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Universitatea
POLITEHNICA
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Business Process Automation for Service Systems

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FONDUL SOCIAL EUROPEAN

Investește în
OAMENI

inSeEi



Problem

NEW

- requirements
- business services
- service providers

Service Oriented Architecture (SOA)

- business processes
- services
- frameworks

Cloud computing

- Software as a service (SaaS)
- Infrastructure as a Service (IaaS)
- Platform as a Service (PaaS)



Causes

- adjust the operational behavior of services;
- adapt to new rules, regulations and policies;
- adapt to changes in operating conditions;
- transform manual into automated services;
- redesign business processes;
- improve the quality of service.



Evolution points

- new business processes for orchestration;
- new Web services;
- process and Web service annotation with business ontology;
- ontology changes reflecting domain evolution;
- new service providers;
- new multilingual content of the portal.



Actors

- front-end support
- back-end support,
- management,
- design,
- quality assurance
- technical actors
- business experts



Aspects of Service Evolution

Risks

- inconsistent chain
- spurious results
- discontinuities



Evolution process

- changing organization culture
- transition between “as-is” and “to-be” service models
- service versioning;
- payment models
- eliminating the ad hoc character of change management



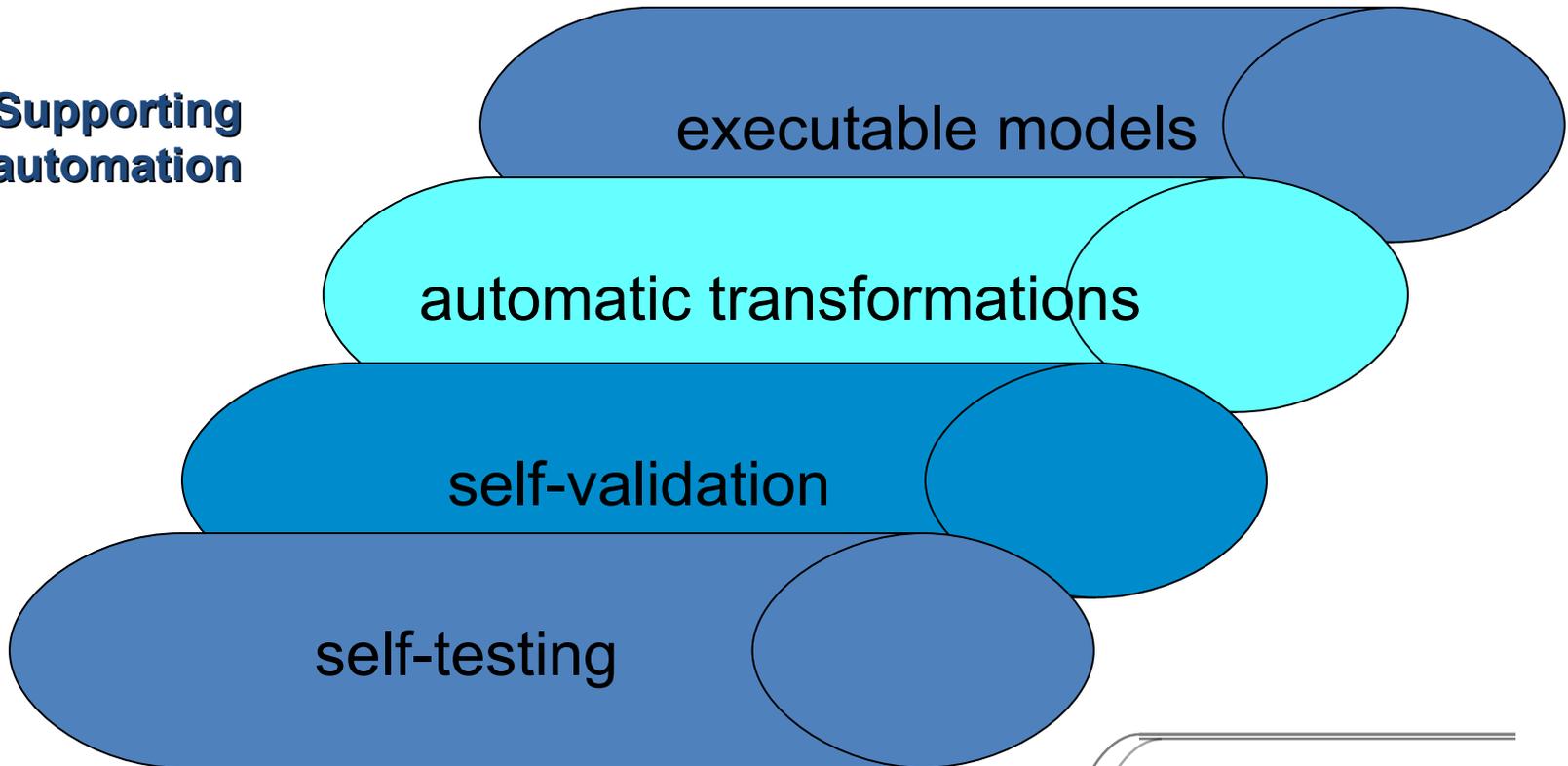
Increasing Evolvability

- Increasing the level of abstraction
- Orientation towards the users
- **Supporting automation**
- Enabling adaptivity through feedback loops



Increasing Evolvability

**Supporting
automation**



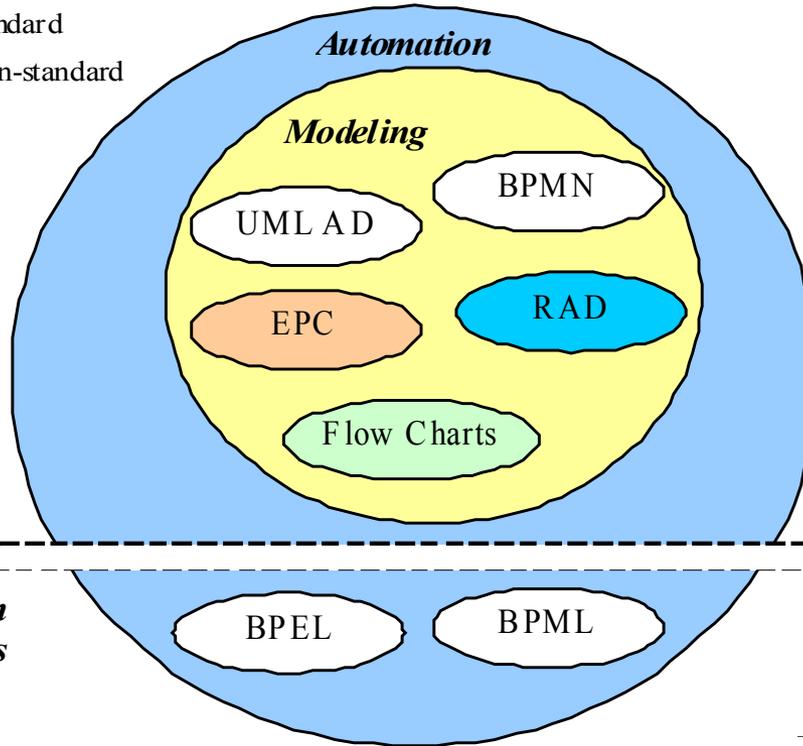
Business Process Automation



Gap between
Modeling and
Execution

 standard
 Non-standard

*Graphical
languages*



*Business
Expert*



Technical developer

Graphical Modeling Languages

UML AD (UML Activity Diagrams)

- included in the standard UML (Unified Modeling Language) adopted by Object Management Group (OMG)
- similar to flowcharts, but adding concurrency

BPMN (Business Process Modeling Notation)

- adopted by OMG, under the Business Process Management Initiative (BPMI);
- a common notation for business analysts and technical developers, based on flowcharting
- mappings for generating executable processes written in BPEL4WS (Business Process Execution Language for Web Services)



