Verteilte Systeme

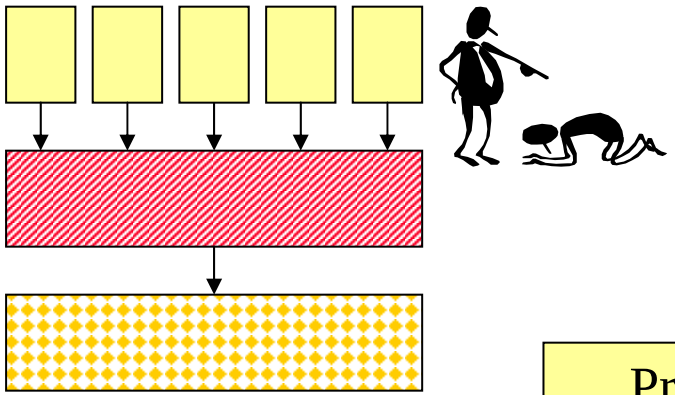
3. Dienstevermittlung

3.3 SOA for Business

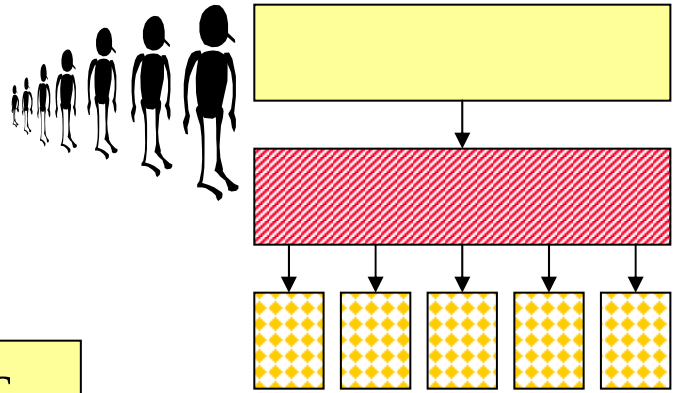
Sebastian Iwanowski
FH Wedel

Evolution of architectures

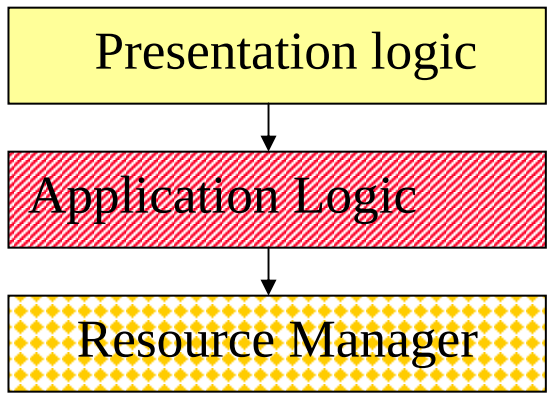
Layer Distribution



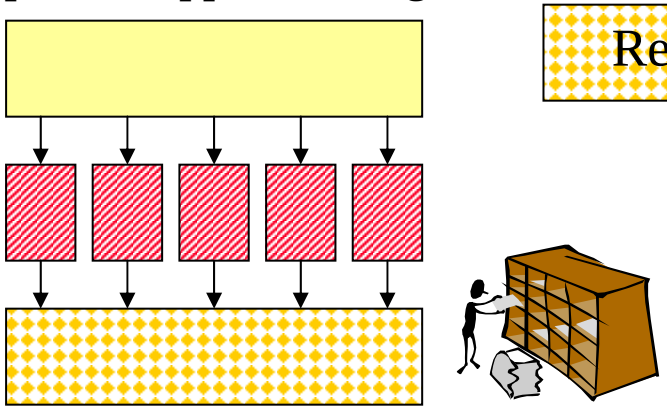
Support for multiple clients



