

Event-Driven Business Process Management

*Reference Model, Reference Architecture,
Business Processes as Services,
Domain Specific Reference Models for Event Patterns*

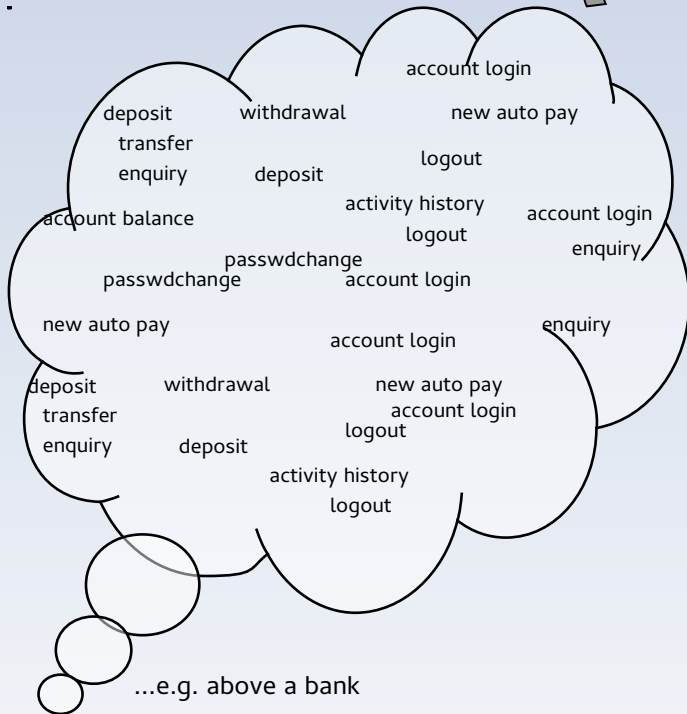


Agenda

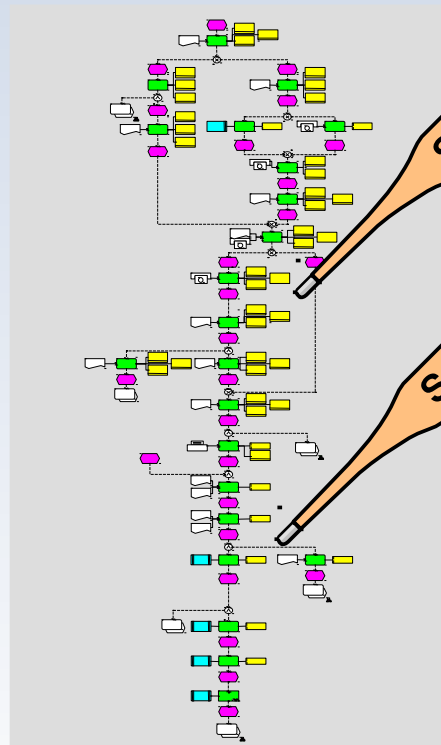
- Introduction into Event-Driven Business Process Management (ED-BPM)
- Contributing to NESSI by DoReMoPat-project
 - Reference Model for ED-BPM
 - NEXOF-RA enhanced by ED-BPM
 - Contributions to NESSI Software + Services Platform
- ED-BPM and future market trends
- A new master course of study „Event-Driven Business Process Management“ – the necessity of skilled people
- Evangelizing ED-BPM and previous work

Big Picture: Monitoring Business Processes and Activities

event cloud with thousands of events per sec...



event patterns and complex event processing...



The important steps:

