



and **ORACLE**

Transforming the Swedish electricity industry with Oracle SOA Suite

IDG SOA Summit

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Contents

- **Introduction and background**
- Project, Architecture and Technology
- Lessons learnt and Summary



EMIX (Energy Market Information eXchange)



Facts and industry challenges

- 340 actors – network owners and electricity suppliers in the Swedish electricity market
- 5.2 million connection points
- 63 million meter readings/year
- 2.8 million cases (move, change of supplier etc.) where information is sent between actors each year
- EDIEL (EDIFACT extension) point to point over SMTP was industry standard for communication of structured data between actors
- Low quality and security in the information flow between actors
- Inconsistent compliance with industry standards and rules
- Meter reform (all meters has remote reading) has increased the traffic between actors
- Government requirements to separate Electricity Suppliers from Network Owners will increase the traffic between actors
- Low consumer confidence in the electricity market



EMIX - History

- 2004 – Industry initiative to increase customer satisfaction – Kundoffensiven
- 2004 Capgemini teams with Oracle to lobby for a system implementation
- 2005 – First functional specification for EMIX created as a spin-off from Kundoffensiven
- 2006 Q3 - Decision by the board of the market organization Svensk Energi to create EMIX AB and to procure the system
- 2006 Q4 – RFP sent out
- 2007 Q2 – Capgemini/Oracle selected as preferred supplier
- 2007 April – Project start with requirements phase



EMIX – Client benefits

EMIX will

- Act as a central hub for all structured communication between actors
- Augment communication security between actors with encrypted VPN
- Verify and enforce message quality
- Verify and enforce process alignment
- Lower actor costs for manual follow-up and correction
- Allow for a higher degree of accuracy and quality for end consumer processes
- Allow for quicker turn-around times for end consumer processes
- Allow for a higher degree of flexibility for the end consumers in the deregulated market
- Allow for actors to get process statistics and to follow up on cases
- Facilitate integration to a common Nordic or European end consumer market – similar initiatives ongoing in Holland, Denmark and Belgium

Major business driver for the industry as a whole

Will lead to higher customer satisfaction



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EMIX - Challenges

- New customer (EMIX AB - created by the industry with sole purpose to implement the EMIX system) with evolving organization and processes
- New communication paradigm for an entire industry
- Tough requirements regarding IT security (transaction security, data and communication integrity)
- Tough requirements regarding performance (peak 20 messages per second – 10 in and 10 out) – the actual figures in live production was actually almost 5 times higher
- Many actors involved in requirements definition and testing
- At project start: new technologies
- Complex target environment to ensure performance, security and availability



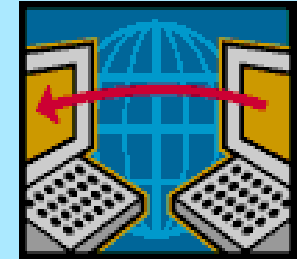
EMIX – Project setup

- Run from the Capgemini office in Stockholm
- Manned both with Capgemini personnel and with technical experts from Oracle Consulting
- Close cooperation with the client throughout the project in all aspects of the delivery
- Intimate involvement from representatives for the actors, especially around requirements and test
- Capgemini is responsible for both application and infrastructure management of the system after go-live
- Project milestones
 - April 2007 – Project Start
 - January 2008 – First functional delivery
 - August 2008 – Second functional delivery
 - January 2009 – Project end, hand-over to maintenance
 - April 2009 – Go-live



EMIX – Major functional areas

- Message Exchange
 - EDIFACT (format) validation of incoming messages
 - Ediel (content) validation of incoming messages
 - Rerouting of message to intended receiver
 - Log messages
 - Keep track of case logic and history
 - Change of Supplier
 - Move
 - Meter Exchange
 - Update Installation info
 - Change Of Balance Provider
 - Revoke Delivery
 - Verification request
 - Forward Load Profile Share
 - Forward Meter reading
 - Generate reminders when messages have not been received in time
 - Generate warnings and errors when Ediel rules have been violated
- Portal
 - Search for current cases and case history
 - See case status
 - Resend messages
 - Manual confirmation of certain case steps
 - Basic statistical reporting
 - Manage semi-structured dialogues between actors