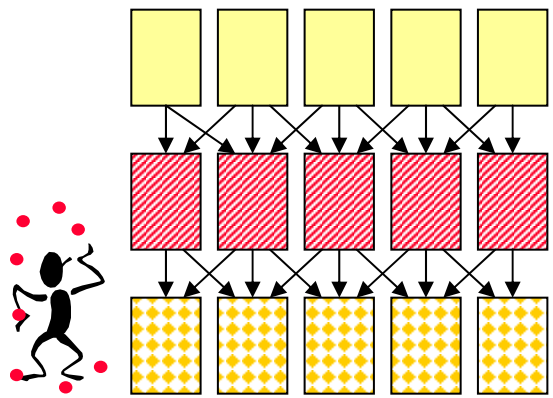
Data distribution or replication



Separated application logic



Any combination thereof

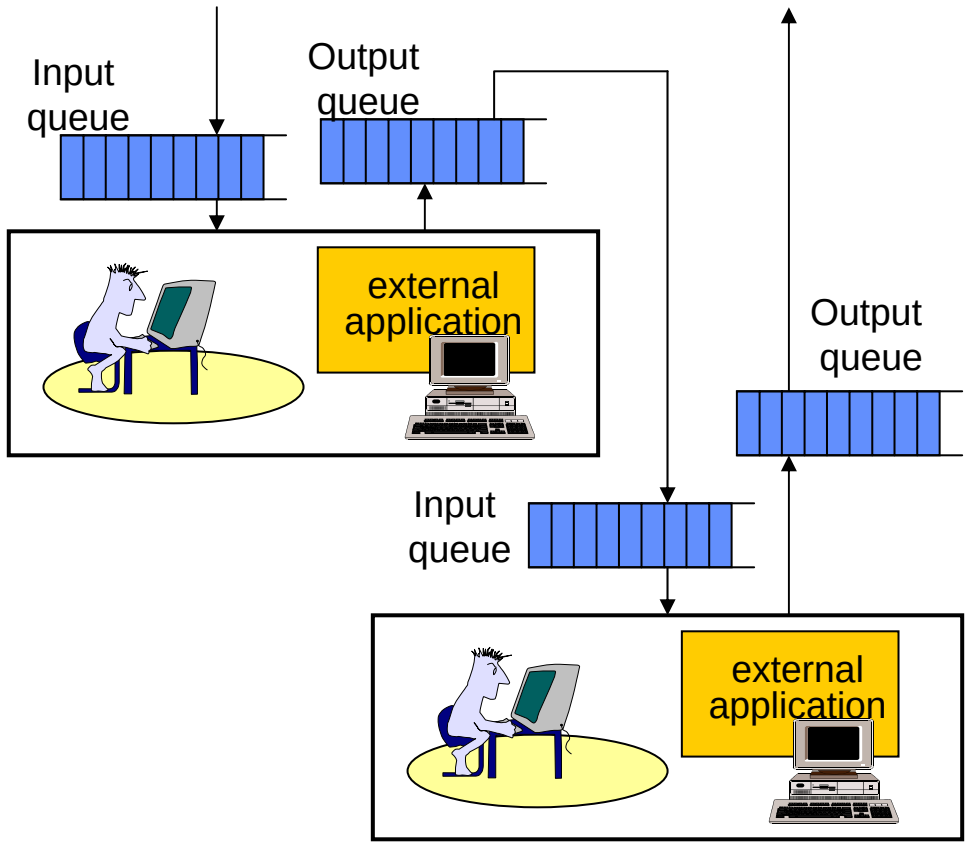


aus Alonso / Pautasso: graduate course in Lappeenranta, http://www.inf.ethz.ch/personal/alonso/teaching.html

Evolution of architectures

Message Oriented Middleware (MOM)