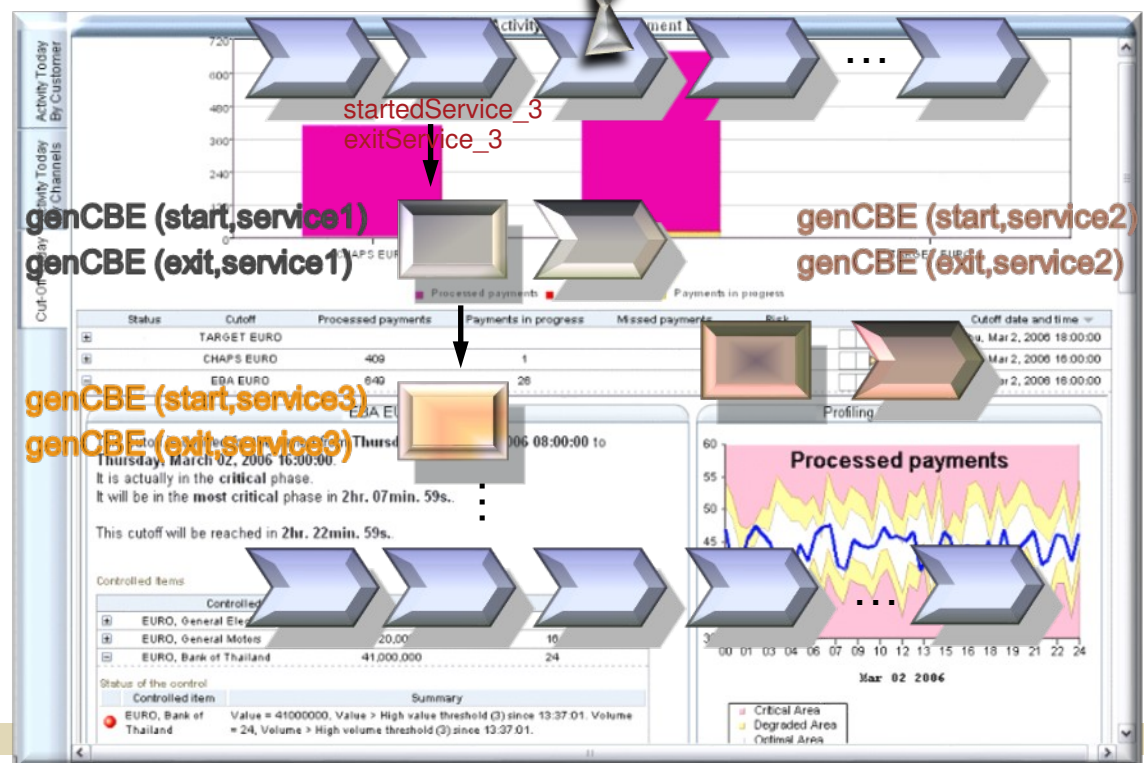
1. Redesign the business processes for SOA and BPM
2. Make a SOA, identify services, build WSDL-interfaces...
3. Precise description of patterns of events
4. Detecting patterns in the event cloud
5. Abstraction of complex event pattern instances to higher level events

The Pain Point: The Event Cloud, today's IT-Blindness and the „Event Tornado“:

Often even additional events are needed for BAM and a better Business Insight



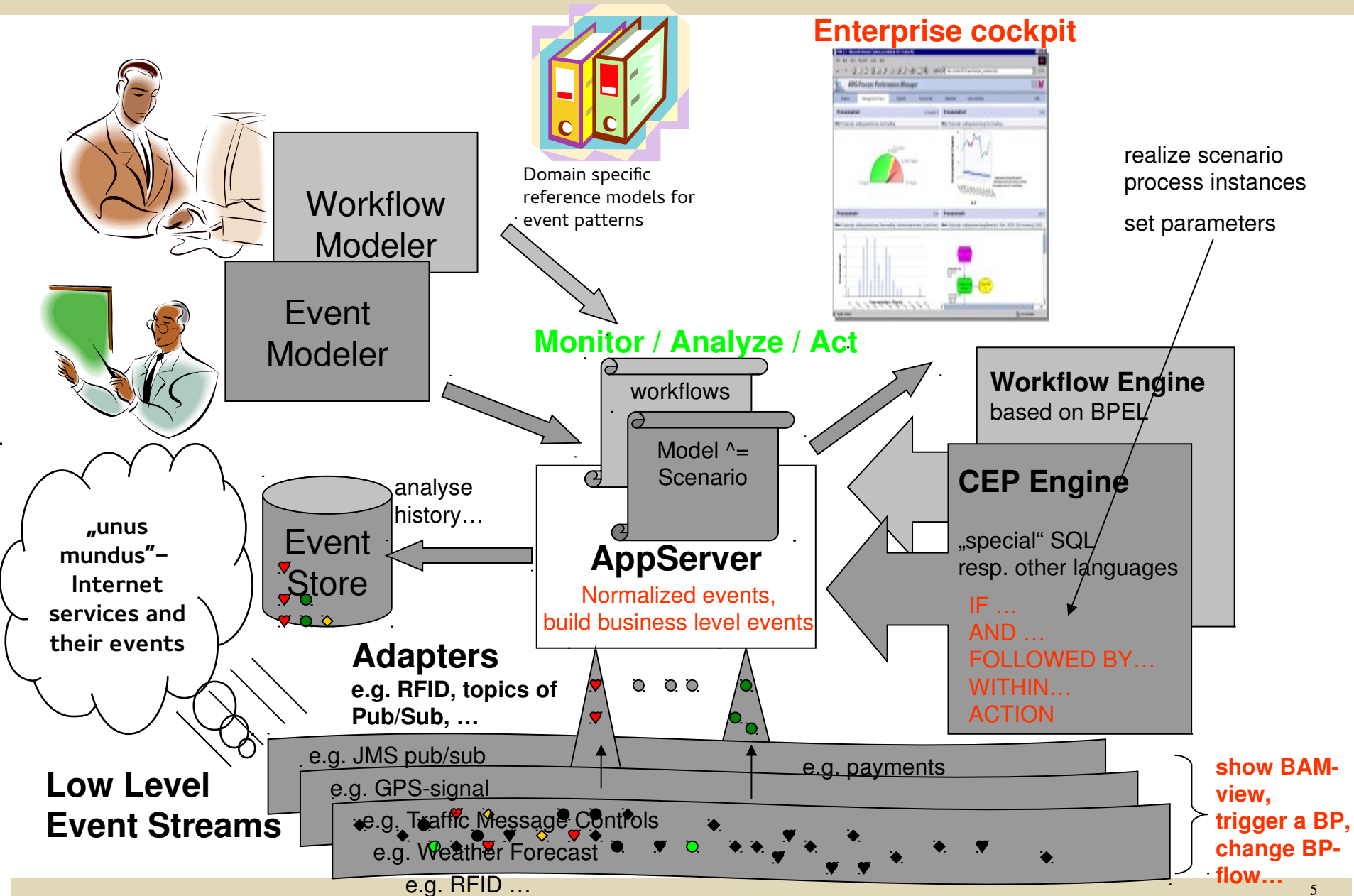
Visualization of the processed/correlated events via Business Activity Monitoring

