

- **Organizational
perspective and
prototypical IT
solution**

**Process Description & Background/Need**

An applied project study should generate the differential aspects between the areas “Business Process Management” (BPM) versus “Enterprise Integration Application” (EAI) as well as the advantages and disadvantages of interfacing the two fields. Ultimus Germany GmbH assigned the Institute for Organization and Information Systems at the University of Applied Sciences Rosenheim to conduct this study.

The study was based on a real world, inter company scenario where the information flows of the supply chain “DIY store (purchaser) – forwarding agent – carrier – brick manufacturer” were to be analyzed. All the required paper documents had to be digitalized, the logistics supply chain had to be automated and the relevant information systems had to be interfaced. In doing so, three software tools were used: ARIS Toolset for process modeling, the Ultimus BPM Suite to realize “Human Workflows” and Microsoft BizTalk Server to realize “Machine Workflows.” The crucial aspect of analysis was thereby the use of Ultimus and BizTalk as an integrated solution.

As a first step of this study, all processes and the entire organization structure were modeled by using the ARIS Toolset, and subsequently transferred into Ultimus process maps and into the Ultimus Org Chart. Ultimus, as the leading system, was responsible for the entire process flow that includes a number of human related interactions. Whenever required, Ultimus called BizTalk via Web services to perform automatic processes for data preparation and data transfer between the application systems.

Points of Pain Addressed / Issues

Looking at the practical application, crucial improvements could be achieved by interfacing Business Process / Workflow Management and Enterprise Application: from replacing paper based documents by digitalized ones, to reducing phone call expenses and automating process steps that used to be manual, to significant time efficiency and more transparency and possibilities for monitoring the processes.

Because Ultimus covered the major parts of process implementation, as opposed to BizTalk, the associated complexity was significantly lower when compared with BizTalk and the results could be achieved more quickly.

The project: background and goals

In the summer of 2003, Ultimus Germany GmbH and the Institute for Organization and Information Systems at the department of Business Administration of the University of Applied Sciences Rosenheim agreed to conduct an applied project study. The goals of this study were to differentiate between the areas of Business Process Management (BPM) and Enterprise



Application Integration (EAI) as well as to look at the advantages and disadvantages of interfacing the two fields facing a real world supply chain problem.

For the project, two types of software were used: the Ultimus BPM Suite, which is a BPM software product, focusing on workflow management (“Human Workflows”), and Microsoft BizTalk Server 2004, which is an XML based integration software product. BizTalk tends to automate IT processes without user interaction (“Machine Workflows”). The crucial aspect of analysis was the novel interfacing of Ultimus and BizTalk, with particular emphasis on both their optimization potentials based on the application case described. The focus was based more on the technically induced approaches of improvement resulting from using the complementary technologies of Ultimus and BizTalk, rather than on purely organizational ones:

- Digitalization of required documents
- Automation of logistics supply chain processes by using a Business Process Management system (Ultimus)
- Interfacing of relevant information systems (Microsoft BizTalk)

This application was particularly suitable for achieving the project goals because organizational BPM aspects, including human centric process steps, and technical EAI aspects, including automated IT processes, could be observed at the same time. In addition, an ideal solution implementation had to consider both aspects in an integrative manner.

Working in cooperation with the Logistics Competence Centre at Prien/Chiemsee, a real world application scenario involving an Austrian DIY store, a forwarding agent, a carrier and a brick manufacturer (the latter three being medium sized companies located in Southern Germany) was developed, which the study was based on. This inter company scenario involves the DIY store ordering bricks from the manufacturer and the processes required from the perspectives of the forwarding agent and the carrier, as well as carrying out diverse financial processes.

Tools

Three tools, each with their own particular strengths, were deployed for the project:

- ARIS Toolset for modeling the logistics related information processes (the ARIS product being a global leader in the business process modeling field)
- Ultimus BPM software with focus on “Human Workflow Management” (IT planning, execution and control of processes with frequent human interactions; intuitive web based deployment; integration capabilities with BizTalk)
- BizTalk for system interfacing with focus on “Machine Workflow Management” (efficient tool in the area of “Enterprise Application Integration”)

Ultimus thereby played a crucial part in combining with very low complexity the purely organizational perspective of ARIS with the distinctly technical perspective of BizTalk. The ARIS process models were on the one hand efficiently transferred into executable Ultimus process models by easily integrating all process participants. On the other hand, the Ultimus standard “Flobots” allowed easy interfacing with BizTalk in order to call external programs, including data transfer.

