Using Technology to Empower Users:
Towards Next Generation Middleware for Model Driven Development

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SW technologies we are talking about…

CLOUD COMPUTING

- SW as a Service (SaaS)
- On-Demand SW

- Business Process Management (BPM)
- Service Oriented Architecture (SOA)
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### Issues BPM/SOA are expected to solve according to IT users: Business Agility

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<th>Due to a need to…</th>
<th>We must become…</th>
<th>Through…</th>
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<td><strong>CHANGE</strong> frequently and rapidly in an IT intensive enterprise</td>
<td><strong>RESPONSIVE</strong> (in IT and as a business) to changes in business, its context, in technology and other business enablers</td>
<td>BUSINESS PROCESS MANAGEMENT (BPM) &amp; SERVICE ORIENTED ARCHITECTURE (SOA)</td>
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<td><strong>CONSOLIDATE</strong> costly infrastructure, skills and practices</td>
<td><strong>EFFECTIVE</strong> in terms of time &amp; costs</td>
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<td><strong>COMPLY</strong> with many local and global regulations</td>
<td><strong>STANDARDIZED</strong> with respect to both technology and business/branch standards</td>
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<td><strong>COOPERATE</strong> locally and globally</td>
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Ref.: Dr. M. N. Akkøk 2000-2007, Studies/surveys at the University of Oslo & NR
Adaptability, Agility, Sustainability:
Need to change & respond is a requirement we need to understand well

- Insufficient time for requirements engineering, specifications
- Instead, we need
  - Live requirements, immediate specifications!
  - Not only support for separate business & IT development cycles, but support for a single aligned/integrated Enterprise Development (ED) Cycle!

Ref.: Dr. M. N. Akkøk 2000-2007, Studies/surveys at the University of Oslo & NR
What improves IT pay-off refally?
IT agility or adaptability & sustainability?

IT Payoff
IT Spending
Relative Return (Normalized to Low)

IT FLEXIBILITY

SARA (AIA)
ERP +
Point Solution
Middleware (SOA)

Ref.: IT Pay-Off according to Talon and Cramer, University of California at Irvine
## Agenda…

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2. Oracle’s BPM & SOA solution – “today”
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Enterprise Development Life-Cycle for Agile/Aligned Business

Transform/Execute (lossless)!

1. Design & Publish Business Processes
2. Develop, integrate, orchestrate, secure & deploy
3. REPOSITORY GOVERNANCE
4. Monitor, Log & Analyze (live)
5. Simulate & Analyze (off-line) Business Processes
6. Oracle® BPA Suite
7. Oracle® SOA Suite (incl. BAM)
8. Live & Maintained Requirements

Modeling enterprise/business context

Business Design = BPM, SOA, EA++

- Transparency
- Visibility
- Availability
- Transformability
- Business Drivers, Goals
- KPIs
- Business Constraints
- Business Rules
- Business processes
- Work-processes (incl. work-flows)
- Organization, roles
- Business data, terms
- Service providers, information systems
- Required services & functionality

Publish!
Enterprise Development Life-Cycle for Business Intelligence

Business Design = BPM, SOA, EA ++

1. Modeling: Formalizing (designing & publishing) the business, also as basis for Performance Management, for BI...

2. Simulation: Analyzing and verifying the “designed” Business...

3. BAM (live monitoring)...
4. Analytics (live analysis)...
5. PM (reporting, mining)...

Live & Maintained Requirements
Implied IT eco-system

ONE common design/development-time (meta)model in ONE common repository!

ONE common run-time (meta)model in ONE common repository!
Required technology (just a bit of it)

- **Innovation**
  - Introduces *shared meta-data* to facilitate “round-trip”

- **Standards based**
  - BPMN, BPEL, WS* etc.

- **“Closed Loop BPM”**
  - From process design, simulation, through implementation to process monitoring in real-time

- **Cooperative design**
  - Both process-centric & SOA application design

**NOTE!**

ONE single model (blueprint) in common “repository”!

Aligning Business & IT is Aligning Analysis-Design, Development-Deployment and Production-Maintenance

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SOA Compliant Application Reference Architecture (SARA) Example: Oracle® Application Integration Architecture (AIA)

- Industry best practice processes to optimize the business
- Sustainable integration to connect current and new applications
- Pre-built SOA to provide a framework for continuous innovation
- 3rd Party enabled

- STANDARDIZATION: Active participation or initiation, also for change & upgrade support standardization
- Std. Reference Models & Foundation Packs: Telco (eTOM++), Bank, Finance, Insurance, …
Modeling the whole enterprise is essential but very difficult…

What if someone gave you...

