jBEAM v5

Enterprise Services
the next generation of data post-processing

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Service-Oriented Architecture (SOA)

Wiki: “Service Oriented Architecture (SOA) is a computer systems architectural style for creating and using business processes, packaged as services, throughout their lifecycle. SOA also defines and provisions the IT infrastructure to allow different applications to exchange data and participate in business processes. These functions are loosely coupled with the operating systems and programming languages underlying the applications. SOA separates functions into distinct units (services), which can be distributed over a network and can be combined and reused to create business applications. These services communicate with each other by passing data from one service to another, or by coordinating an activity between two or more services. SOA concepts are often seen as built upon, and evolving from older concepts of a distributed computing and modular programming.”
SAP: “Enterprise SOA is a blueprint for an adaptable, flexible, and open IT architecture for developing services-based, enterprise-scale business solutions. An enterprise service is typically a series of Web services combined with business logic that can be accessed and used repeatedly to support a particular business process.”

What does this mean for data postprocessing?
Data Processing

**Offline Data Evaluation**

Server based

*Test Management System*

Local

*Testdata Management System*

Online Acquisition

*Acquisition Modules*

**Import**

**Analyze**

**Visualize**

Local, even offline: Desktop

Global: Webbased-Service

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**jBEAM v5** – Enterprise Services, the next generation of data post-processing
Data Processing

Offline Data Evaluation

Server based

[jBEAM]

Test Management System

Testdata Management System

Local

Online Acquisition

Acquisition Modules

Import

Analyze

Visualize

Local, even offline:

Desktop

Global:

Webbased-Service

Reports

Screen

Printouts

Test Management System

Server based

Local

Online Acquisition

Acquisition Modules

Import

Analyze

Visualize

Local, even offline:

Desktop

Global:

Webbased-Service

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Supported IT-Architectures

1. **Desktop Usage**
   Old but still important: High interactivity

2. **Web based Static Reports**
   Especially for automated processes

3. **Web based Interactive Reports**
   Combining the advantages of web and desktop.

4. **Enterprise Services**
   Web based services, combined with business logic.
Focus of jBEAM

- Engineering Domain
- Business Domain
- Complexity

Desktop → Web

- JReport
- Crystal Reports
- Excel
- Famos
- Diadem

jBEAM → jBEAM v5 – Enterprise Services, the next generation of data post-processing
E-SOA Requirements

- Scalability
- Platform Independence
- Localization
- Metadata Support
- Adaptable
- High Performance
- Component based
- Open
Scalability (I)

The different applications range from small visualization of 100 values up to analysis of Tera-Bytes of data.

**jBEAM** runs on:
1. small Windows 32 bit systems with only 1 GB RAM.
2. 64 bit Windows and Linux systems
3. SUN or HP workstations
Scalability (II)

Big data sets

Modern automation-systems create more and more data. Hard disk storage is inexpensive. So we are focused even today with Tera bytes of data.

1. RAM-based data access on 32 bit systems
2. Fast file storage on 1 GB systems working on >20 GB of data.
3. On 64 bit systems we support > 10 GB of RAM for fastest data access
Target: Support of different hardware and operation systems

Solution: Java
the standard in web based solutions

Required: High performance
Resource saving
Global Focus - Localization

- Graphical User Interface
  - English, German, French,
  - Italian, Chinese, Russian,
  - Spanish, Portuguese

- Multilanguage Layouts
  - Any language / country combination
  - One layout for all languages
Integration

Easy integration in data management systems.

For example jBEAM is integrated smoothly in the PAtools of Kratzer.

See booth 1724
Applications

Sample: Crash Analysis
Applications

Sample: Vibration Analysis

![Graph showing vibration analysis](image-url)
Applications

Sample:
Business Graphic

Statistical evaluation

Limit at 0.8

Sample:
Business Graphic
Based on Standards

Active participation on designing new standards.
Active implementation of standards in jBEAM.

- **ASAM** (Member of the TAB)
  - **CEA** - Components for Evaluation and Analysis
    - Standardized Interfaces and Events
    - Extendable by third party components
- **ODS**: Open Data Service
  - Database connections
  - ATF(x) File Import/Export with comprehensive checking
- **ISO**
  - 13499: MME test data.
  - 16100: Description of Software Components (Editor)
Open Component based Software

- ASAM-CEA
  - Components for Evaluation and Analysis
  - Standardized Interfaces and Events
  - Extendable by third party components
- User: Select specific features from a market of CEA-Components
- Provider: Generate high quality solutions by adding knowledge as components sharing the basic features.
ASAM-CEA Component World

Crash
- HIC
- CFC
- Others

Engine Test
- Can
- Turbo Charger
- Graph
- Matlab
- Exported JARs

Test Drive
- GPS
- FFT Cross Correlation

Application Specific Components
Based on ASAM-CEA

Basic Components and Services
CEA-Framework

Basic Services

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Support of Meta Data

A comprehensive set of functions is available in jBEAM, to include meta data / properties in reports.
jBEAM – a Class library

Standard Desktop Application

User

System Integrator

Customized Application (Business Layer)

Library with > 5,000 API methods

Class H

Class T

Class Y

jBEAM
Data-Management Systems from IT-specialists

jBEAM is integrated as a frontend for data analysis and visualization

- Kratzer Automation – part of the TestExplorer (Daimler, Volkswagen, …)
- T-Systems – MODIS (Volkswagen)
- WIPRO – Brake Test System (GM-Vehicle)
Some Samples of use cases.
Interactive Desktop

```
runJBEAM_Demo_142_03.bat
```

Spezifischer Verbrauch vs. Drehzahl

Spez. Verbrauch vs. Ansaugdruck

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Test Protocols
Mouse controlled xy-cursor defines a cross-section, which is displayed in line charts.
Safety - Crash

Synchronized display of numerical and video data.
Interactive Energy Calculation

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Counting Methods

- Different Rainflow Methods
- Level Crossing
- Range Pair
- Interactive Cuts
Material Deformation

Deformation as Grid

Deformation as Vectorfield

Coordinates:
- \( x: XPos \)
- \( y: YPos \)

Field 1:
- \( dx: XShift \)
- \( dy: YShift \)

Scaling:
- \( = 1.0 \text{Pixel} \)

Values:
- \( 0.0 \)
- \( 0.1 \)
- \( 0.2 \)
- \( 0.3 \)
- \( 0.4 \)
- \( 0.5 \)
- \( 0.6 \)
- \( 0.7 \)
- \( 0.8 \)
- \( 0.9 \)
- \( 1.0 \)
Flow fields

Double angular jet
Sport (Ludge – Bob)

Training optimization:
Comparing handle forces of different starts.
Movement control by video.
Gold Medal for Sylke Otto in Salt Lake City 2002 and at World Championships 2004
Interactive 3D-Graphs
Online Monitoring

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This may also be a Report

Create a video from your dynamic test
Play it with every video player
May 2008: jBEAM Version 5

- Enterprise Communication for Client-Server Systems
- Selective Imports for Big Datafiles
- Page and Cavas View
- new Interactivity with 2D-Graphs
- Different Curvetypes in one 2D-Graph
Conclusion

- jBEAM's functionality fits exactly in the engineering domain.
- The **ASAM-CEA** Standard is the basis for open software solutions in data evaluation.
- jBEAM is a new generation software for desktop- (offline) and enterprise web-operation (online).
- jBEAM - the tool for company wide data post-processing solutions.
jBEAM is developed and distributed by:

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