Deployment with process models and workflows

The following well detailed illustration shows the logistics supply chain, i.e. the entire scenario at a glance. The begin step represents the above mentioned purchase order of bricks by the DIY store. What follows is the purchase order processing of the brick manufacturer and then the order processing of the forwarding agent (in this case it is specified as direct delivery from the bricks factory to the DIY store), including purchase order confirmation. The next step represents transport execution, i.e. the truck trip from the carrier’s location to the loading location at the brick factory. After loading the truck, the consignment note required for transportation is created. After the truck has arrived at the DIY store and the ordered bricks have been unloaded, the DIY store acknowledges the receipt of the bricks. “Information transmission” means the carrier handing over the required documents to the forwarding agent. The forwarding agent, the carrier and the brick manufacturer can now create their invoices (Invoice). To complete the process, the forwarding agent and the manufacturer have to carry out some final tasks, for example, verifying the receipts of payment.

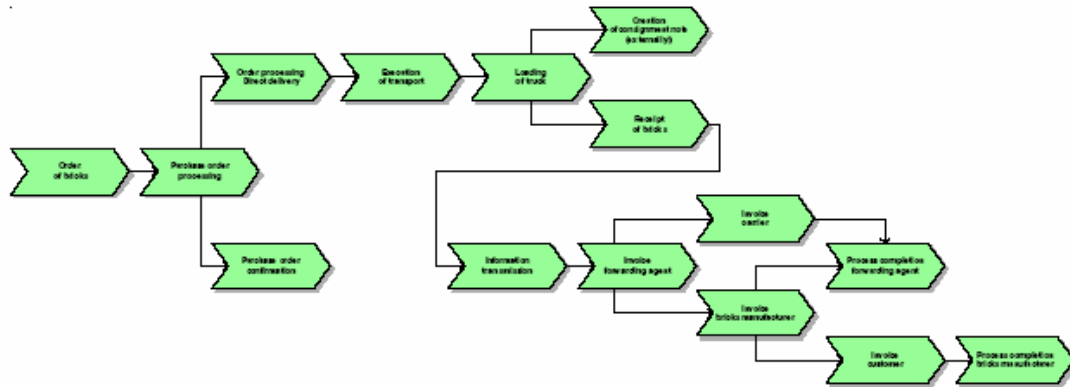


Illustration 1: Sub processes of the logistics supply chain

By using the ARIS Toolset of IDS Scheer AG, 15 sub processes were modeled altogether. Every single process consists of a number of process steps that include the data required and organizational objects like departments, positions or persons. The entire organizational structure is shown by the following chart (as Ultimus Org Chart):

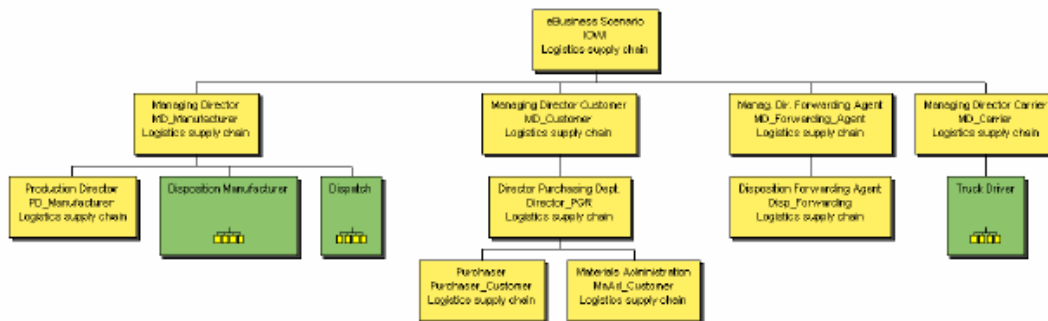


Illustration 2: Organisational structure of the logistics supply chain

The problem scenario and the use of ARIS (for process modeling), Ultimus (to generate an executable workflow), and BizTalk (for system-to-system data preparation and data transfer) is shown by the sub process “Purchase Order Processing” (in this case “Order processing for the following week) (see following illustration 3).

Illustration 3 explains the process diagram: The green symbols represent the process steps, the yellow symbols show organizational objects (like positions or companies) and the light blue symbols represent application systems (in this case: Excel). The dark blue document and telephone symbols are self explanatory. The magenta colored hexagony symbolize events (that activate or end process steps). The crossed circle represents a logical (exclusive) OR and the red squares (“cluster”) are not relevant in this example.

This actual process shows (without the support of Ultimus or BizTalk) a number of paper documents (to be sent manually) and phone calls made internally and between the purchaser and the manufacturer. As a consequence, the information flow has insufficient IT support.

