eBAM
extended Business Activity Monitoring

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Engineering Group - 2010
Agenda

1. Intro to eBAM Project
2. Architecture and functionalities
3. BAM & Business Intelligence
4. Description of a real Use Case
5. Demo of eBAM
6. Conclusion
Why eBAM and SOA?

- The term "business activity monitoring" was originally coined by analysts Gartner, Inc. and refers to the aggregation, analysis, and presentation of real-time information about activities inside organizations and involving customers and partners.  

- In service-oriented architectures, a component of process analysis is particularly relevant since:
  - It provides real-time information on the state of processes/services
  - It identifies problems and new business opportunities
  - It supports managers in their decision making and it starts automatic actions through events, dashboards and KPIs
  - It performs historical analysis in order to identify critical situations in advance.
... eBAM

- eBAM is a monitoring platform with analytical functionalities
- It is a component of Eclipse project Service Oriented Architecture
- It supports: services, processes, applications and infrastructures
- The project aims to provide both runtime and support components.

- ....First release : 0.7.0 on 29th September
Functionalities

- Logic-event-based real-time data management.
- It allows to gather data from heterogeneous sources, distributed on different types of adapters.
- It includes a rules engine and it offers the opportunity to use a CEP (Complex Event Processing) engine, which allows to set up alarms and events.
- Definition of alarms and SLAs
- Monitoring console and control on processes and services.
- Analytical meta-model with historical data analysis.
Relevant Technology Aspect

• Use of OSGi technology (Equinox)
• Definition of Adapters to read the specific data on each channel: JDBC, File, JMS, SOAP...
• Modular architecture: Adapter Data Flow, Event Manager, Meta model, Dashboard service, Alert service, Rule Engine.
• Projects used in Eclipse: EclipseLink, TPTP, BIRT.
• Modular integration of different rules engines through OSGi technology.
Main Components

**Designer** to configure the meta-model:
- Definition of services, processes, etc.
- Definition of messages, events
- Definition of rules, alarms, SLAs

**Runtime components:**
- equinox Server for real-time data management
- Meta-model to manage both configuration details and data.
- Reports for data analysis.
Designer

- eBAM provides a wide range of wizards for platform configuration
- Released as Eclipse plug-in
Run Time components

- The runtime is released as Equinox server
- Dashboards and reports allow to analyze incoming messages and upcoming events
- All components share the same meta-model
Complex Event Processing

• This technology identifies patterns which are set on a large amount of data in real-time.
• It is useful to monitor events on heterogeneous data sources (databases, network, RFID… )
• It allows data analysis without saving them on the DB

• … Integration with other external engine like Esper or Drools

• Now we have released a **BASIC ENGINE** that it will evolve in the next release of eBAM.
Basic Engine

- eBAM default settings include a basic CEP engine.
  - Useful to identify some simple events.
    - Number of messages belonging to a certain category
    - Incoming messages of a certain type

- It uses regular expressions to identify messages
- Configurable through a graphic wizard
BAM & BI ... the Real-time BI

**Real-time business intelligence** is the process of delivering information about business operations as they occur.

In this context, real-time means a range from milliseconds to a few seconds after the business event has occurred. While traditional business intelligence presents historical data for manual analysis, **real-time business intelligence compares current business events with historical patterns to detect problems or opportunities automatically.** This automated analysis capability enables **corrective actions** to be initiated and or business rules to be adjusted to optimize business processes.

eBAM & SpagoBI .. Enable the Real-time BI

• The integration between eBAM and SpagoBI (www.spagobi.org) allows the extension of eBAM functionalities in terms of data visualization.

• SpagoBI can be employed to:
  - Create real-time Consoles
  - Create Dashboards
  - Create Charts
  - Manage batch processes

SPAGOBI – eBAM Enterprise/Supported Version
eBAM & SpagoBI .. Enable the Real-time BI
Monitoring on reservation Systems

... A real use case

- eBAM and SpagoBI platforms have been used to develop a portal allowing to perform online reservations of healthcare services at the AUSL (Italian Public Healthcare companies) of one the largest regions in Italy.
Monitoring on Reservation Systems

... Main aspects

- New concept of real-time web console implemented in SpagoBI through AJAX technology
- Batch processes are executed and monitored
- Monitoring of the operativeness of citizens and operators
- All messages are stored into the historic Data Warehouse
- Use of the CEP engine in order to identify critical situations
  - Sending alarms, if the status of batch processes changes
  - Notifying critical situations, if a relevant number of errors are detected over a certain lapse of time
Monitoring on Reservation Systems

- SpagoBI Console can be employed to monitor the messages that are managed by eBAM

<table>
<thead>
<tr>
<th>Azienda</th>
<th>Data Inizio</th>
<th>Ore Inizio</th>
<th>Data Fine</th>
<th>Ore Fine</th>
<th>Stato</th>
<th>Modalita</th>
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<td>19/01/2010</td>
<td>15:38:01</td>
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Monitoring on Reservation Systems …The web console

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<th>Stato sistemi remoti</th>
<th>Batch Agende</th>
<th>Batch Simulazione tempi di attesa</th>
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<td><img src="image2.png" alt="Dashboard Image" /></td>
<td><img src="image3.png" alt="Dashboard Image" /></td>
</tr>
</tbody>
</table>

- **Errore**: 0
- **Avg tempo risposta (sec.)**: 3
- **Errore**: 0
- **Avg tempo aggiornamento (min.)**: 1
- **Errore**: 1
- **Avg durata simulazione (min.)**: 61
- **Avg tempo simulato (min.)**: 1

<table>
<thead>
<tr>
<th>Utenti collegati</th>
<th>Codice disponibilità</th>
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<tbody>
<tr>
<td><img src="image4.png" alt="User Dashboard" /></td>
<td><img src="image5.png" alt="Availability Dashboard" /></td>
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</table>

- **Operatori**: 0
- **Pre aut.**: 0
- **Post aut.**: 0
- **Errore**: 0
- **Saturazione Perc.**: 0

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eBAM DEMO
Next step ... 2010

- Next release: 1.0.0 in December

New functionalities:
- Wizard definition of the basic engine rules
- Definition of the historical data model
- Definition of the graphics interface as RPC
Road Map 2011

• Integration of CEP Esper / Drools

• Internal Cache

• Configuration data Import/Export

• Transformation of XST messages

• New Adapters: JDBC, JMS

• Integration of CBE, used as the standard for message definition.