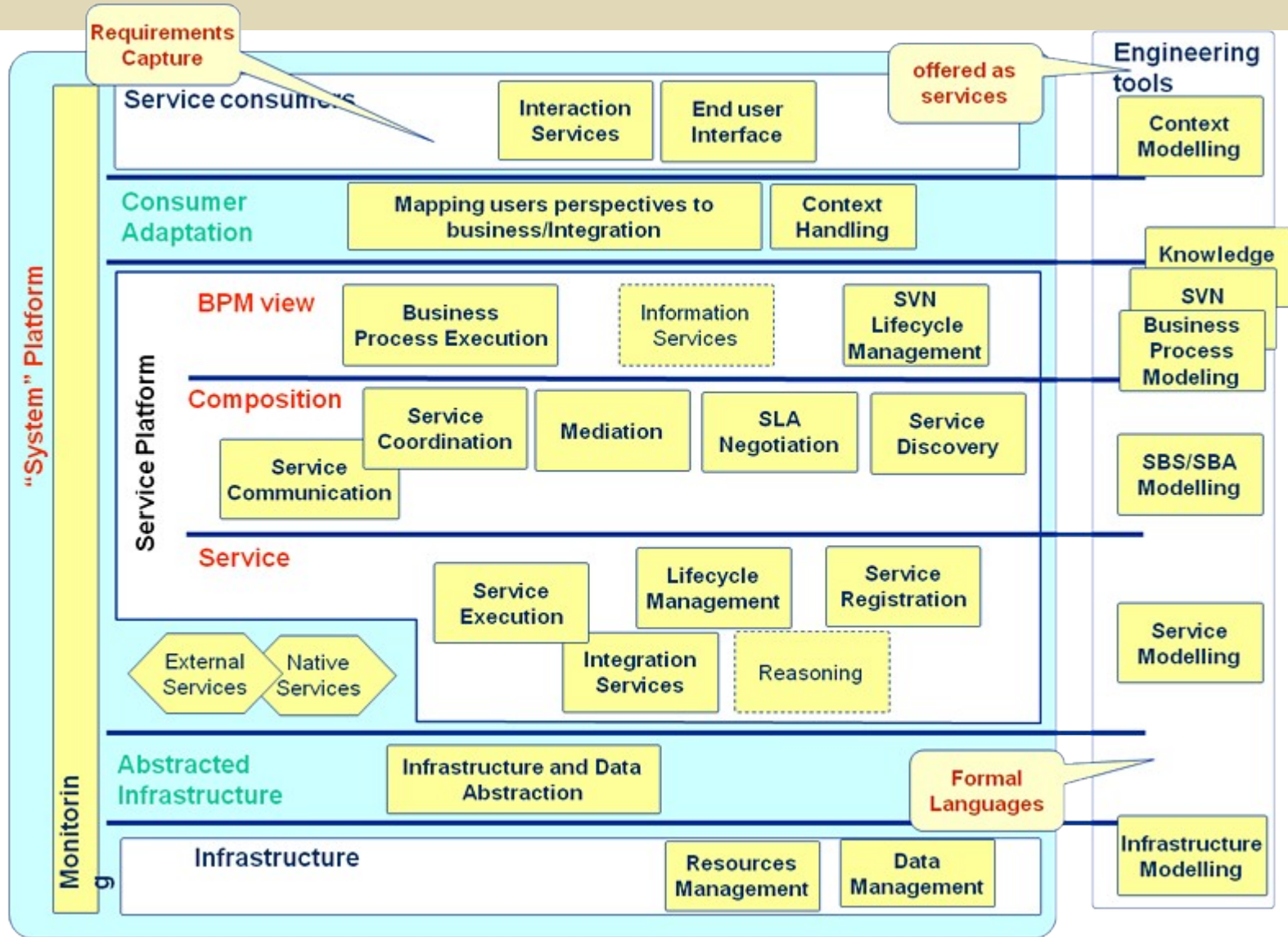


Business Process 1

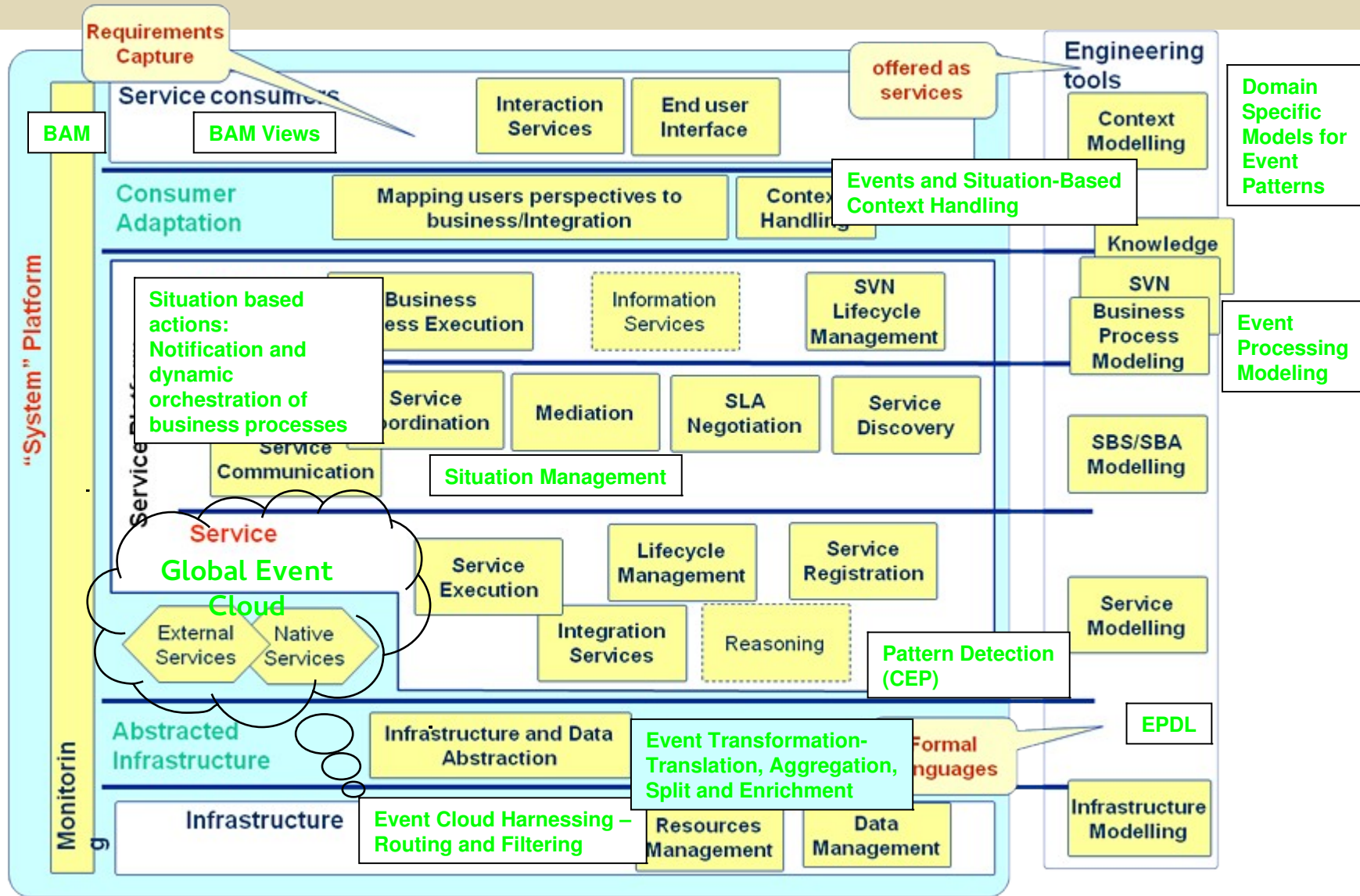
Business Process n

The Challenge and the Principle of ED-BPM – Reference Model





NEXOF-RA enhanced by ED-BPM



Categorizing of ED–BPM use cases

Definition of a categorization schema:

- Cat. I:
“Event pattern triggers a business process resp. service”
- Cat. II:
“Event pattern influences the sequence of a business process”
- Cat. III:
“Event pattern triggers a new business process from a running business process”
- Cat IV:
“Event pattern triggers cascading processes from a running business process”
- Cat V:
...<only as a first impression; categories have to be developed during the project term>

Modelling and implementing of the use cases

Main tasks:

- BP-modelling of the use cases per domain
- Event-modelling of the use cases
- Definition of BAM-views per use case
- Description of reference models per use case according to the DoReMoPat-pattern framework
- Reference implementations of the use cases using the „ED-BPM-enhanced NEXOF-RA“

Examples for contributing to NESSI Software+Services Platform by DoReMoPat–project proposal

The platform presently consists of 9 thematic Working Groups:

- **Open Source**

„NESSI Open Source WG will promote integration of Open Source within NESSI platforms and services, ensuring that the resulting integrated systems meet quality and security requirements according to the overall strategy of Open Source usage on the part of the adopter...” →

- **DoReMoPat uses Open Source systems combined with systems of other vendors according to the software stack of the enhanced NEXOF-RA.**
- **An evaluation schema will be defined...**