- A toolset for designing, developing & maintaining end-to-end processes (Process Integration Packs) with relevant
  - Development (programming) model...
  - Governance model...
  - Process model...
  - Service model...
  - Object model...

- Aligned across the enterprise?

AIA Foundation Pack
Seriously reduced costs, complexity, time:\n20% in implementation, 55% in upgrading, 50% in maintenance

If $R$ is the number of distinct roles (and not persons) in the organizational unit that do business-relevant work, the time to document the work-process is approximately

$$T_{wp} = \pi \times \sum_{i=1}^{R-1} i = \pi \times \frac{(R-1) \times R}{2}$$

person-days. Note that this is a measure of the effort required.

Thus, assuming an organizational unit with 10 distinct business-relevant roles, documenting the work-processes of the organizational unit will take about 28.3 person-weeks (approximately 7 person months per business unit).

If $O$ is the number of business-value adding organizational units in the enterprise (i.e., organizational units that contribute to business directly), the time to document only the high level business processes is approximately

$$T_{bp} = \pi \times \sum_{i=1}^{O-1} i = \pi \times \frac{(O-1) \times O}{2}$$

person-days.

For an organization with approximately 3000 employees and an average organizational unit size of about 100 employees, the effort required to document all processes would then be minimum 21,57 person-years of effort.

(1) Source: Dr. M. N. Akkök 2000-2007, studies/surveys at the University of Oslo & NR
(2) Source: 5 year TCO Study, Oracle Study on Composite SOA for Telecoms 2008
More than reuse: Proper SW **SYSTEMS** engineering and user empowerment!

Configure & Tune according to “system” requirements!

- 1 sec
- 0,5 sec
- 1,5 sec
- 2 sec
- 3 – 3,5 sec “response” guaranteed
- 5 – 6 “resources” guaranteed
Implied Infrastructure

**Business Logic Layer**
- Service $S_A$

**The Application**
- Service $S_1$
- Service $S_2$
- Service $S_3$
- Service $S_4$
- Service $S_5$

**Presentation Layer**
- Service $S_7$
- Service $S_8$
- Service $S_9$

**Security (Cross) Layer**
- Service $S_6$

**ESB:**
- Manager
- Router
- Transformer
- Rep./Reg.
- Monitor
- Orch. engine

**BP DESIGN:** f. ex. BPMN
- $S_1$
- result empty?
  - [YES]
    - $S_3$
  - [NO]
    - $S_5$

**ORCHESTRATION:** f. ex. BPEL
- Use (consume) $S_1$
  - If result is empty, use $S_5$
  - If not empty, use $S_4$

**Deploy, run**

**Interpret, generate**

**DATA STORE**

**SERVER**

**MAINFRAME**

**LEGACY**
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Implications of the AIA FP: Next Generation Application Servers?

In AIA FP, we have effectively raised the level of abstraction that we’re dealing with in building applications: From “beans”, “server pages” etc. to

- Business Processes
- Enterprise Business Objects
- Enterprise Business Services

Could this be the way to next generation Application Servers (Business Servers?) for designing, developing, deploying and maintaining next generation BPM/SOA compliant applications that support full Enterprise Development life cycle?
Two kinds of AIA Foundation Packs:

- **Cross Industry** (generic, for building all kinds of applications)
- **Industry Specific**
  - Telecommunications (for building telco-specific applications)
  - Insurance (for building insurance-specific applications)
  - Banking (for building banking-specific applications)
  - Utilities/Energy (for building utilities/energy-specific applications)
  - Healthcare, Public …

Q: How did NCR take the whole bank market initially?

A: Industry (banking) specific development tools
SARA or
AIA++ = An open spec
to replace current JEE spec?
Oracle BPM/SOA Roadmap (Envisioned)

“Today”
Already best, and with an unprecedented potential
• Best-of-breed portfolio
• Supports existing best practices
• Customers leveraging today

“Tomorrow Now”
• AIA (BPM/SAO ref. app. arch.)
• AIA Foundation Pack (tool-box for developing AIA-compliant apps & systems)
• Standardized first-cut Business Objects & Business Services
• Model-driven
• Business-centric

“Next Generation”
Open...
• All ref. models of AIA FP are standardized
• AIA FP spec is opened as the spec for next generation app. servers (or business servers)

Complete...
• All AIA FP service definitions are implementable by all service vendors

Integrated!
Back to SW technologies we are talking about…

They all relate!

CLOUD COMPUTING

• STANDARDS, new standard specifications

New application (business) servers & technologies

• SW as a Service (SaaS)
• On-Demand SW

• Business Process Management (BPM)
• Service Oriented Architecture (SOA)
QUESTIONS & ANSWERS

ORACLE IS THE INFORMATION COMPANY