

SSE 3200 Course: Analysis and Design of Web-Based Services

ASEE SECC 2010

**A Curriculum for Engineering Service Systems Workshop
June 20, 2010**

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Motivation for the course

- Widespread use of the web for delivering services
 - An engineering perspective to
 - Design
 - Development
 - Testing
 - Problem solving
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Course description

- The strategy and technology behind developing web-based service systems will be the focus of the course.
 - Topics will include flowcharting, cost estimating, performance measurement, and alpha and beta testing.
 - A semester project will illustrate the use of these tools.
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Prerequisite support

- **CS 1121 Computer Science 1**
Starting point of the CS program. A high-level, object-oriented programming language is introduced as a problem-solving tool. Topics include design, coding, documentation, debugging and testing of programs. Programming assignments are given in both a lab setting and as homework.

(Programming in Java)

- **SSE 2300 Service Systems Dynamics and Design**
Introduces a systems perspective in solving complex problems. How systems are designed and implemented will be a focal point of the course. Topics such as simulation, life cycle, and regulation will be introduced.

(Design of complex systems)



Course structure

- General topics
 - Part 1: Web based services through web browsers
 - Human – computer
 - Hands on focus
 - Part 2: Enterprise Application Integration
 - Computer – computer
 - Design and technology focus
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General topics

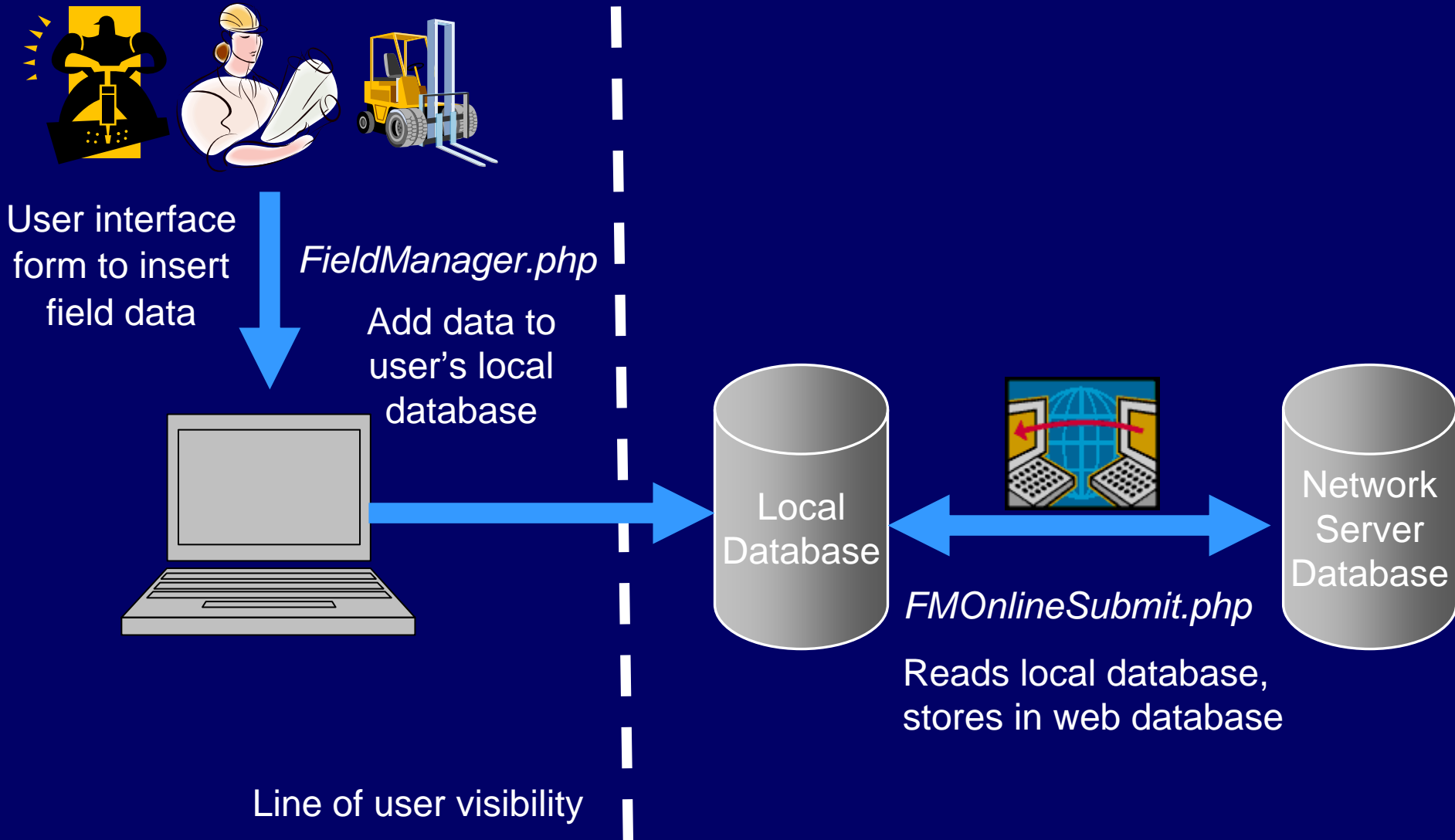
- Distributed Information Systems (DIS)
 - Proprietary networks vs. the Internet
 - Layered design
 - Architecture (one-tier to n-tier)
 - Communication
(blocking or non-blocking)
 - Middleware
 - Web technologies
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Part 1: Human-computer services