Simple Messaging: autonomous queuing

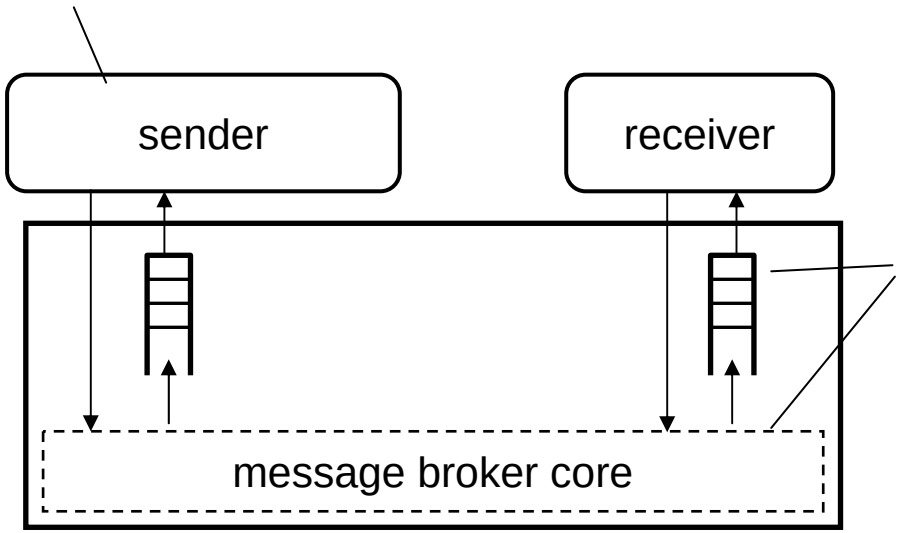


Evolution of architectures

Message Oriented Middleware (MOM)

Message brokering

In simple messaging it is the sender who specifies the identity of the receivers



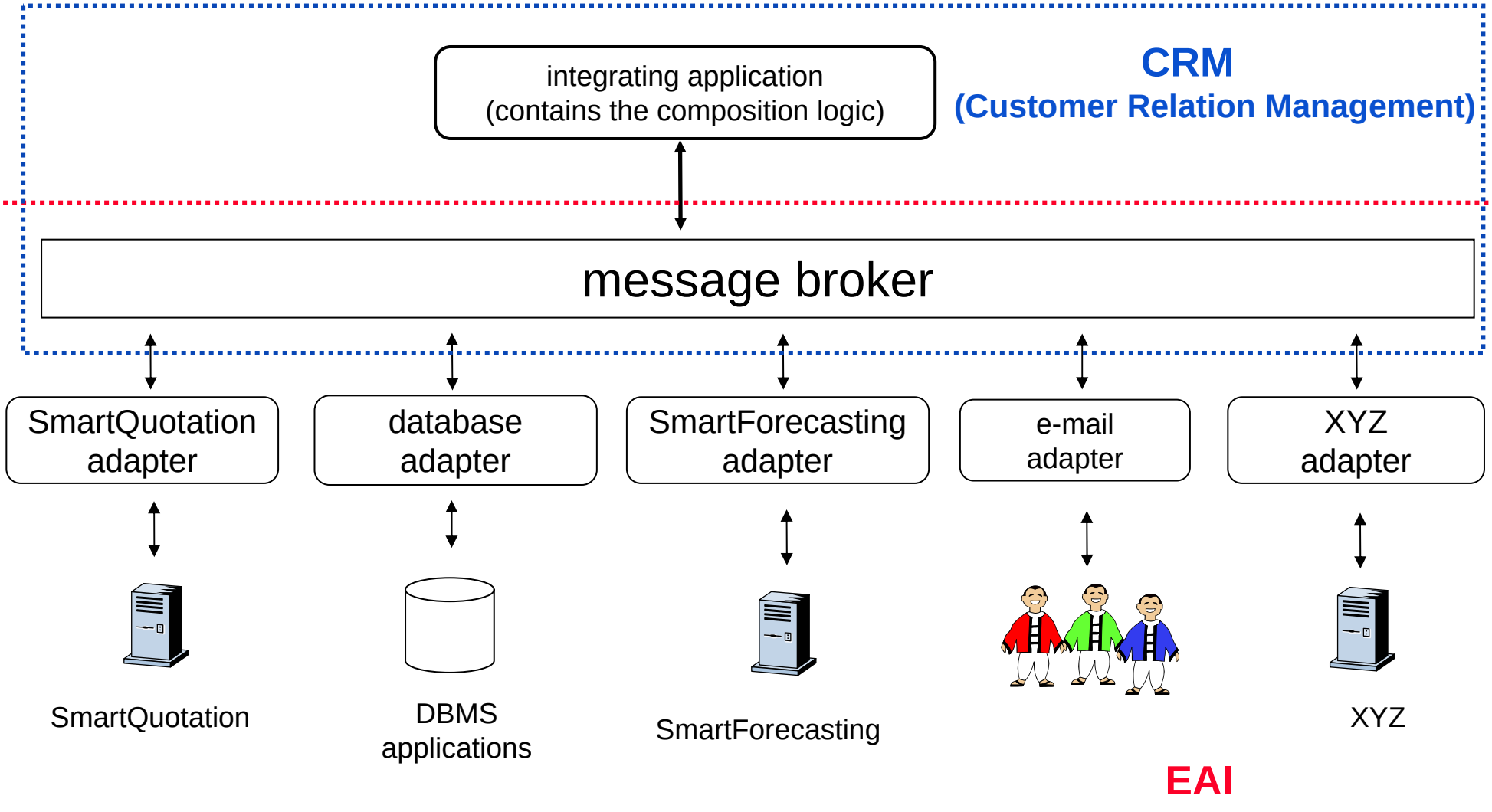
With message brokers, custom message routing logic can be defined at the message broker level or at the queue level

