



Automatic Process Discovery with ARIS Process Performance Manager (ARIS PPM)

“It’s about behavior!”

Dr. Tobias Blickle, Dr. Helge Hess
Product Managers, Software AG

October 2010

CONTENTS

INTRODUCTION	3
DISCOVERY AND VISUALIZATION OF (SINGLE) PROCESS INSTANCES	3
DISCOVERY OF AGGREGATED PROCESS VIEWS	5
DISCOVERY OF ADDITIONAL ASPECTS	7
ROOT-CAUSE ANALYSIS	8
SUCCESS FACTORS AND USE CASES	8
REFERENCES	9

In these economic times, most enterprises focus on their core competencies and understand that there is a close relationship between financial success, the efficiency of business operations and the satisfaction of their customers. True to the motto “What can’t be measured, can’t be optimized”, the ability to monitor and analyze organizational performance becomes more and more important. Companies begin to realize that collecting indicators without the link to processes is not enough to identify bottlenecks and to derive measures of optimization.



Dr. Tobias Blicke heads up development for products of Software AG’s process intelligence and performance management solution.



Dr. Helge Hess is responsible for R&D and the product and solution management of the ARIS platform, especially Software AG’s products and solutions for Process Intelligence & Performance Management.

INTRODUCTION

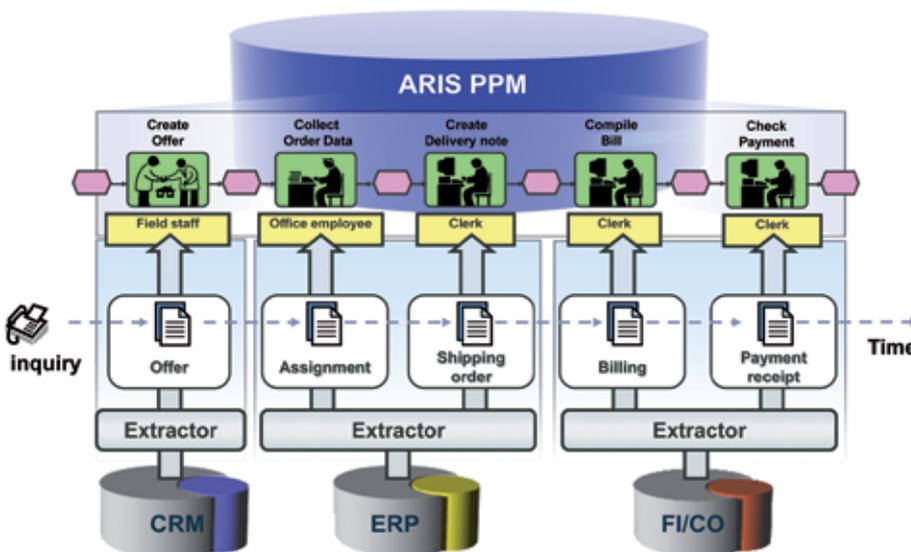
Traditional Business Intelligence (BI) software is used for pure data-oriented analysis. By contrast, Process Intelligence focus on the direct link between metrics / indicators on one hand, and the end-to-end processes (e. g. Order-to-Cash, Procurement-to-Pay, Idea-to-Product) causing these indicators on the other hand. Process Intelligence analytical capabilities are closely associated with the monitoring and controlling of business processes. Patented ARIS Process Performance Manager (ARIS PPM) enables enterprises to monitor and analyze the performance and structure of their business processes, i. e. the behavior of the organization. ARIS PPM drives the continuous optimization of your internal and external workflows, thus making a key contribution to your business success: If you want to optimize, you have to change organizational behavior and if you want to change organizational behavior, you must change the way you measure the organization! ARIS PPM provides you with a key technology to assess your business processes in terms of speed, cost, quality, and quantity – and to identify optimization opportunities. You benefit from a comprehensive overview of business process performance with two perspectives:

- Quantitative, based on the measurement of objective process indicators (End-to-End).
- Qualitative, based on a graphical visualization of the actual structure of your processes (down to individual transaction level), i. e. Process Discovery.

DISCOVERY AND VISUALIZATION OF (SINGLE) PROCESS INSTANCES

As “(Automatic) Process Discovery” we characterize the combination of process-relevant data / events from IT systems (e.g., ERP, CRM, workflow / legacy systems, etc.) and the reconstruction and visualization of each executed process instance (e.g. customer order no. 12345 of May 5th 10:30 a.m.). This is done automatically and persisted in a process intelligence repository (see Figure 1). The reconstruction process can result in a sequence of activities / functions (for simple process executions) or in a complex graph with branches and junctions. For each process instance, the result is a perfect image of the reality. The process instance is depicted as EPC (event driven process chain, the broadly used standard to describe business processes).