- **Services Sciences**

„The challenge: to establish attainable expectations that services systems will function according to their specifications, at predicted costs, throughout their intended lifetimes... Designing and managing efficient, reliable, and cost effective services is not easy, as frequent commercial and public sector failures continue to demonstrate...” →

<http://62.72.100.94/Nessi/WorkingGroups/HorizontalWorkingGroups/ServicesSciences/tabid/244/Default.aspx>

- **DoReMoPat defines BAM views for monitoring business objectives in real-time for different business domains**
- **Use cases and reference models for event patterns and dynamically, flexibly adapted business processes will be designed and implemented for different business domains**
- **Policies in the sense of Predictive Business will be defined...**

- **Security, Trust and Dependability**

„Software applications will likely be broken into separately managed component services and will form so called service eco-systems. This has many security consequences: first, applications will need to utilise components out of different domains of control that require to obey separate security policies and ask for diverse security and dependability qualities; second, components may be owned and operated by different organisations so that informal company arrangements will have to be replaced by formal agreements resulting from partially mechanised negotiations; and third, the services will be shared between many consumers which implies advanced confidentiality and isolation requirements...” →

- **Software Engineering**

„The complexity of software systems is growing significantly and will continue to do so across a wide range of application domains including Manufacturing, Telecommunications, Transportation, Internet, Retail, Healthcare, Aerospace, and Energy provision. These types of system are characterized by distribution over heterogeneous networks involving Internet and Intranet technologies and also by ever more demanding and interdependent functional and non-functional requirements ...” →

- **User Services Interactions**

„Experience shows that acceptance of many tools and systems depends on how interaction with the final user is resolved. In the same way, the success of the new paradigm shift will depend very much on how user/service interactions are carried out, meaning the capability to:...” →

Examples for contributing to NESSI Software+Services Platform by DoReMoPat-project proposal

The platform presently consists of 9 thematic Working Groups (continued):

– *Business Process Management*

„The main aim of this NWG is to create a unified strategy for applying BPM in order to solve real, cross-domain challenges... In order to achieve this NWG will focus on practical aspects of successful applying BPM to define appropriate business ecosystems (usually domain specific)...“→

<http://62.72.100.94/Nessi/WorkingGroups/HorizontalWorkingGroups/BusinessProcessManagement/tabid/257/Default.aspx>

– *Semantic Technologies*

„Semantic Web technology based on ontologies will enable far more effective machine to machine communication about the nature and the manipulation of data they hold and actions based upon that data. On the business process level, business modelling provides the semantics that is required for business process management, process transformation and inter-company cooperation... →