message broker

aus Alonso et al.: Web Services

Evolution of architectures

MOM with Brokering = EAI (Enterprise Application Integration)



nach Alonso et al.: Web Services

Evolution of architectures

Enterprise Application Integration

Definition

Enterprise application integration (EAI) technology
is the means of integrating existing software systems (legacy systems) within enterprises with each other in order to share data, replicate data or execution business processes involving many software systems

aus Alonso / Bussler: EDBT-WebService-Tutorial,
http://www.inf.ethz.ch/personal/alonso/teaching.html

Evolution of architectures

Enterprise Application Integration

Requirements for the integration of legacy systems

- Access of the legacy systems themselves through adapters
  that understand the legacy systems' interfaces and can extract and insert data
- Data transformation to overcome data definition mismatches of legacy systems' interface data
- Business processes to define multi-step processes across several legacy systems in order to achieve a business goal (e.g., purchasing goods)

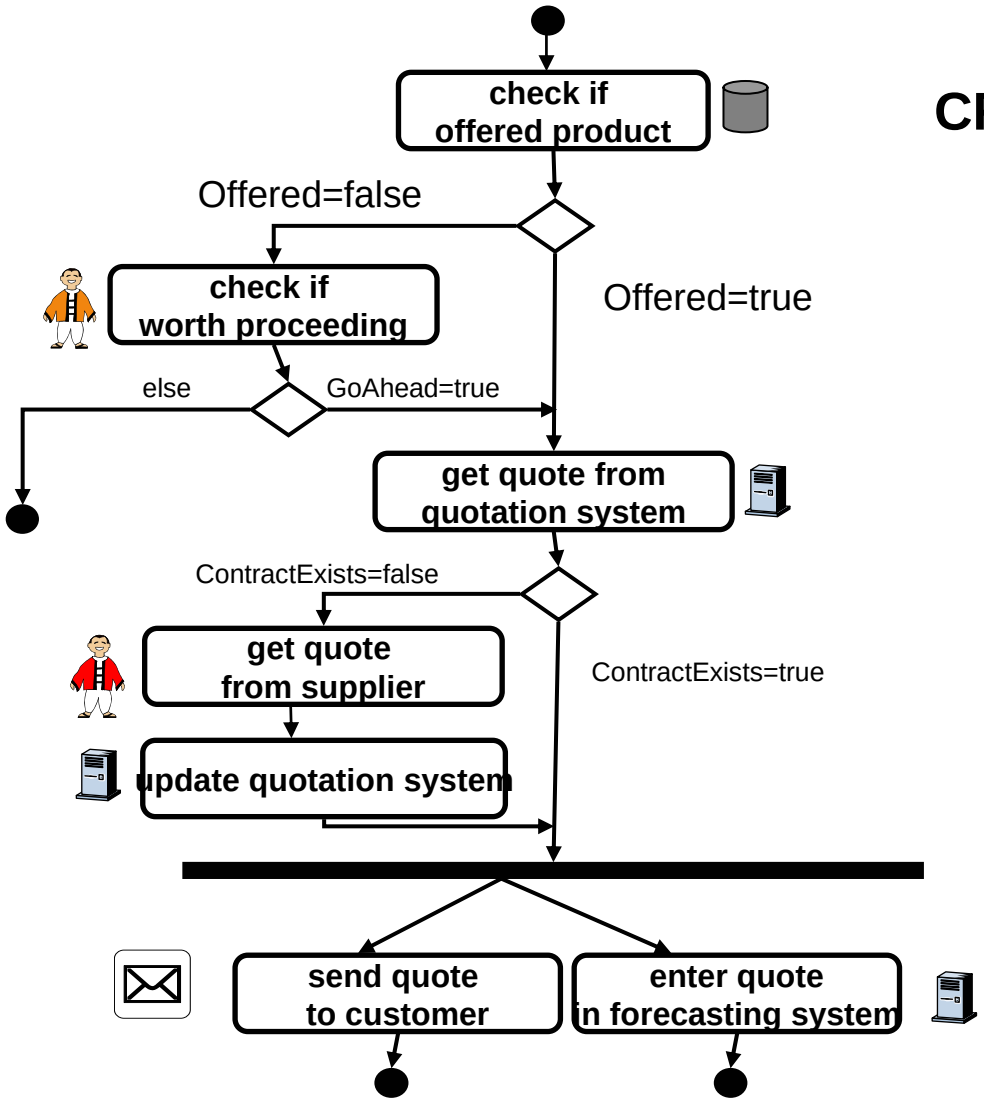
Requirements for EAI technology

- Access as many legacy applications as necessary
- Define and execution as many business processes as necessary
- Transform data from any data type format to any other data type format

nach Alonso / Bussler: EDBT-WebService-Tutorial,
http://www.inf.ethz.ch/personal/alonso/teaching.html

Evolution of architectures

WFMS (Workflow Management System)

