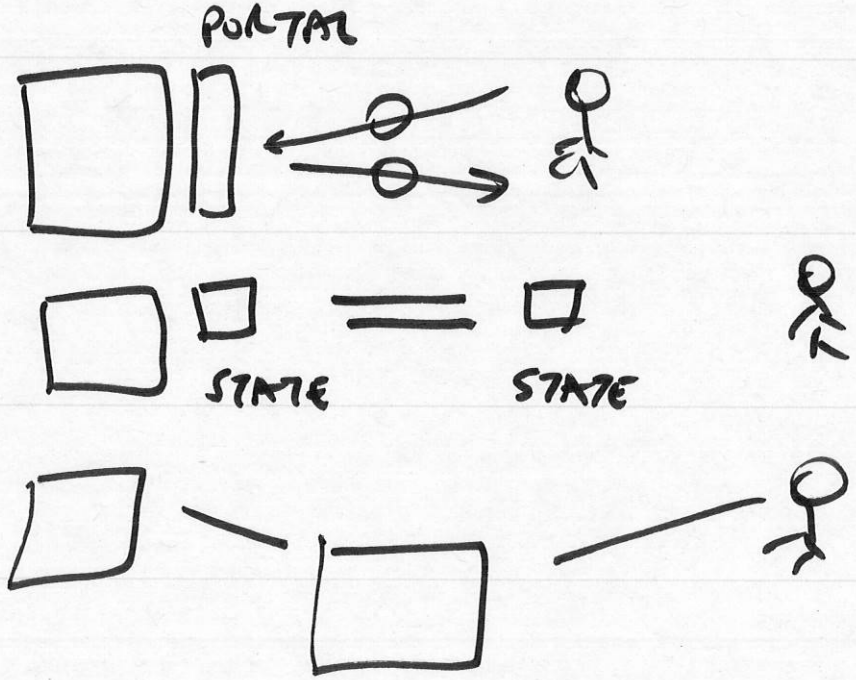
- Reliable messaging (asynchronous communication, which guarantees message delivery or failure notification)
- Maintain state: retry if needed
- Detect and repair duplicate transactions
- Engage user about credit problems

Matter of policies to ensure compliance

RULES OF ENCOUNTER AMONG THE PARTIES

ADDRESSING THE ABOVE IN AN OPEN SETTING

SELLER INFORMS BUYER OF ANY PROBLEMS
(JUST SOME)



In an Open Environment: 2

- Not immediate consistency
- Eventual "consistency" (howsoever understood) or just coherence
- Sophisticated means to maintain shared state, e.g., conversations