<http://62.72.100.94/Nessi/WorkingGroups/HorizontalWorkingGroups/SemanticTechnologies/tabid/258/Default.aspx>

– *Service Engineering*

„The focus of the working group is on the engineering of services and on their integration and composition into [composite] new services and business processes... →

<http://62.72.100.94/Nessi/WorkingGroups/HorizontalWorkingGroups/ServiceEngineering/tabid/259/Default.aspx>

– *Service Oriented Infrastructure*

„The focus of the working group is on the engineering of services and on their integration and composition into [composite] new services and business processes...“ →

<http://62.72.100.94/Nessi/WorkingGroups/HorizontalWorkingGroups/ServiceOrientedInfrastructure/tabid/260/Default.aspx>

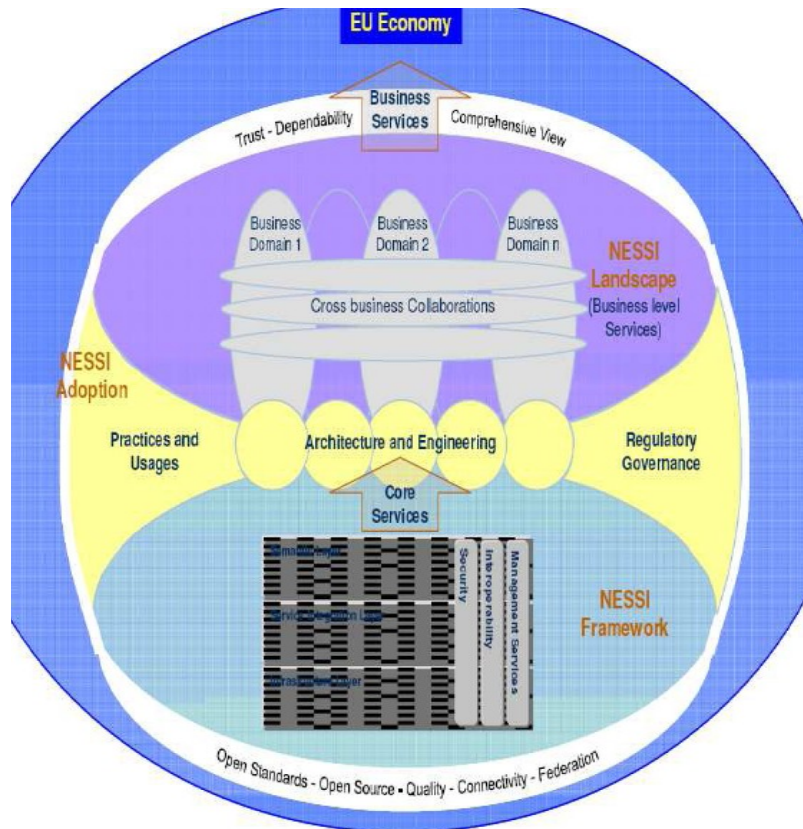
Examples for contributing to NESSI Software+Services Platform by DoReMoPat-project proposal

Furthermore, there are 3 so called "Committees" for:

- "Future Internet"

http://62.72.100.94/Nessi/Portals/0/Nessi-Repository/Events/2007_12_11_NESSI_GA/Presentations/2_2007_12_11_NESSI_GA_DaSilva.pdf , see pp 16

- The different business domains banking, healthcare, insurance, logistics, retail etc. of the DoReMoPat project
- adopt the enhanced NEXOF-RA and NESSI framework for their use cases and reference models
- and work on a meta mdel as a result of the cross domain collaboration...



Examples for contributing to NESSI Software+Services Platform by DoReMoPat–project proposal

Furthermore, there are 3 so called "Committees" for (continued):

– "Standardisation"

ftp://ftp.cordis.europa.eu/pub/fp7/ict/docs/ssai/events-20080922-23-cm-d1-pm-kudorfer_en.pdf

- **DoReMoPat already contributes to NEXOF–RA**
- **will adopt the NEAR–standard**
- **will help developing standards like NEAL(ogistics) etc...**

– and "Strategic Research Agenda" (SRA)

„The main focus of NESSI is that of service. There are many definitions of service used in different contexts. However, all are based on the same principle: a service consumer does not own the service and therefore need not be concerned with all the aspects generally associated with ownership such as infrastructure, technology, integration and maintenance. Instead he/she has only to choose a service which meets his business needs.

Businesses are increasingly concentrating on activities where they can gain a competitive advantage.

Supporting capabilities can be obtained as services from specialist providers.