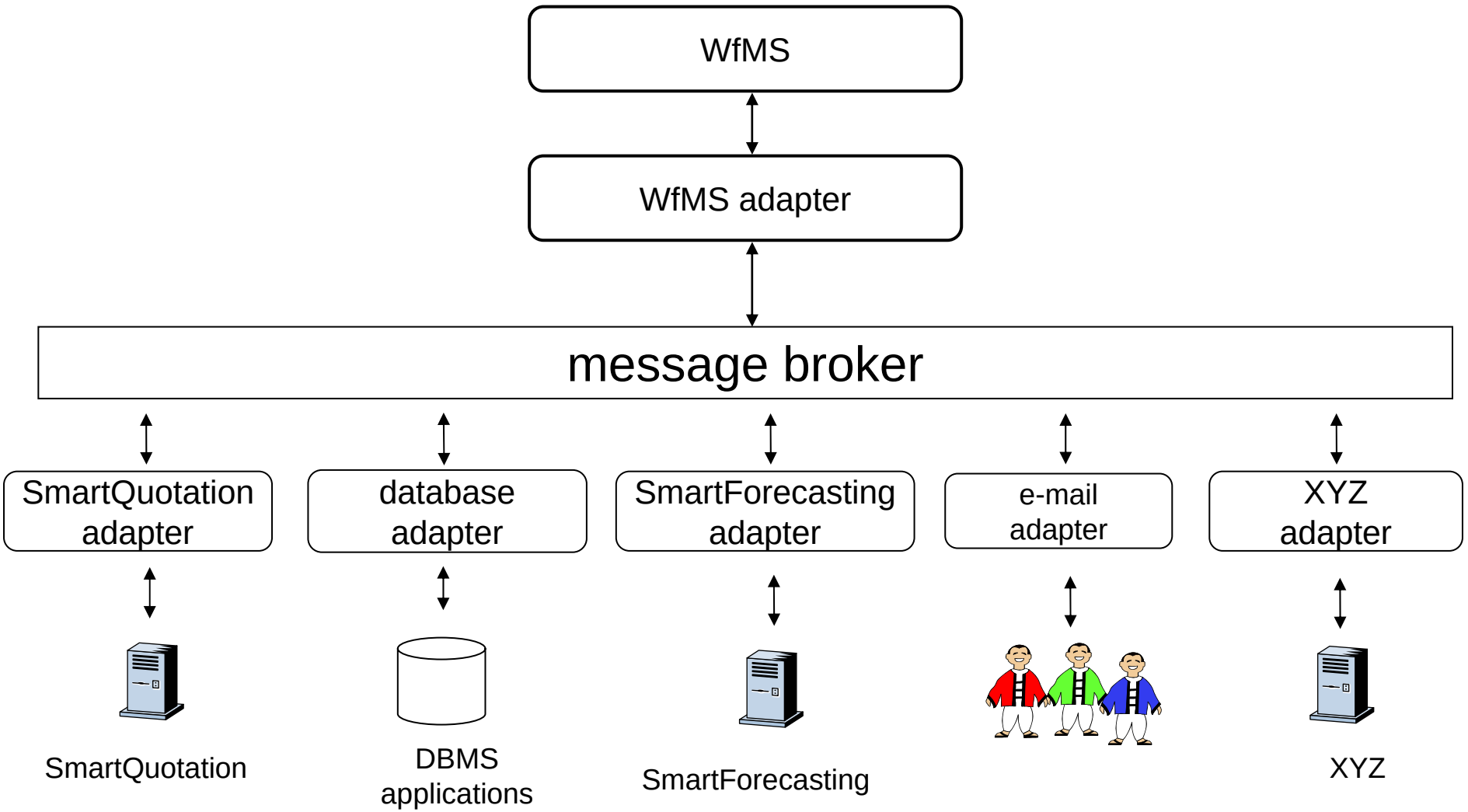


CRM for SCM (Supply Chain Management)