↳ NONE ARE GUARANTEED

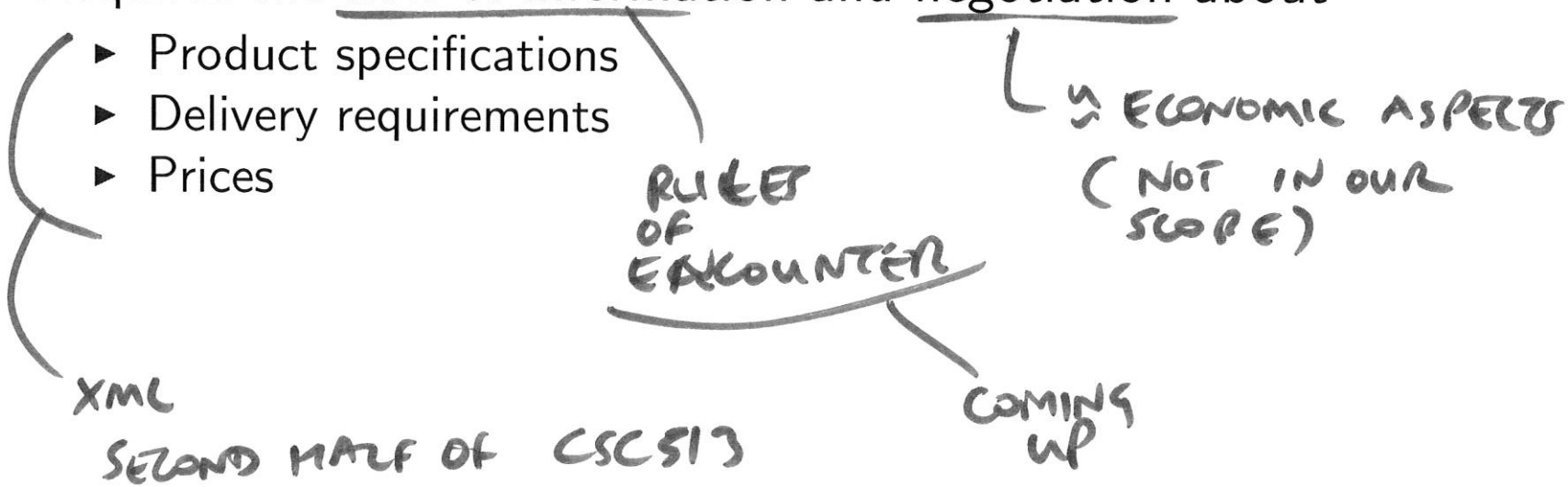
Challenges

- Information system interoperation
- Business operations
- Exception handling
- Distributed decision-making
- Personalization
- Service selection (location and assessment)

Information System Interoperation

Supply chains: manage the flow of materiel among a set of manufacturers and integrators to produce goods and configurations that can be supplied to customers

- Requires the flow of information and negotiation about
  - Product specifications
  - Delivery requirements
  - Prices



Business Operations

Modeling and optimization

- Inventory management
- Logistics: how to optimize and monitoring flow of materiel
- Billing and accounts receivable
- Accounts payable
- Customer support

Exception Conditions

Virtual enterprises to construct enterprises dynamically to provide more appropriate, packaged goods and services to common customers

- Requires the ability to
  - Construct teams
  - Enter into multiparty deals
  - Handle authorizations and commitments
  - Accommodate exceptions
- Real-world exceptions
- Compare with PL or OS exceptions

COMING UP

1/0

FILE NOT FOUND

Distributed Decision-Making: Closed

Manufacturing control: manage the operations of factories

- Requires intelligent decisions to
  - Plan inflow and outflow
  - Schedule resources
  - Accommodate exceptions

Distributed Decision-Making: Open

Automated markets as for energy distribution

- Requires abilities to
  - Set prices, place or decide on others' bids
  - Accommodate risks
- Pricing mechanisms for rational resource allocation

Personalization

Consumer dealings to make the shopping experience a pleasant one for the customer

- Requires
  - Learning and remembering the customer's preferences
  - Offering guidance to the customer (best if unintrusive)
  - Acting on behalf of the user without violating their autonomy

Service Selection

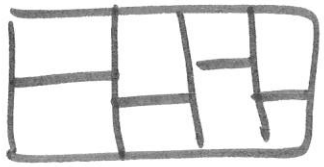
DEALING WITH DYNAMISM
BENEFITING FROM "

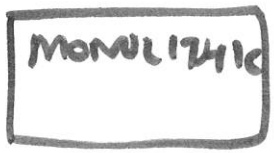
What are some bases for selecting the parties to deal with?

- Specify services precisely and search for them
  - How do you know they do what you think they do (ambiguity)?
  - How do you know they do what they say (trust)?
- Recommendations to help customers find relevant and high quality services
  - How do you obtain and aggregate evaluations?

Architectural Considerations

Architecture is motivated by additional considerations besides functionality





- Instance level, nonfunctional properties such as the availability of a specific service instance
  - What if the payments are made offline, i.e., significantly delayed?
- Metalevel properties such as the maintainability of the software modules and the ease of the upgradability of the system

class Stack{
}

method Sorting $O(n^2)$

Stack s = new Stack()

CONTRAST TECHNICAL AND BUSINESS SERVICES (IN PARTICULAR WRT COMPUTER SCIENCE. - HOW MAY WE BUILD OR MAINTAIN SUCH SERVICES).

1. EXAMPLES :

2. CHARACTERISTICS

TECHNICAL (web search)

N.W. ADMIN

BUSINESS

* POLICIES BUSINESS

?q = Kanshal ⟺ INFO ABOUT KANSHAL

BY DEFAULT, IMPL' NOT IMPORTANT FOR EITHER.

WEB SEARCH

REF. LIBRARIAN

* FLEXIBILITY
  ? ABSTRACT
  ≈ HUMAN
  LQOS DIFFER (EG ANNIL)

AUTOMATION . . . . . .