

# Value Demonstration of Embedded Analytics for Front Office Applications

Erik Nijkamp, Martin Oberhofer, Albert Maier

IBM Deutschland Research & Development GmbH  
Schönaicherstrasse 220  
71032 Böblingen  
{nijkampe, martino, amaier}@de.ibm.com

**Abstract:** Users of front office applications such as call center or customer support applications make millions and millions of decisions each day without analytical support. For example, if a support employee gets a new support ticket and needs to decide how much time should be used for problem resolution and which measures should be taken, this is done without analytical insight. As a result, companies cannot optimize their front office departments because analytical insight derived in Business Intelligence (BI) Systems is not available to users of these applications. Our demo shows how to improve a Customer Relationship Management (CRM) System [Lin01] by embedding analytics in an “in context” and “on demand” fashion without requiring any BI System skills. “In context” means that only analytics relevant for decision making on the current UI screen is made available. “On demand” means that the user has the information accessible in “mouse-over” events, i.e. the user decides when to consume which portion of the analytical information. This avoids being flooded with information not needed. The underlying implementation uses UIMA [GS04] to determine the context. Real-time lookup services for the delivery of the analytic insight are dynamically bound to the application UI. In the demo we will show the system at work and explain the architecture, the underlying technologies, and the algorithms used for the embedded analytics. The system has been built in the context of a bachelor thesis.

## 1 System Architecture

The general architecture is shown in Figure 1. The UI of an application, here a CRM System (4), is shown in a Web browser (1) on which a specific plugin for embedded analytics has been deployed. A user executes a complaint resolution business process through executing several complaint UI screens (3). The embedded analytics components (5) are deployed in a backend application server. They are based on UIMA, specific annotators (6), and lookup services. A lookup service is a direct call through an ESB (9) to backend systems such as Master Data Management (MDM) systems (13) [DHM+8], Data Warehouse systems (12), HR systems (11), or other external systems (10). A lookup service can also be a trigger causing a complete analytical workflow to be executed on a process orchestration component (8), i.e. a series of fine granular services is invoked to compute an overall analytical result which is returned to the browser (1).

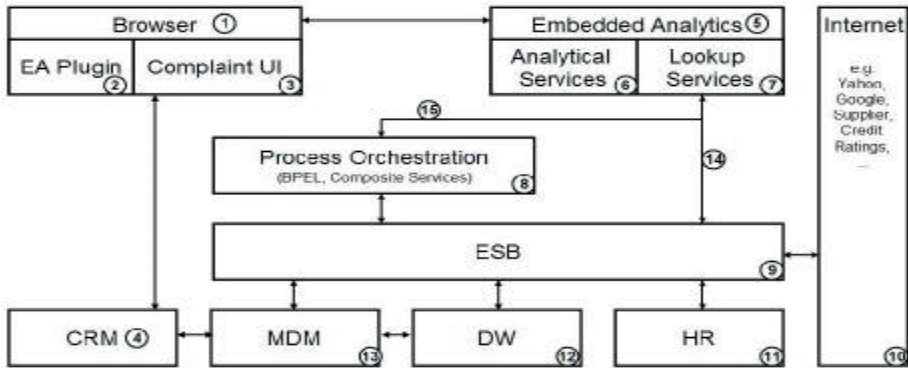


Figure 1: High Level Architecture

A more detailed view with a focus on the CRM system is shown in Figure 2. Analytical workflows in the context of a Business Process Execution Language (BPEL) [WS-BPEL] based orchestration component consume for example several SAP CRM web services to compute the overall customer segmentation result dynamically. Advantages of this workflow abstraction layer between the UI and the backend systems include:

- backend systems providing raw analytical data and the embedded analytics infrastructure are decoupled allowing changes when business priorities shift
- business analysts can graphically design the analytical workflows without a need for a developer and inject relevant analytic insight into front office applications
- front office application users can consume the graphical representation of the analytical insight in context without deep BI skills leveraging operational BI [Imh06]