- XML: eXtensible Markup Language
 - HTML: HyperText Markup Language
 - JavaScript
 - PHP
 - MySQL
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Example

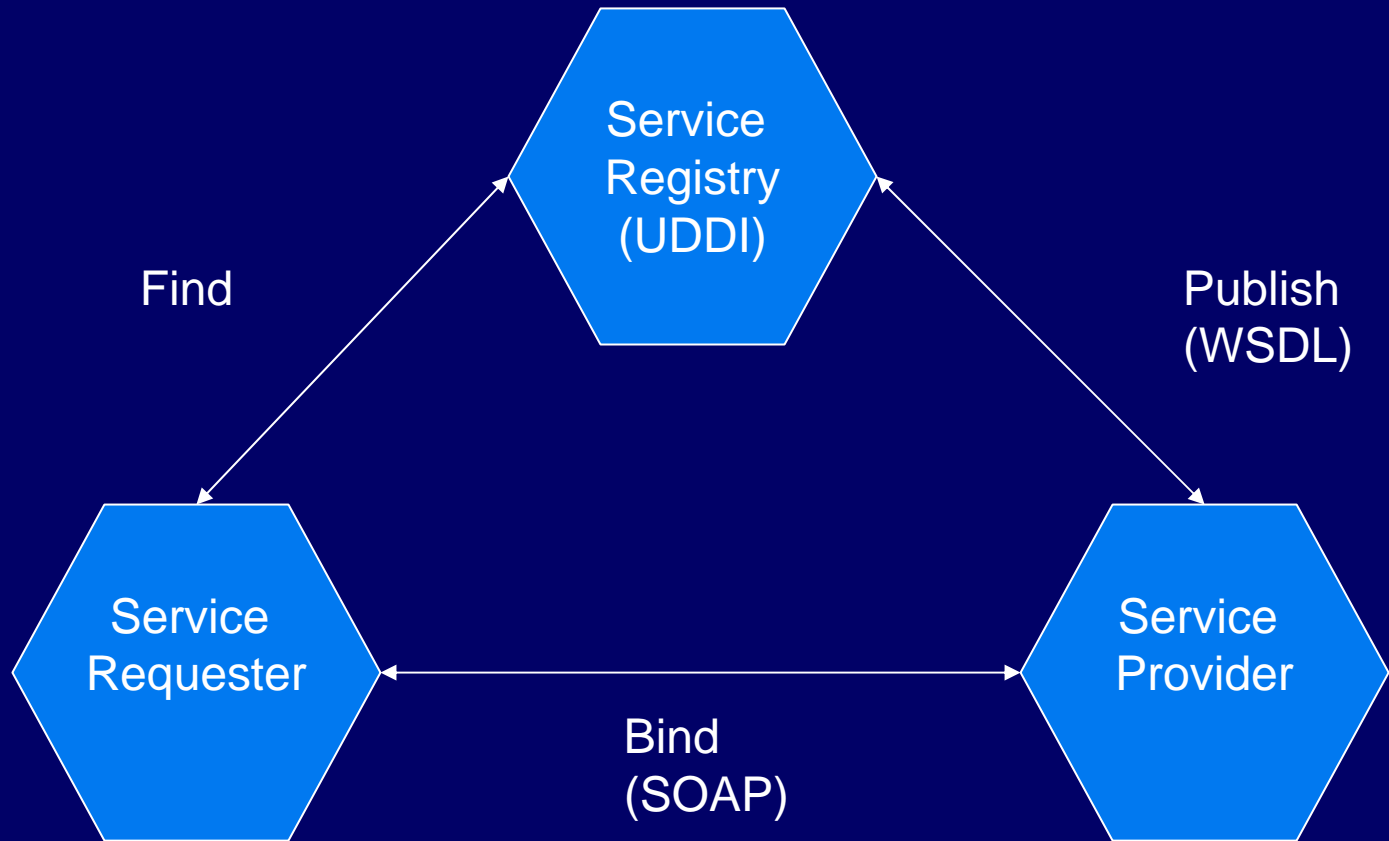




Part 2: Computer-computer services

- RPC: Remote Procedure Calls
 - TP monitors: Transaction Processing Monitors
 - Object brokers
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Part 2: Computer-computer services (cont'd)