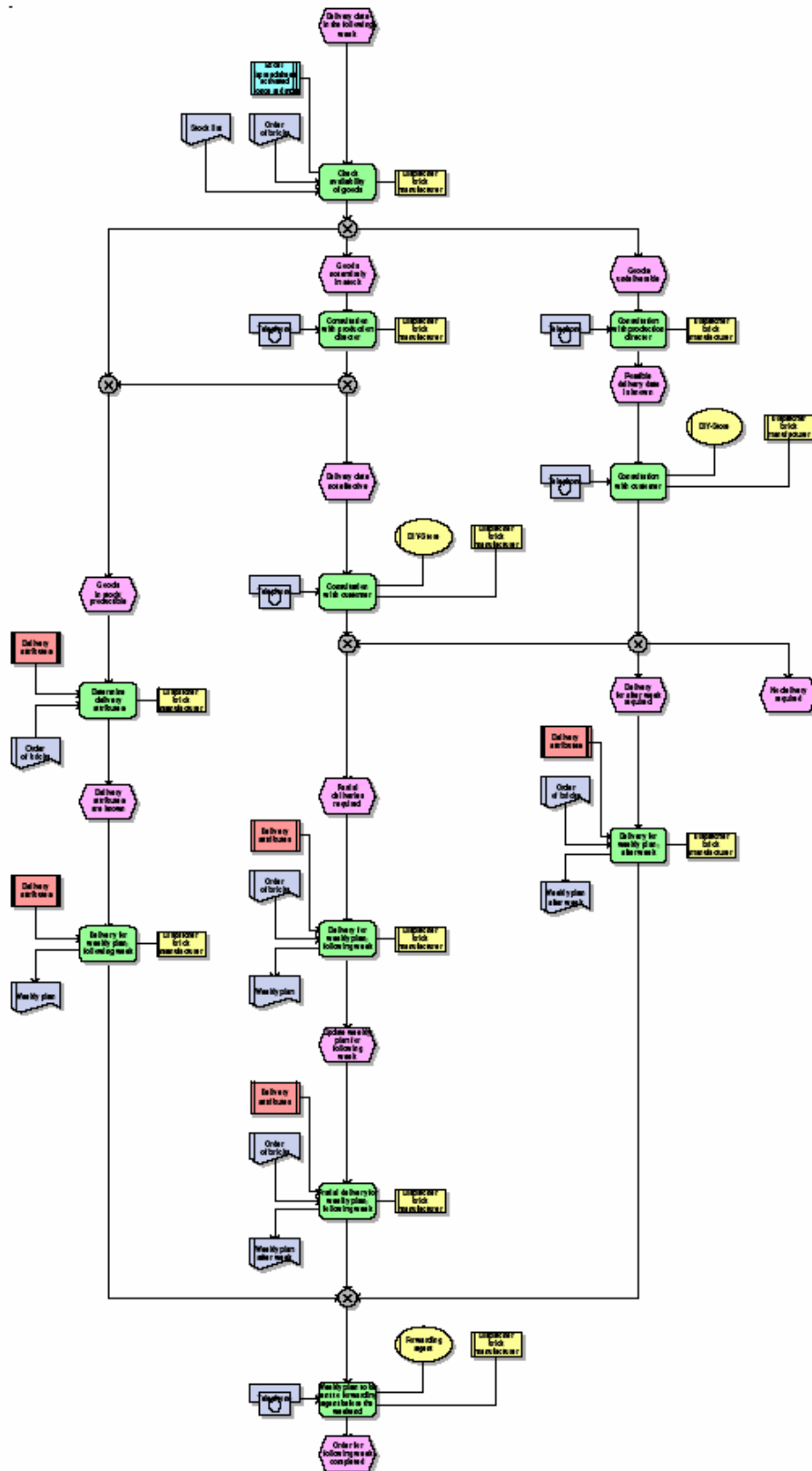


Illustration 3: Purchase Order Processing process of the brick manufacturer

Based on this process, an executable workflow was created with Ultimus that digitalizes paper documents (as Ultimus forms for scope presentation) and eliminates time consuming telephone calls (see illustration 4). Altogether, this automated and optimized Ultimus workflow represents the actual process of the ARIS model because optimizations tend to be achieved more by IT supported measures than by organizational measures.