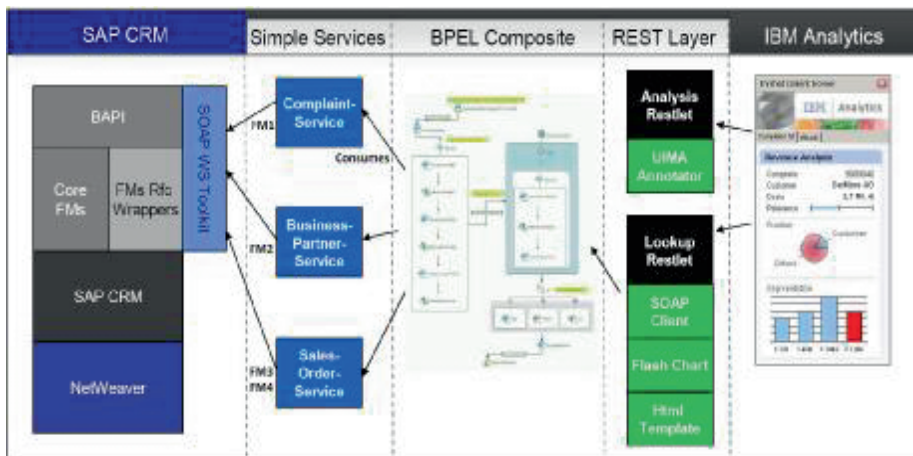


Figure 2: Components Involved in a CRM Complaint Process

The results of the analytical workflows are transformed into graphics using HTML Template and Flash Charting APIs and rendered by the browser in a sidebar. The visualization components are called through a REST API.

## 2 Demo Scenario

The demo follows the steps as shown in Figure 3.

- Step 1: The user opens a complaint in the CRM Web UI. The text shown in the UI is processed by an IBM analytics component based on UIMA.
- Step 2: If certain elements are identified by UIMA, the corresponding elements in the text are highlighted when the requested page is rendered by the browser.
- Step 3: If the user triggers the lookup of certain analytical information through a “mouse over”-event, analytical workflows and lookup services are executed.
- Step 4: With a HTML rendering component the result is prepared to be shown in a panel of the browser on the left hand side of the CRM Web UI main frame.

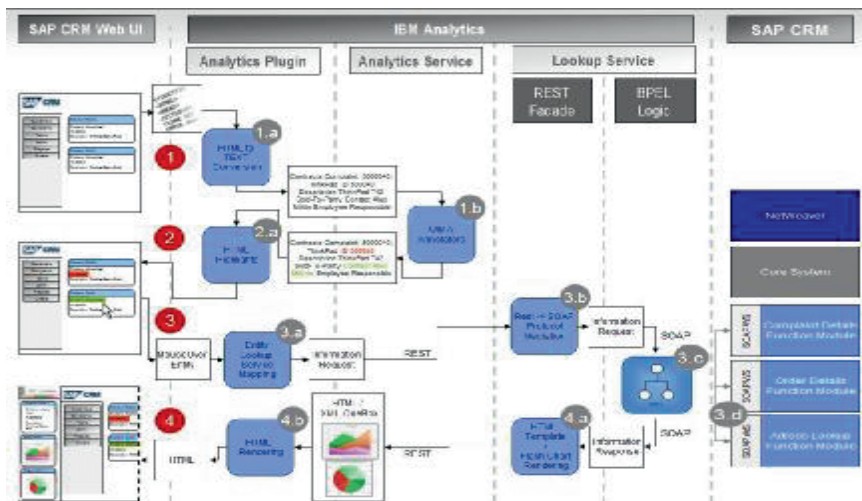


Figure 3: Component Interactions

In the demo the user will be able to connect to an SAP Netweaver CRM system using the Web UI and work with complaints. Depending which “mouse over”-event is triggered, the user will see in the browser sidebar on the left hand side various context sensitive, analytical results optimizing the decision making while processing the complaint. We will show how the system works, and explain the architecture and the underlying technologies.

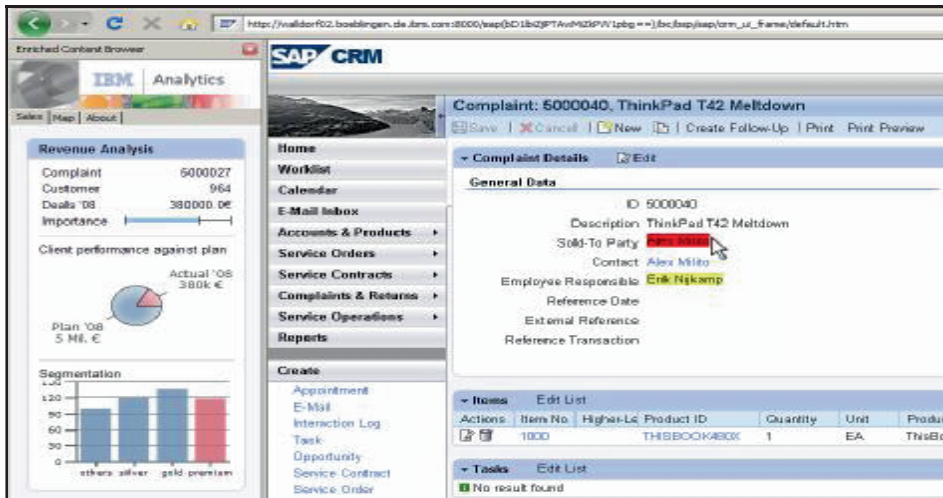


Figure 4: Example Screenshot

The screenshot in Figure 4 shows the outcome of retrieving analytical information, such as revenue and customer relevancy information, for a customer identified by his name.

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