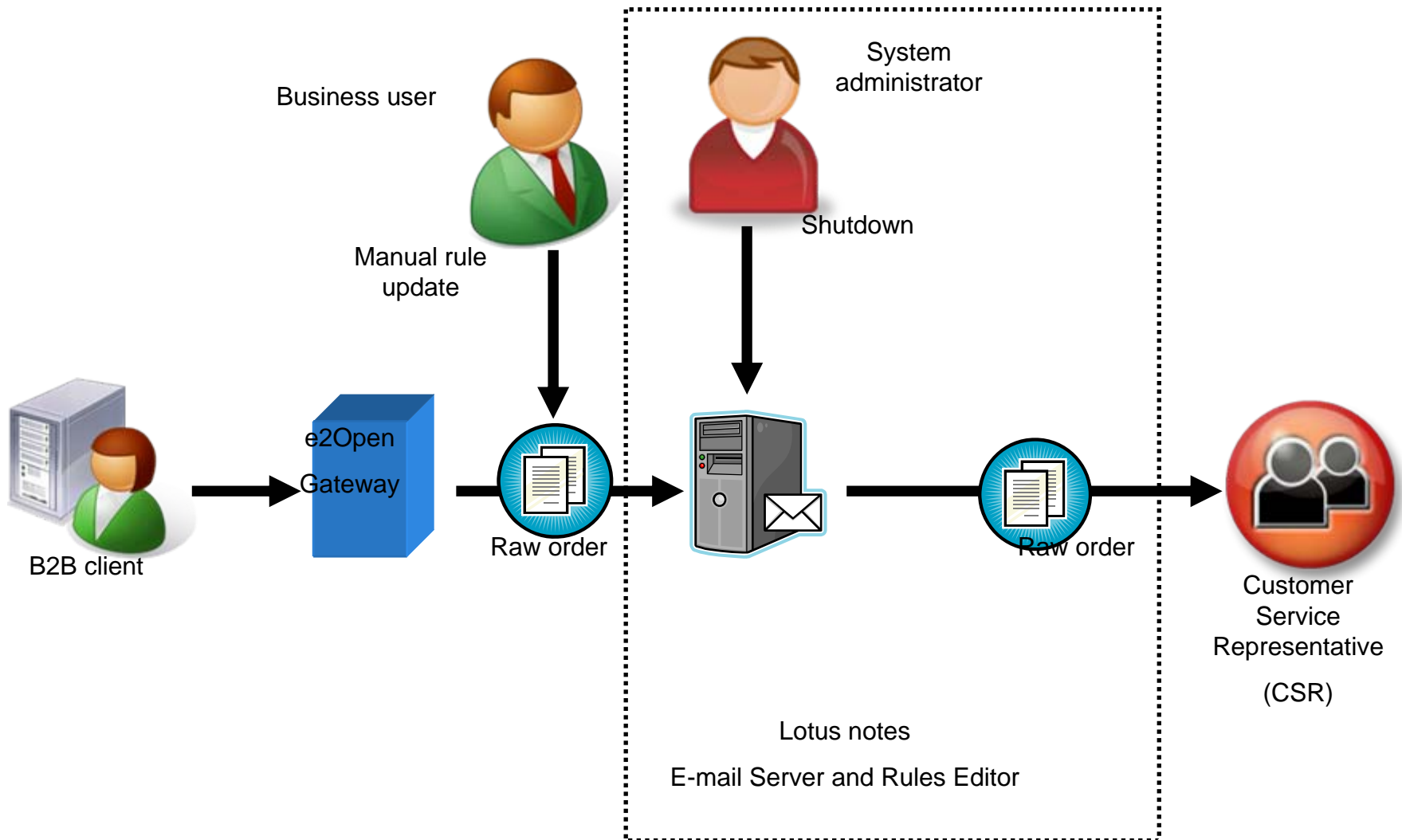




B2B document sharing

- A research project conducted at IBM's Almaden Research Center
- Business clients, procurement analysts or approved employees need documents
- Clients in 26 countries