aus Alonso et al.: Web Services

Evolution of architectures

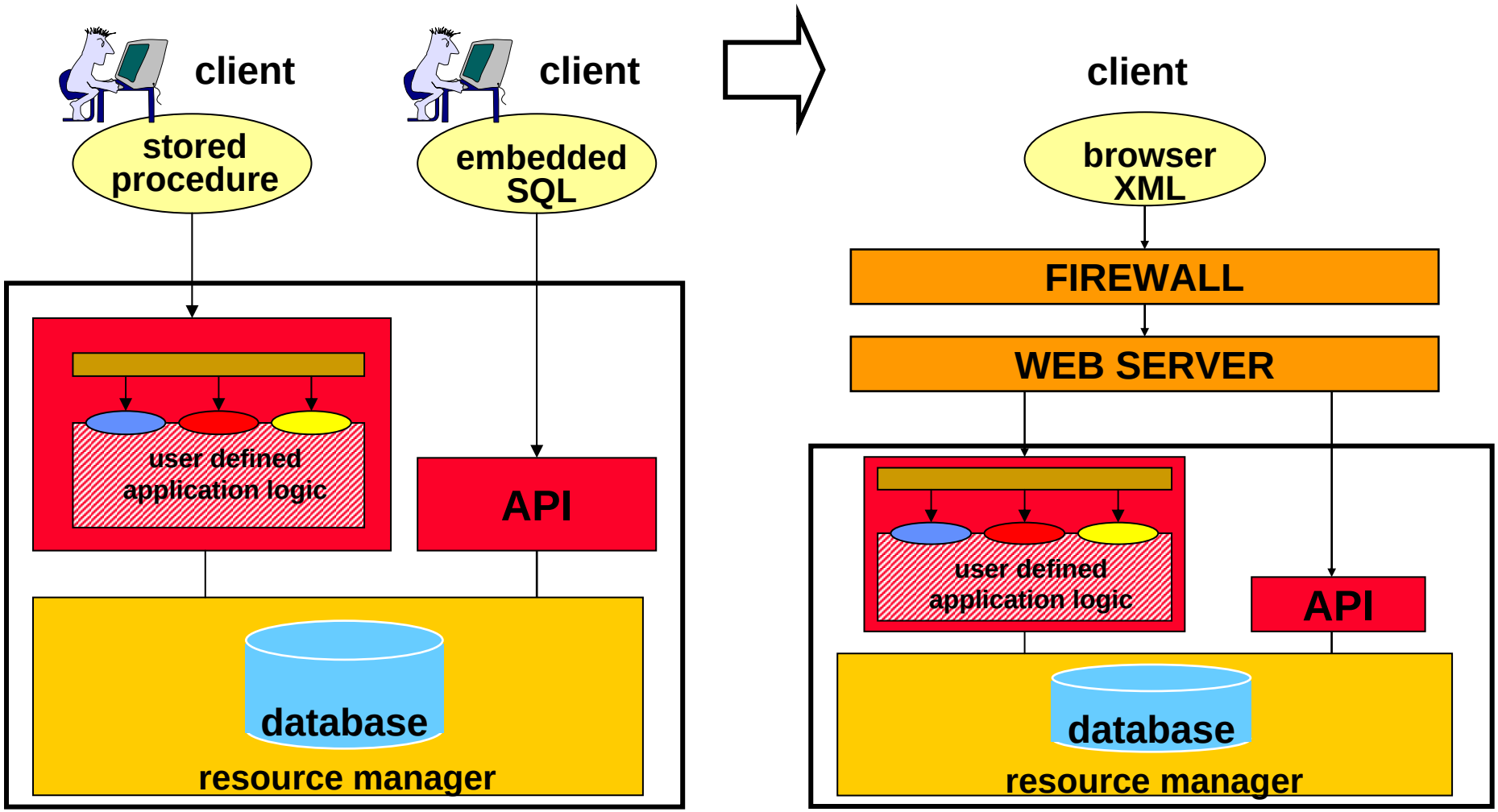
Integrating WFMS and EAI



aus Alonso et al.: Web Services

Integrating SOA with WWW

Remote Clients



aus Alonso / Pautasso: graduate course in Lappeenranta, http://www.inf.ethz.ch/personal/alonso/teaching.html

Integrating SOA with WWW

B2C: Business-to-Consumer Integration

Definition

Business-to-consumer (B2C) integration is the means to have human users connect to businesses in order to purchase or to sell goods or services.