Execution Languages

BPEL (Business Process Execution Language)

- based on XML (eXtensible Markup Language) standardized by OASIS
- the dominant standard encountered in software suites

BPEL4WS ver. 1.1 (Business Process Execution Language for Web Services)

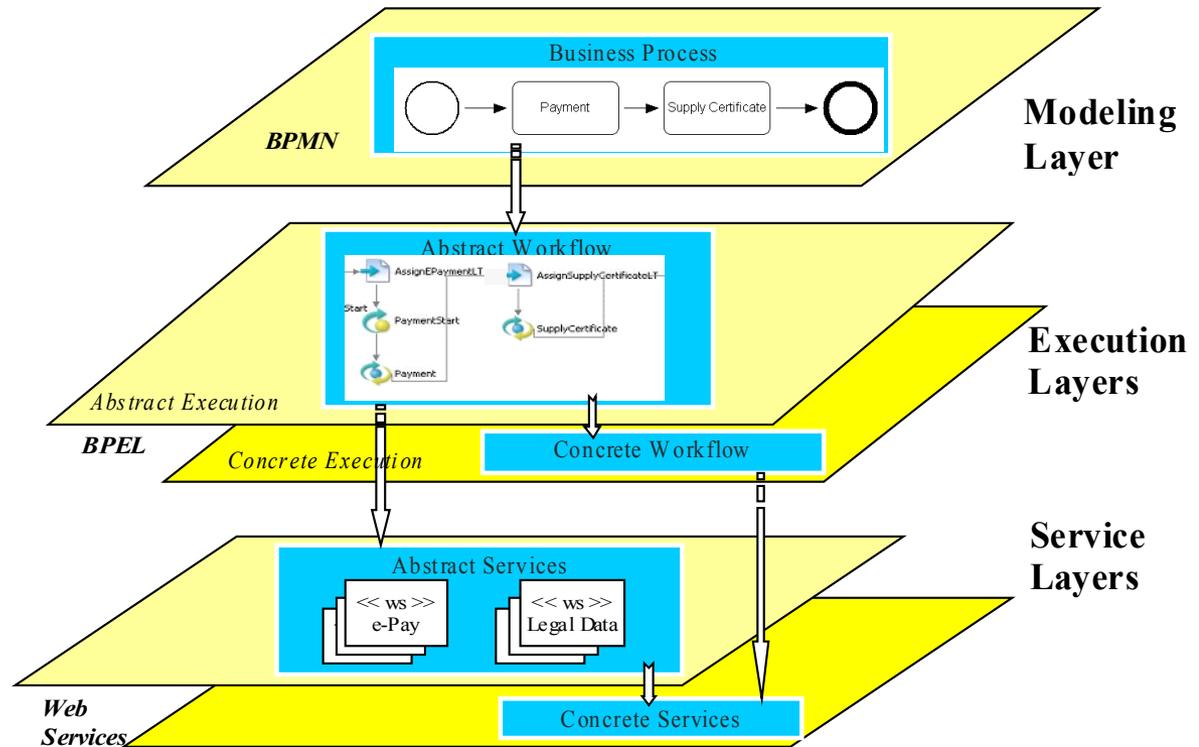
WS-BPEL ver. 2.0 (Web Service Business Process Execution Language) ver.2.0.

BPEL4People and **WSHumanTask**



Business Process Automation

Successive Transformations of Models





Transformations
- **subject to**
information loss

Modeling Layer

- graphical languages
- diagrams oriented on graphs
- *cannot support recurrence from execution languages*

Execution Layers

- languages that represent control flow by nesting blocks
- *difficulties to render cyclical and temporal elements from the diagrams*



Conclusions

Problem

Requirements for rapid evolution cycles

→ **gap between business experts and technical developers**

Solution

Transition from contemplative towards imperative roles of business process models



Multumesc !