Figure 1: Process Assembly



Find out how:

- How the real root cause of process variations and exceptions can be found.
- How the combination of quantitative and qualitative analysis leads to a continuous optimization of business processes in terms of speed, cost, and customer satisfaction.

To assemble these process graphs, there are two necessary steps: First, the events that belong to the same process instance have to be identified (event grouping) and second, all those events have to be arranged in the correct flow (graph generation).

The simplest case for event grouping is collecting all events with the same identifier, i.e. belong to the same process instance, such as an order. However, in real world cases and when analyzing business processes that flow through several, heterogeneous IT systems there is usually no such unique identifier. For example, the event “create offer” in the CRM system might have the id “4711”, whereas the event that represents the corresponding “order created” in an ERP system has the id “0815”, so that a mapping between the identifiers has to be used. These cases and even more complex scenarios (e.g. “hierarchies” (a single event belongs to a whole sub-process) or “shared events” (one event / business step is used in several process instances) are addressed by ARIS PPM. Furthermore, for real world usage, this grouping step must be able to deal with millions of process instances.

The graph generation for each single process instance is also very flexible. In the most common cases you specify order criterion (e.g. execution time) for each step, and the graph is generated as the sequence of those events. The names of the corresponding steps might be derived from the event itself (e.g. the event contains an attribute with the value “Create offer”), joined with external data (e.g. an excel sheet or database table) that links the event type to the corresponding activity, or the mapping is maintained within the configuration of ARIS PPM using process fragments. Of course it is possible that (due to late import or other circumstances) a step might have to be inserted into an already assembled EPC instance. This means, you do not have to model the process in advance as the order is automatically detected and computed by the software.

Another option to generate an EPC is the specification of rules that define which event corresponds to with fragment of a process and which conditions must be met to link two fragments together. ARIS PPM supports the import of data in arbitrary order, as it keeps track of all events imported at any time.

Figure 2: On-the-fly discovery of process behavior



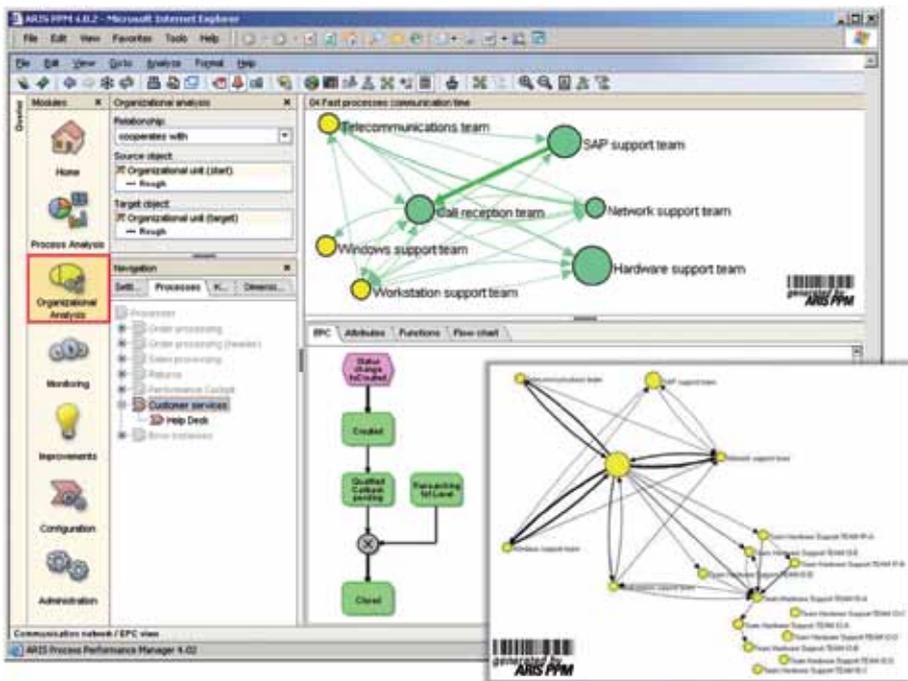
DISCOVERY OF ADDITIONAL ASPECTS

Optimizing business activities and analyzing processes is not only about examining a sequence of actions and evaluating them using performance indicators. It is definitely worth extending the scope of automated analysis to address the following aspect (as described by the ARIS House):

- Organizational analysis: Who works with whom, and how?
- Analysis of data and document relationships: Which data and documents are used in the process, and how?
- Analysis of system support: Which IT systems are used, and how?
- Physical Supply Chain: Where have items been at which point in time? How did they move?