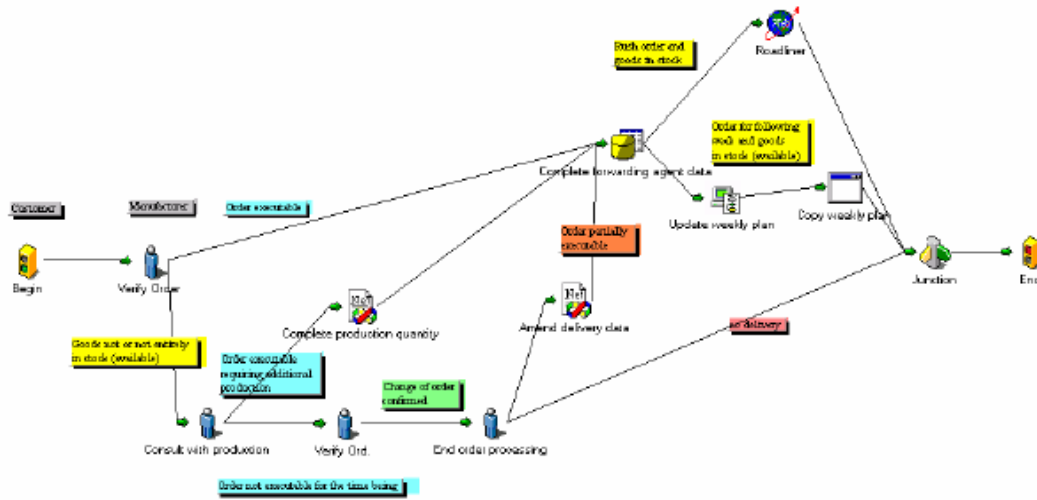


Illustration 4: Purchase Order Processing process as an Ultimus workflow map

After finishing the process for purchase order processing by the brick manufacturer, the transportation of the bricks is entered into the forwarding agent's "Roadliner" software, either for the weekly plan or as a rush order.

For the subsequent assignment of the carrier for transportation (sub process "Order Processing for Direct Delivery" see illustration 1), the entire order to the forwarding agent must previously have been split into single positions and automatically entered into the forwarding agent's "Roadliner" software. This data preparation and data transfer is carried out by a BizTalk Webservice which is called by the step "Roadliner" in the workflow in illustration 4.

However: How does the interaction between Ultimus and BizTalk work exactly?

By calling the Webservice, the order data that has previously been entered in Ultimus is transferred into BizTalk. Within the BizTalk process, the order passes through a BizTalk orchestration which conducts the splitting of the lines into single positions. The direct delivery order arises from the ordered number of trucks stated in the individual order lines. Each order line also has a check for invalid data entry.

If the data entered is valid, a direct delivery order for each ordered truck load is created. All order information such as order date, delivery date, etc is transferred via the BizTalk XML mapper into the direct delivery order. After the mapping is completed, the BizTalk orchestration of the active direct delivery order calls the next process in Ultimus: "Order Processing for Direct Delivery."

The following illustration shows the BizTalk orchestration to the Webservice "Splitting of Rush Order Data into Single Positions for Direct Delivery Orders."