- **DoReMoPat works on catalogues of prebuilt and easily customizable use cases, BAM views and reference implementations...**
- **and will develop policies in the sense of a Predictive Business...**

In this context NESSI is about transforming the EU economy through Service Oriented business models..." →

<http://cordis.europa.eu/technology-platforms/pdf/nessi1.pdf>

NESSI Strategic Research Agenda:

These are: Vol. 1 "Framing the future of the Service Oriented Economy" (the present document), which introduces the NESSI Holistic Model;

Vol. 2 "Strategy to build NESSI", which, defining the NESSI set of solutions, describes principles, paths and evolution steps in the construction of NESSI;

Vol. 3.x NESSI Roadmap", which, in a series of documents dealing with different domains, plans the short, mid and long term phases in the execution of NESSI.

- **DoReMoPat is working in the sense of this SRA since 2005 already when EPTS and CITT were founded as community building platforms for CEP respectively ED–BPM**

Forecast of ED-BPM for the next decades



Forecast of Prof. David Luckham:

- we need skilled people at least up to 2050...
- we are only at the end of the period of Simple CEP

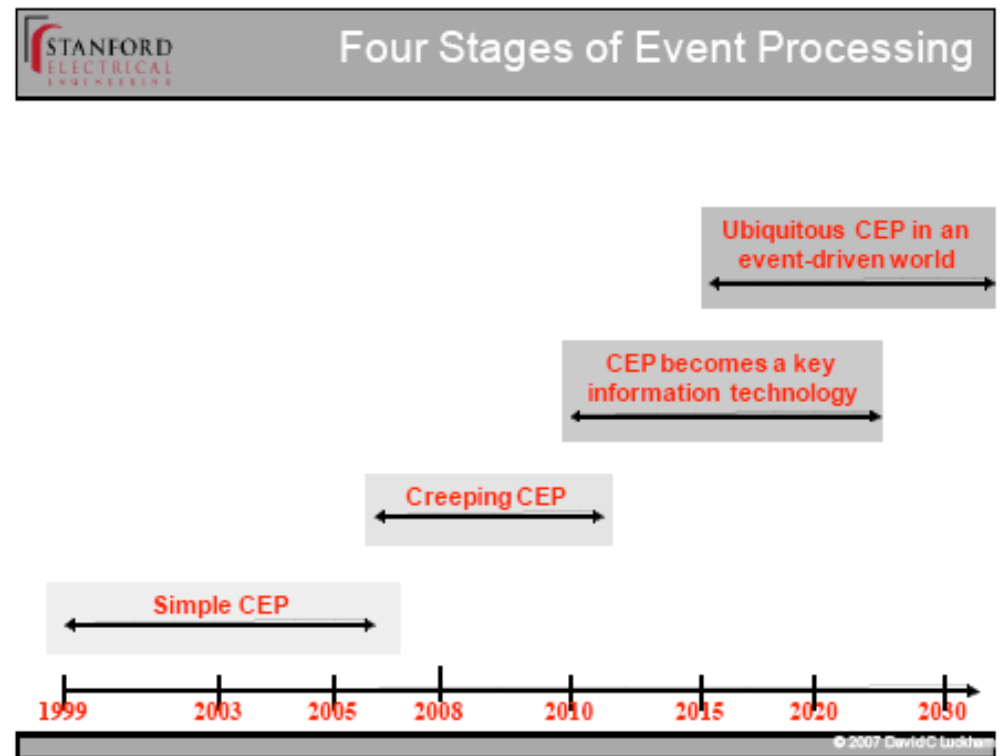
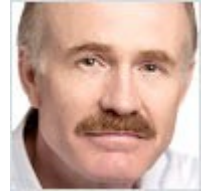


Figure 1: The four stages in the evolution of CEP applications.

The forecast of ED-BPM for the next decades

The warning of Roy Schulte (VP of Gartner) since 2006...

...we won't have enough skilled people who would be able to do all the jobs and projects



The statement of Prof. Mani Chandy (California Technical University) at the Gartner Event Processing Summit 2007...

...The work of IT during the next twenty years will be to complete the evolution of business processes from sequences of slow-moving, disjointed applications to more responsive end-to-end, event-based straight-through flows of action.