- An order based system

Before





Example routing rule

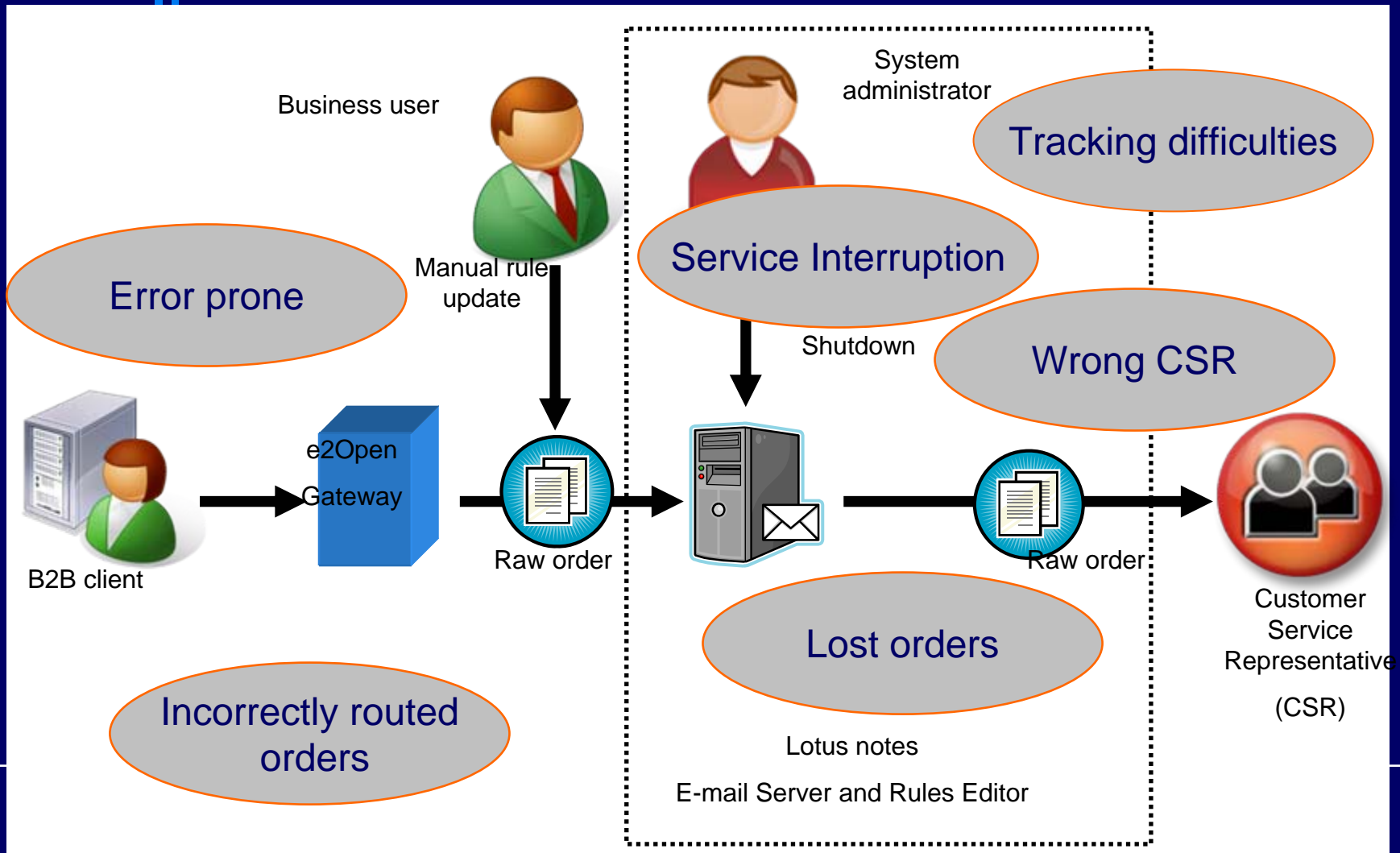
If the customer name contains the string “AA1” and the country code is in the set {UK, FR} then notify by e-mail the following CSRs as follows:

To: johndoe@uk.ibm.com

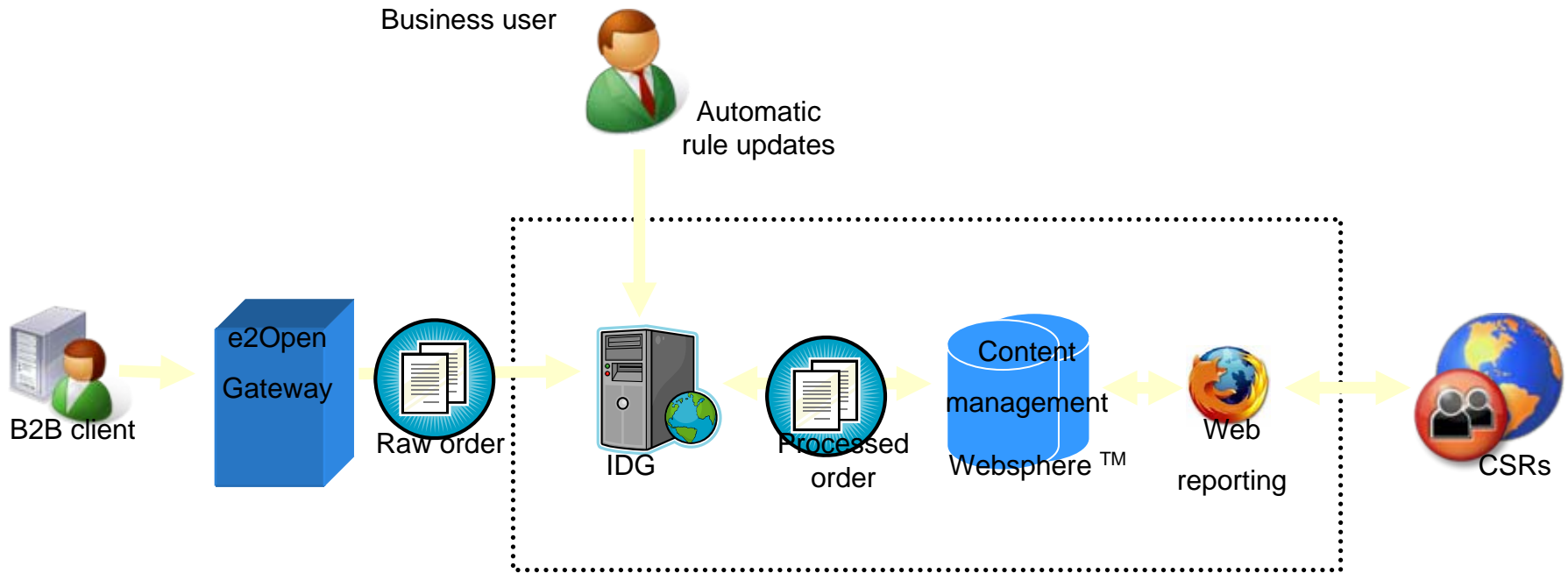
Cc: aa@fr.ibm.com

Bcc: customer_support@ibmc1.pe.e2open.net

Possible problems



After





Textbooks

- Learning PHP, MySQL & JavaScript
Robin Nixon
2009, O'Reilly
 - Web Services: Concepts, Architectures,
and Applications
Gustavo Alonso, Fabio Casati, Harumi
Kino, and Vijay Machiraju
2004, Springer Verlag
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Summary

- The course was offered twice (Spring 2009 and Spring 2010)
 - The students liked the hands-on parts
 - They commented that they learned a lot about the Internet's architecture and web based transactions
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