As with the analysis of the actual processes generated by ARIS PPM based on the data from the underlying IT systems, the real-world relationships between teams and groups can be examined, where “relationship” can mean collaboration, delegation, informing, reporting to, reviewing, etc. In addition, this approach reveals in which processes an organizational unit is involved, and for which parts of a process it is responsible (see Figure 6). Visualizing these relationships is an important requirement for identifying, analyzing, and optimizing actual communication during process execution.

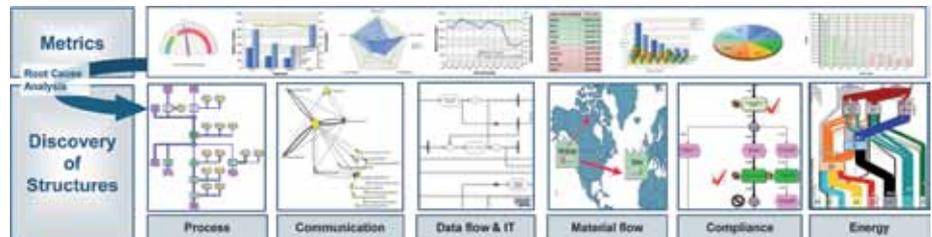
Figure 6: Communication Network detected by ARIS PPM



ROOT-CAUSE ANALYSIS

Usually, the detection of anomalies starts at a high level of abstraction, e.g. a dashboard with speedometers or traffic lights. From this “alerting” point the influencing factors are identified (using interactive analysis, automatic data mining, distribution charts) until the structure of the actual processes is analyzed for the critical combinations and patterns, as only the structures describe the behavior of an organization. The combination of both performance indicators and process structures is essential to obtain a meaningful analysis of bottlenecks (see Figure 7).

Figure 7: Root-cause analysis



SUCCESS FACTORS AND USE CASES

IDS Scheer invented this Process Discovery approach and provides, with ARIS PPM, a proven and patented technology for many years. It is used by many large customers including SAP, Bayer, Daimler, Credit Suisse, Kraft, Deutsche Post World Net, Yodobashi, etc. The broad experience with many customers gives us a sound understanding of the problems and challenges that occur with process discovery in real world projects:

- Ability to extract (and combine) data from several sources (IT applications) for a single end-to-end business process
- Merging and sorting the events / fragments according to flexible criteria to a single process instance – in many cases without any pre-configuration
- Automatic capturing of the business processes flow on process instance level – without modeling the process behavior in advance
- Aggregation of arbitrary subsets of process instances to discover the process model representing the real-world behavior of the company
- Providing easy filtering techniques for the discovered process models that allow removing “noise” but also identifying the “exceptions”
- Handling of high data volumes

Typical use cases for Automated Process Discovery are:

- Standardization / Harmonization of IT systems (e.g. ERP systems) based on the real usage and identification of best practices
- Identification of bottlenecks (related to time / quality) of the key processes
- Identification of allocation of resources and the main cost drivers of key processes
- Identification of the obstacles for efficient cooperation between teams and organizational units

REFERENCES

- Von den Driesch, M.; Blickle, T.:
“Operational, Tool-Supported Corporate Performance Management with ARIS Process Performance Manager”.
In: Scheer, A.-W. et al.: “Corporate Performance Management – ARIS in Practice”, Springer, 2005.
- Blickle, T.; Hess, H.:
“From Process Efficiency to Organizational Performance”,
Expert Paper, IDS Scheer, 2006.
- Hess, H.:
“Measuring the Business World”.
In: CxO Europe, May 2008.

TO FIND THE SOFTWARE AG OFFICE NEAREST YOU,
PLEASE VISIT WWW.SOFTWAREAG.COM

Take the next step to get there – faster.

ABOUT SOFTWARE AG

Software AG is the global leader in Business Process Excellence. Our 40 years of innovation include the invention of the first high-performance transactional database, Adabas; the first business process analysis platform, ARIS; and the first B2B server and SOA-based integration platform, webMethods.

We offer our customers end-to-end Business Process Management (BPM) solutions delivering low Total-Cost-of-Ownership and high ease of use. Our industry-leading brands, ARIS, webMethods, Adabas, Natural, CentraSite and IDS Scheer Consulting, represent a unique portfolio encompassing: process strategy, design, integration and control; SOA-based integration and data management; process-driven SAP implementation; and strategic process consulting and services.

Software AG – Get There Faster

© 2010 Software AG. All rights reserved. Software AG and all Software AG products are either trademarks or registered trademarks of Software AG. Other product and company names mentioned herein may be the trademarks of their respective owners.