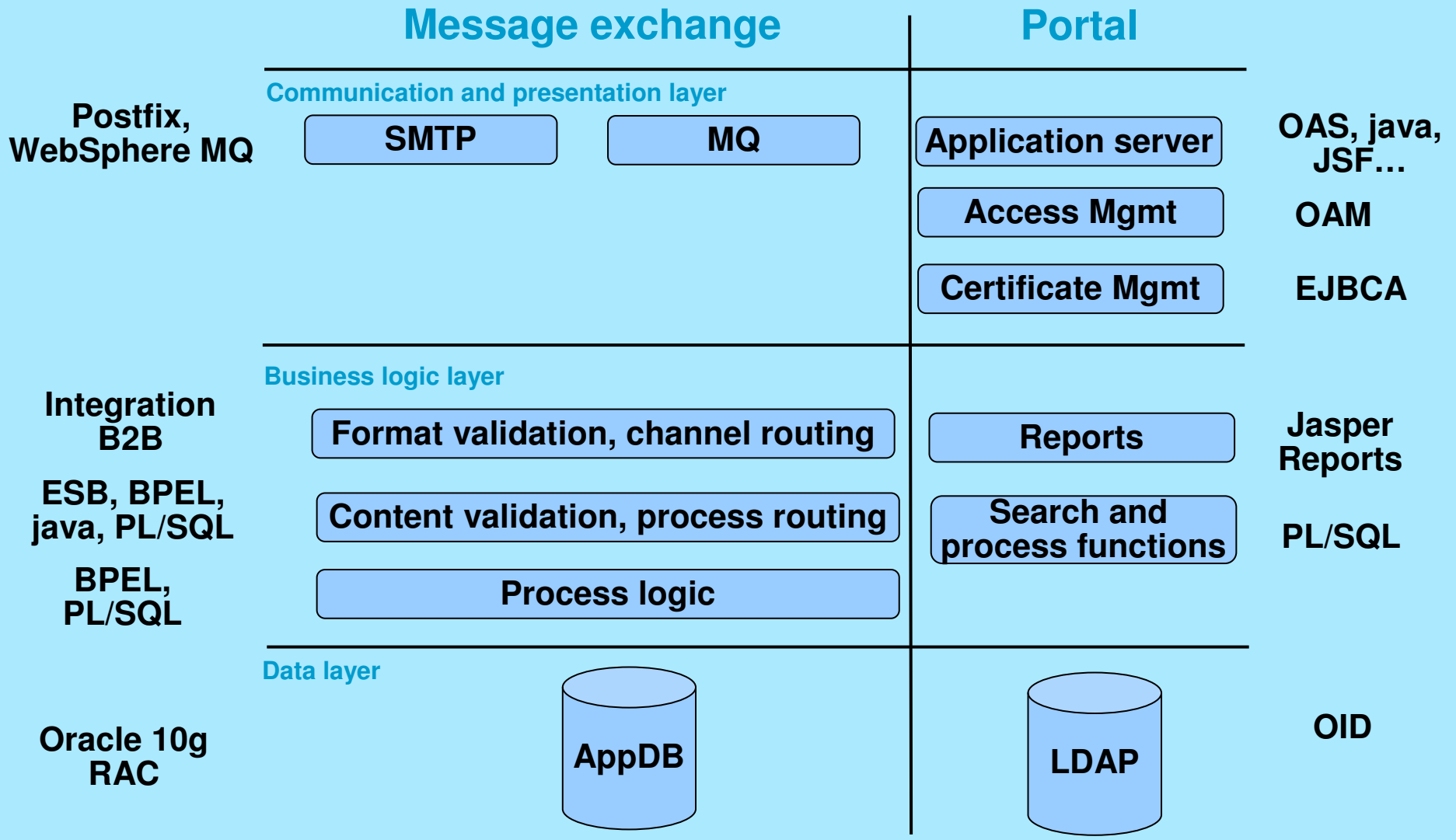


EMIX – Architectural principles and guiding requirements

- A flexible architecture that will allow for new communication channels and facilitate/isolate changed Ediel process definitions - leads to a general SOA approach
- Performance and throughput is essential - the message exchange is designed to handle up to 100 million messages per year (during peak load this is translated to up to 20 messages per second)
- Solution based on Oracle SOA suite and other Fusion Middleware components
- Primary actor connection through encrypted VPN
- Secondary actor connection with encrypted SMTP
- Offer high availability and support rapid messaging
- Meet the requirements for data security



EMIX – Logical Architecture





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EMIX – Lessons learnt

- SOA architecture will isolate functions and facilitate development and enhancements but be pragmatic – there are many ways to do SOA (technology, level of granularity etc.)
- It is difficult to use BPEL for long living processes (> 3 months) due to possible (probable) updates of process logic and technical platform
- Performance in ESB and BPEL has not been an issue. Bottleneck has been Integration B2B
- Building blocks in SOA Suite gives a quicker turn-around time for design and development
- Functionality is well divided (and also seamlessly integrated) between the SOA Suite building blocks
- Automated regression tests saves lots of time in an automated, process driven system



EMIX – Summary

When the EMIX system was finally delivered to the customer and put into production the project had

- After 20 months made all deliveries in time or before the original time plan
- Leveraged new technology (Oracle SOA Suite) into an industry solution unique for the Nordic area and comparable with only a handful systems world wide
- Received a maximum score (5.0) in a customer satisfaction inquiry
- Implemented a higher message throughput than any comparable system (using Oracle B2B and SOA Suite) in the world
- Connected actors representing 70 % of the Swedish electricity market to the solution



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