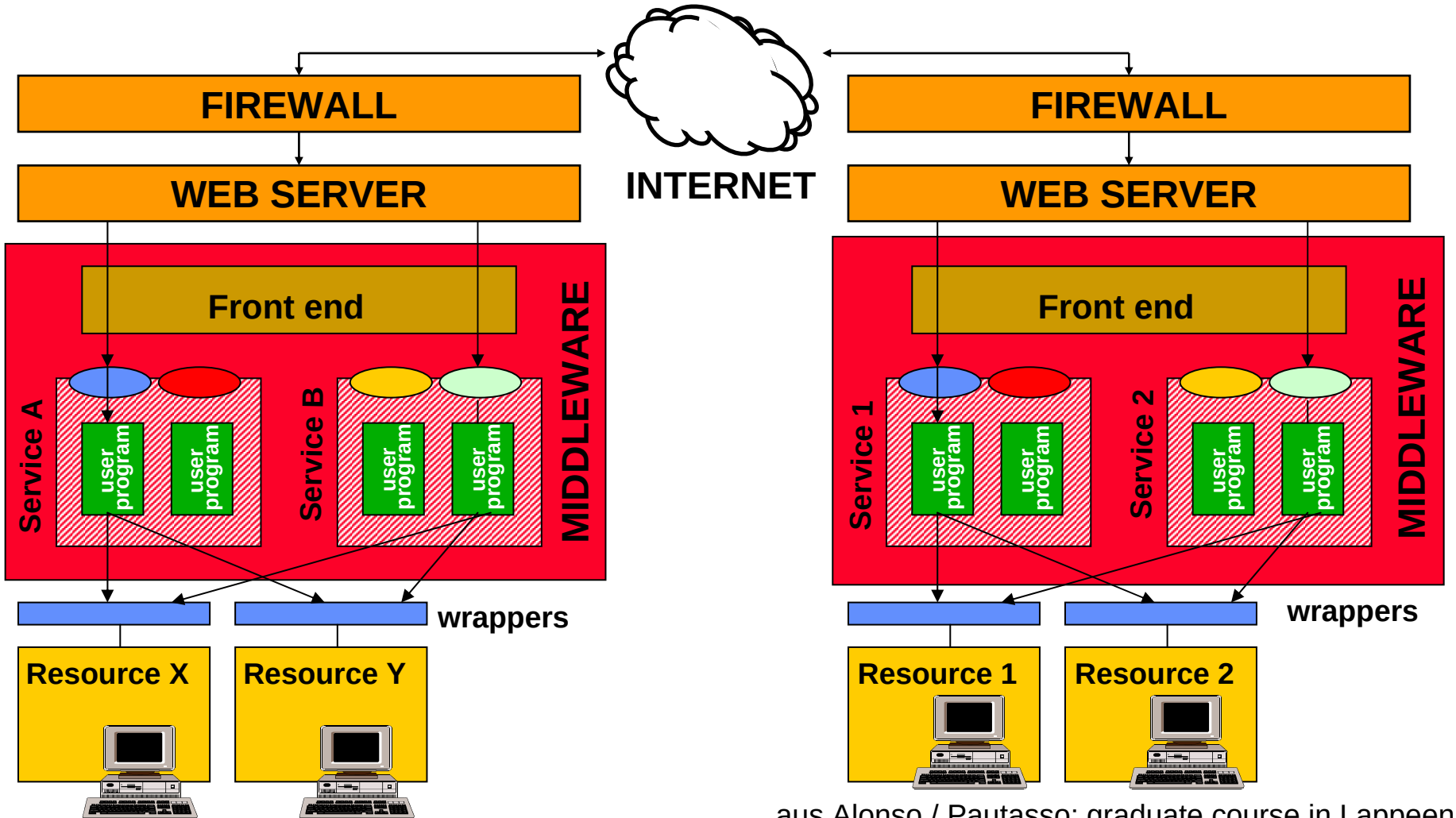
Requirements

- Dialog guidance of user for browsing goods and services, selection for purchase and the purchasing (“checkout”) itself
- Shopping cart management
- Security management
- User account management for customer to view and to track completed or ongoing orders
- Customer support for help or complaints and returns

aus Alonso / Bussler: EDBT-WebService-Tutorial,
http://www.inf.ethz.ch/personal/alonso/teaching.html

Integrating SOA with WWW

B2B: Business-to-Business Integration



aus Alonso / Pautasso: graduate course in Lappeenranta, http://www.inf.ethz.ch/personal/alonso/teaching.html

Integrating SOA with WWW

B2B: Business-to-Business Integration

Definition

Business-to-business (B2B) integration is the means to integrate the electronic data transmission between enterprises over public or private, secured or unsecured, transactional or unreliable networks.

Requirements

- Support of any data type format required by the communicating enterprises.
- Agreement on a common data type format for the messages between the communicating enterprises
- Support of data transformation in order to overcome data type format heterogeneity
- Security support in order to address unsecured and unreliable networks
- Contract management in order to define legally sanctioned communication
- Non-repudiation support in order to prove that messages were communicated as stated
