The SAP R/3 Framework

Prof. Uwe Aßmann  
TU Dresden  
Institut für Software- und Multimediatechnik  
Lehrstuhl Softwaretechnologie  
05-1.1, Jan 16, 2006
References

Problem

► How to build a framework for Business Software?
► Software/Anwendungen/Produkte (SAP) Walldorf, founded 1972
  ▪ Most of the Fortune 500 companies use SAP
► SAP R/2: Mainframe solution
► SAP R/3 1988-today. Client-server 3-tier
  ▪ ABAP language with simple use of databases
  ▪ Workflow specifications with Ereignis-gesteuerte Prozessketten (EPK)
  ▪ Business blueprint: prefabricated processes for installation of the framework at
    the customer
► Future: SAP NetWeaver
  ▪ Fully Java- and web-based
Modules of R/3 3.0

- Internals
  - FI Financials (Finanzwesen)
  - CO Controlling
  - AM Anlagenwirtschaft
  - PS Projektssystem

- Miscellaneous
  - OC Office&Communication
  - IS Branchenlösungen

- Core
  - SD Distribution (Vertrieb)
  - MM Materia management (Materialwirtschaft)
  - PP Production planning
  - QM Quality management
  - PM Instandhaltung

- HR Human Resources (Personalwirtschaft)

Business Processes
The SAP framework is steered by business workflow specifications.

- Events, sent between processes
Business Blueprint

- The Business Blueprint are a collection of business process templates
  - EPK specification templates with *hooks*
  - The specifications are parameterized and adapted for concrete business processes
- They form a *framework* for business process based applications
  - They conform to the template/hook principle, but rely on substitution
  - They are invasive specification components (see *invasive composition*, CBSE in summer).

Business blueprints are business process frameworks
R/3 Repository

- Distributed with Application Link Enabling (ALE)
  - An intelligent middleware layer that distributes repositories over several databases
- Stores Business Objects with interfaces (business application interfaces, BAPI)
  - > 170 Business Objects are predefined
  - Encapsulate well-known business knowledge
- A business object is a layered object
  - Internally, it maintains an entire data model (business object data model)
- The set of business objects forms a layered framework
Engineering with R/3

Organisation Model

Business Process Model

Business Objects

Repository

Business process engineer
Business Application Integration

- Legacy systems
- Office Software
- Java J2EE
- Enterprise Integration Server
- Data warehouses
- Other systems (e.g. Peoplesoft)
- R/3

Business process engineer
Insight: A Process Framework needs a Process Specification Language

- If the framework is used for processes, we need a process specification language
  - Similar to web service area (enterprise services)
- Process languages
  - Petri nets (YAFL), Process languages
  - More in summer (CBSE)

Business frameworks rely on process execution engines
The End

- www.sap.com
- SAP's research lab at TU Dresden
  - Director Dr. Kubach
  - Dürerstrasse 26, 1st floor
  - Topic “Future Manufacturing”