The business modeller and the event modeller – different qualifications not in personal union

A proposal for a curriculum of a new Master course of study “Event-Driven Business Process Management”

Draft V0.1

Description:

Curriculum together with required credits
and examinations

Certificate:

Master of Science

Programme Duration:

Four Semesters (120 credits/cr)

Mastercourse-EDBPM-v01.doc

(www.citt-online.com)



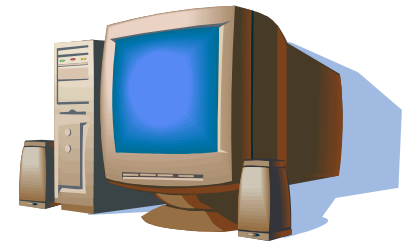
The business modeller and the event modeller – different qualifications not in personal union

Concept:

The course consists of the fields of study

- Business Process Management,
- Complex Event Processing,
- Business Activity Monitoring included
- Business Intelligence and Data Warehousing,
- Computer Networks,
- Messaging as well as several application disciplines like
- Algorithmic Trading,
- Supply Chain Management in the retail domain,
- fraud detection in the banking and insurance domain etc.

All courses are completed with course-related tests and Credits (cr) according to European Credit Transfer System (ECTS) are awarded. All courses are given in English and are designed as distance learning/eLearning courses.



Previous Work

Examples of last contributions to conferences

*Rainer v. Ammon, Andreas Hehmann
Mainz, Germany, October 7 – 9, 2008
<http://www.bpm-event.com/>*

*"Event-Driven Business Process Management Taking the Example of Hamburger Sparkasse"
EDBPM-Haspa.ppt*

*Rainer v. Ammon, Christoph Emmersberger, Florian Springer, Christian Wolff
Vienna, September 28 – 30, 2008*

*FIS 2008 / 1st International Workshop on Complex Event Processing for Future Internet – Realizing Reactive Future Internet –
"Event-Driven Business Process Management and its Practical Application Taking the Example of DHL"
FIS08_AmmonSpringer.pps*

*Rainer v. Ammon
New York/Stamford, September 17 – 19, 2008
4th EPTS symposium*

*"Proposal for a new Master course of study -
Event-Driven Business Process Management"
EDBPM-mastercourse.ppt*

*Adrian Paschke, Rainer v. Ammon
Irsee Monastery, Bavaria, Germany, July 9 – 13, 2008
Focus Group for EuroPLoP 2008*

*Domain-specific Complex Event and Rule Patterns
<http://hillside.net/europlop/>
Agenda for the focus group...*

Previous Work

Examples of some of last publications

Rainer v. Ammon, Christoph Emmersberger, Florian Springer
"Event-Driven Business Process Management" – Eine neue Technologie und erste Projekte am Beispiel der DHL
OBJEKTSpektrum 06/2008
mehr...

Rainer v. Ammon, Christoph Emmersberger, Florian Springer, Christian Wolff
Event-Driven Business Process Management and its Practical Application Taking the Example of DHL
FIS 2008 / 1st International Workshop on Complex Event Processing for Future Internet - Realizing Reactive Future Internet. September 28-30, 2008 Vienna, Austria
mehr...

Rainer v. Ammon (CITT), Christoph Emmersberger (CITT), Torsten Greiner (TeamBank), Florian Springer (CITT), Christian Wolff (University of Regensburg)
Event-Driven Business Process Management and its Practical Application in an Industrial Setting
DEBS 2008. 2nd International Conference on Distributed Event-Based Systems. July 1-4, 2008 Rome, Italy

Alexander Widder (CITT), Rainer v. Ammon (CITT), Philippe Schaeffer (TÜV Rheinland), Christian Wolff (University of Regensburg)
Combining Discriminant Analysis and Neural Networks for Fraud Detection on the Base of Complex Event Processing
DEBS 2008. 2nd International Conference on Distributed Event-Based Systems. July 1-4, 2008 Rome, Italy

Rainer v. Ammon
Event-Driven Business Process Management
to appear in the Encyclopedia of Database Systems, Ling Liu and M. Tamer Özsu (Eds.), Springer-Verlag, 2008.

Previous Work

Several Proof of Concept (PoC) Implementations

- *PoC in the logistics domain in cooperation with Deutsche Post AG and Oracle*

Event Driven Business Process Management taking the Example of Deutsche Post AG, An evaluation of the Approach of Oracle and the SOPERa Open Source SOA Framework (C. Emmersberger, F. Springer; September 07 – March 08)

- *PoC in the finance domain in cooperation with Teambank*

Application for monitoring the credit application easyCredit of Team Bank and the evaluation of several CEP approaches (H.-M. Brands, D. Guschakowski; 2007)

Previous Work

8 Expert Meetings ED-BPM

<http://www.citt-online.com/downloads/8-edbpm-agenda-v0-1.doc>