- Conversations in order to define the ordered message exchange

aus Alonso / Bussler: EDBT-WebService-Tutorial,
http://www.inf.ethz.ch/personal/alonso/teaching.html

Business Processes in SOA

Business Logic

Definition

Business logic is the sequence of business functions that are necessary to achieve a value-added business goal (“business process”)

Example: Purchase of Goods

- Good selection
- Request for quotation
- Purchasing
- Payment

aus Alonso / Bussler: EDBT-WebService-Tutorial,
http://www.inf.ethz.ch/personal/alonso/teaching.html

Business Processes in SOA

Business Logic Composition

Definition

Business Logic Composition is the construction of business processes out of smaller business processes that are self-contained and can be combined into a more complex business process that implements the complete business logic.

Business logic composition involves:

- Definition of control flow between the parts
- Definition of data flow between the parts
- Definition of compensation to account for errors and cancellations

aus Alonso / Bussler: EDBT-WebService-Tutorial,
http://www.inf.ethz.ch/personal/alonso/teaching.html

Business Processes in SOA

Development of standards

- EDI (Electronic Data Interchange)
- Additional standards (EDIFACT, X12) for transactions
- ebXML (electronic business XML)
- BPEL (Business Processing Execution Language)
- BPEL4WS

nach Alonso / Pautasso: graduate course in Lappeenranta,
http://www.inf.ethz.ch/personal/alonso/teaching.html