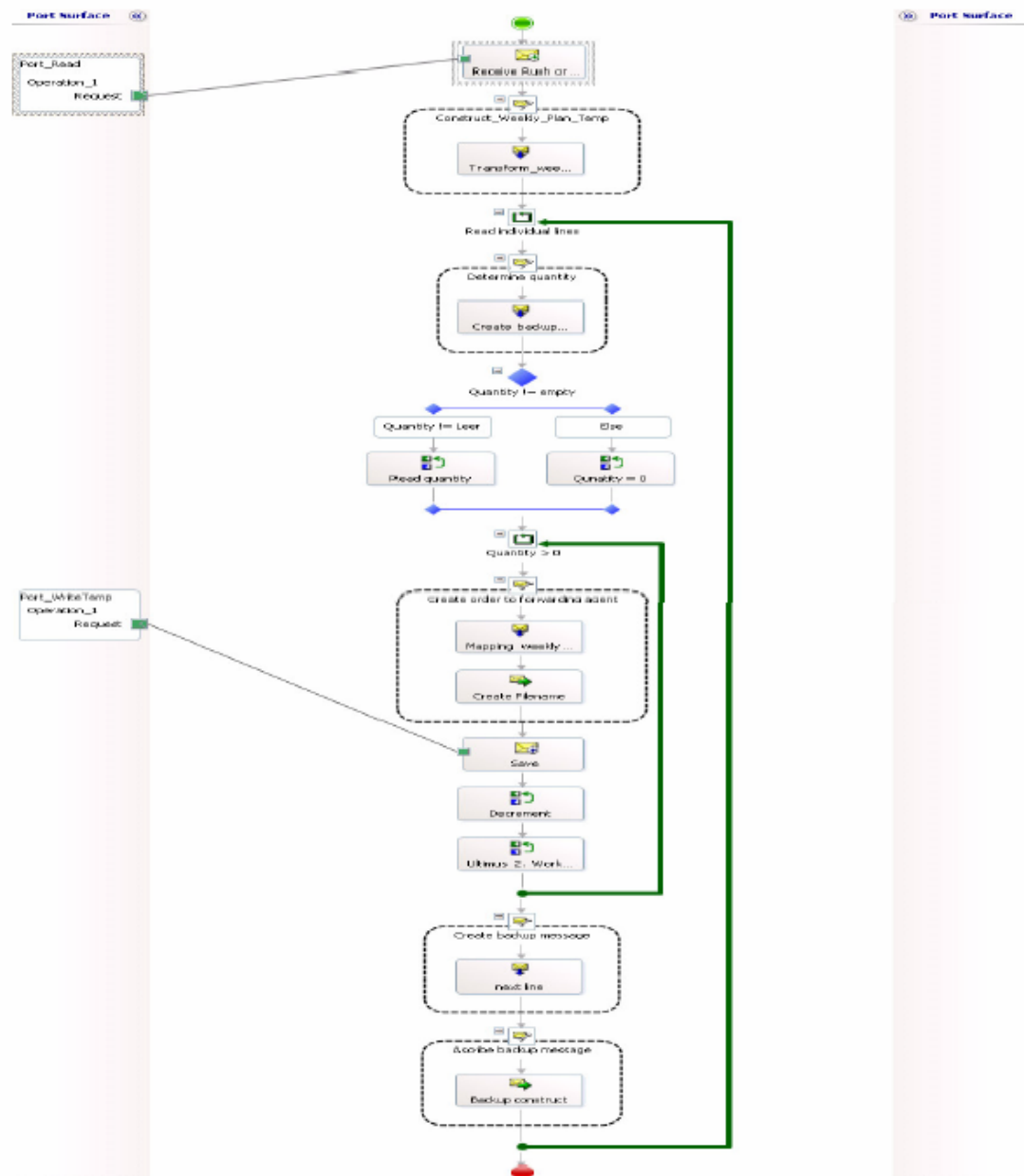


Illustration 5: BizTalk orchestration for creation of "single positions" from an order.

Recap of key benefits and summary - Crucial results and conclusion

Precise improvements could be achieved by interfacing Ultimius and BizTalk such as:

- Replacement of paper based documents by digital documents
- Reduction of time consuming phone calls
- Replacement of previously manual process steps by automated process steps
- BizTalk helps Ultimius to handle EAI heavy IT processes
- As a consequence, significantly faster cycle times are achieved
- Interplant transparency and possibility of monitoring the processes

Which particular but general experiences could be taken from the project study?

To implement the real world business-to-business solution as described above, three software tools were deployed. An ideal solution would be one tool to cover the entire project from the process design and the creation of the workflow to the integration of additional IT systems. In doing so, the data transmission complexity implied for shifting from one software product to another could have been avoided twice. This complexity is relatively high because each tool uses different methods to deal with the subject matter, i.e. the process.

Business process modeling (in this case covered by ARIS) required a relatively large level of complexity. However, it provided a very solid basis for the creation of elaborate Ultimus workflows and BizTalk orchestrations. In general, business process modeling can be covered the Ultimus BPM Suite as well.

Ultimus is the most suitable product for the execution of distinctly human centric processes – on both the organizational and the user level. By using Ultimus, very attractive “Total Cost of Ownership” can be achieved on both these levels. Furthermore, system developments can be performed quickly and cost efficiently and organizational changes can be realized smoothly due to the fact that Ultimus’ graphical user interface is very accessible to both developers and users.

If, as shown in this case, Ultimus is the lead system, then BizTalk is an excellent addition to cover automatic processes that contain no human interaction on the technical level of system development. The two worlds “Workflow” and “Enterprise Application Integration (EAI)” with their differential standard implications (see illustration 6; WFA here means Workflow Automation) can therefore be extensively combined.

	EAI	WFA
Speed	Machine Speed	People Speed
Number of Participants	Few	Many
Handling Exceptions	Few	Many
Business Rules	Data Driven	Data and Relationship Driven
User Interface	None	Complex
Data Transformation/Mapping	Many	Few

Illustration 6: Differential standards of workflow systems versus EAI
(Source: Khan, R., Ultimus + BizTalk Server 2004, in: BPTrends, January 2005)

Based on this case study, it is important to note that the level of development complexity for BizTalk supported data integration was higher by the factor 4 – 5 than the Ultimus workflow design, although most of the above discussed 15 sub processes were covered by Ultimus.

For more information on the Ultimus BPM Suite and how it can help your company become a more agile enterprise, please visit www.ultimus.com.