15.566
Information Technology as an Integrating Force in Manufacturing

Session 4 of 24

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Sloan School of Management

Concluding remarks

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USE CASES

• Contract between stakeholders about system behavior
• Captures:
  – Request from primary actor
  – System response
  – Implications for other stakeholders
• To be agreed by non-technical users
• Usually in text form (also business processes, flow charts, programming languages)
• Used for different purposes
  – To be the functional requirements for a system
  – To describe business processes
  – To form the basis for user documentation
  – To document the design of a system
• One size doesn’t fit all
  – Executives need business oriented use cases
  – Mission critical apps require unambiguous, thorough descriptions

Optional readings distributed in class
<table>
<thead>
<tr>
<th>USE CASE 5</th>
<th>Buy Goods</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal in Context</strong></td>
<td>Buyer issues request directly to our company, expects goods shipped and to be billed.</td>
</tr>
<tr>
<td><strong>Scope &amp; Level</strong></td>
<td>Company, Summary</td>
</tr>
<tr>
<td>** Preconditions**</td>
<td>We know Buyer, their address, etc.</td>
</tr>
<tr>
<td><strong>Success End Condition</strong></td>
<td>Buyer has goods, we have money for the goods.</td>
</tr>
<tr>
<td><strong>Failed End Condition</strong></td>
<td>We have not sent the goods, Buyer has not spent the money.</td>
</tr>
<tr>
<td><strong>1a, 2a Actors</strong></td>
<td>Buyer, any agent (or computer) acting for customer. Credit card company, bank, shipping service</td>
</tr>
<tr>
<td><strong>Trigger</strong></td>
<td>purchase request comes in.</td>
</tr>
<tr>
<td><strong>DESCRIPTION</strong></td>
<td><strong>Step</strong></td>
</tr>
<tr>
<td>1</td>
<td>Buyer calls in with a purchase request</td>
</tr>
<tr>
<td>2</td>
<td>Company captures buyer’s name, address, requested goods, etc.</td>
</tr>
<tr>
<td>3</td>
<td>Company gives buyer information on goods, prices, delivery dates, etc.</td>
</tr>
<tr>
<td>4</td>
<td>Buyer signs for order.</td>
</tr>
<tr>
<td>5</td>
<td>Company creates order, ships order to buyer.</td>
</tr>
<tr>
<td>6</td>
<td>Company ships invoice to buyer.</td>
</tr>
<tr>
<td>7</td>
<td>Buyers pays invoice.</td>
</tr>
<tr>
<td><strong>EXTENSIONS</strong></td>
<td><strong>Step</strong></td>
</tr>
<tr>
<td>3a</td>
<td>Company is out of one of the ordered items: 3a1. Renegotiate order.</td>
</tr>
<tr>
<td>4a</td>
<td>Buyer pays directly with credit card: 4a1. Take payment by credit card (use case 44)</td>
</tr>
<tr>
<td>7a</td>
<td>Buyer returns goods: 7a. Handle returned goods (use case 105)</td>
</tr>
<tr>
<td><strong>SUB-VARIATIONS</strong></td>
<td><strong>Branching Action</strong></td>
</tr>
<tr>
<td>1</td>
<td>Buyer may use phone in, fax in, use web order form, electronic interchange</td>
</tr>
<tr>
<td>7</td>
<td>Buyer may pay by cash or money order, check, credit card</td>
</tr>
</tbody>
</table>
SIMPLE EXAMPLE OF COMMUNICATION – SENDING A FAX

Telecommunication is achieved through the layered exchange of symbols.
GENERIC IT ARCHITECTURE ABSTRACTION STACK

SOFTWARE

Coordination activities
- FRAMEWORK
- PROCESS MANAGEMENT
- WORKFLOW

Base activities
- PROGRAMMING LANGUAGE
- APPLICATION & SERVICE
- PROTOCOL
- DATA
- OPERATING SYSTEM

HARDWARE

NETWORK
MACHINE
COMPONENT

ENVIRONMENT
A “Real” Computer Architecture

- Keyboard
- Mouse
- Monitor
- Laser printer

CPU:
- Clock
- Instruction Counter
- Registers (001, 0101, 1101)

Memory
A Simplified Computer The LMC = Little man computer

**NETWORKING**

I-O REGISTERS

P1  →  400
P2  →  400
P3  →  400
P4  →  400
P5  →  400
P6  →  400
P7  →  400
P8  →  400
P9  →  400
P10 →  400
P11 →  400
P12 →  400

**PROCESSOR**

NEXT INSTRUCTION

ALU

DATA REGISTER

ADDRESS REGISTER

M. RETRIEVE

INPUT

OUTPUT

ADDRESS NEXT INSTRUCTION

CLOCK STATUS

4

**MEMORY**

ADDRESSES | DATA
---|---
001 | 010
002 | 007
003 | 008
004 | 003
005 | 002
017 | 005
018 | 011
019 | 008
020 | 400
021 | 400
022 | 400
023 | 400
997 | 400
998 | 400
999 | 400

RESET