

Intershop eBusiness Modeling Method - A business-process-driven modeling method with reference models based on Intershop Enfinity

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Abstract:

As organizations continue to leverage the Internet for business, there is an increasing demand for platforms that support a variety of different business models – including business-to-consumer, business-to-business, business-to-employee and marketplaces. Organizations are looking for common frameworks to support their interactions with their customers, suppliers, distribution channels, and other supply chain partners.

The structure of an eBusiness that will be successful near-term and long-term generally requires an ongoing and comprehensive analysis and definition of the company's cost savings and revenue growth potentials. The challenge is to transform these potentials into a business model and an eBusiness solution with successful performance.

Given the complex requirements of eBusiness solutions today, there is a high demand on implementation methods to support all the different participants during an eBusiness solution implementation.

This document gives an introduction to the *Intershop eBusiness Modeling Method* which derives dedicated business cases including business processes and technical workflows from a company's strategic decisions and marketing aspects - built on Intershop's eBusiness platform Enfinity.

The *Intershop eBusiness Modeling Method* is supported by IDS Scheer's modeling tool *ARIS for Intershop Enfinity* and Intershop's development tool *Visual Pipeline Manager* which is part of Enfinity. The combination of *ARIS for Intershop Enfinity* and *Intershop's Visual Pipeline Manager* provides an effective and seamless transition from the eBusiness Solution Definition to the eBusiness Solution Implementation.

In order to provide a professional and effective business requirements mapping, Intershop's eBusiness Components are shipped with reference models. These reference models have been refined by deploying Intershop's business-process-driven modeling method.

This "best practice" approach insures a common base of communication with all participants during the project phases and provides a solid base for further developments of complex eBusiness implementations.

1. E-Business Market Landscape

The Internet has been accepted as a viable channel for organizations to conduct commerce and extend relationships with customers, employees, business partners and suppliers. By using the

Internet as a platform for eBusiness, organizations can redefine themselves, transform their business processes and establish new business channels along the value chain.

As a result, the role of IT organizations has shifted from an operational or cost center to a strategic business unit that is vital for enabling revenue growth and increasing a company's value. This is based on using Internet-based technologies and the right eBusiness platform decision.

In addition, business units like Sales, Marketing, Services or NewMedia take charge of getting closer to customers and partners, responding to competitive pressures, boosting revenues – and are thus drivers for eBusiness applications. These business units know what the organization needs to improve the relationships with key trading partners across the company's value chain.

Given this eBusiness climate, there are many new priorities for businesses and their IT organizations today. These priorities include scalability, application integration, return on investment and globalization. In addition, organizations want to empower their business units to play a role in developing and taking part in business process improvements. For that reason, it is necessary to provide a methodology to easily modify existing business processes based on dynamic requirements, which can be matched to eBusiness applications without extensive IT involvement.

2. Intershop eBusiness Modeling Approach

Intershop's approach to address this market needs, is a scalable platform with a flexible architecture and infrastructure for building custom applications. The eBusiness platform Intershop Enfinity comes along with packaged eBusiness Components (ISH BC) including reference models and a business-process-driven modeling method that supports the customer's solution scoping and definition, speeds design and lowers implementation risks.

2.1 Modeling Approach & Methodology - Overview

This chapter describes *Intershop's eBusiness Modeling Approach* and gives an overview how to derive the customer solution from the customer's vision. This approach is based on Intershop's eBusiness platform Enfinity with eBusiness Components and the eBusiness Modeling Method.

Basically there are 3 main phases to derive the customer solution definition from the customer vision which are described in the following 3 chapters.



Figure 1: Considered eBusiness Modeling Phases

The following figure gives an overview about the eBusiness Modeling Approach & Methodology.

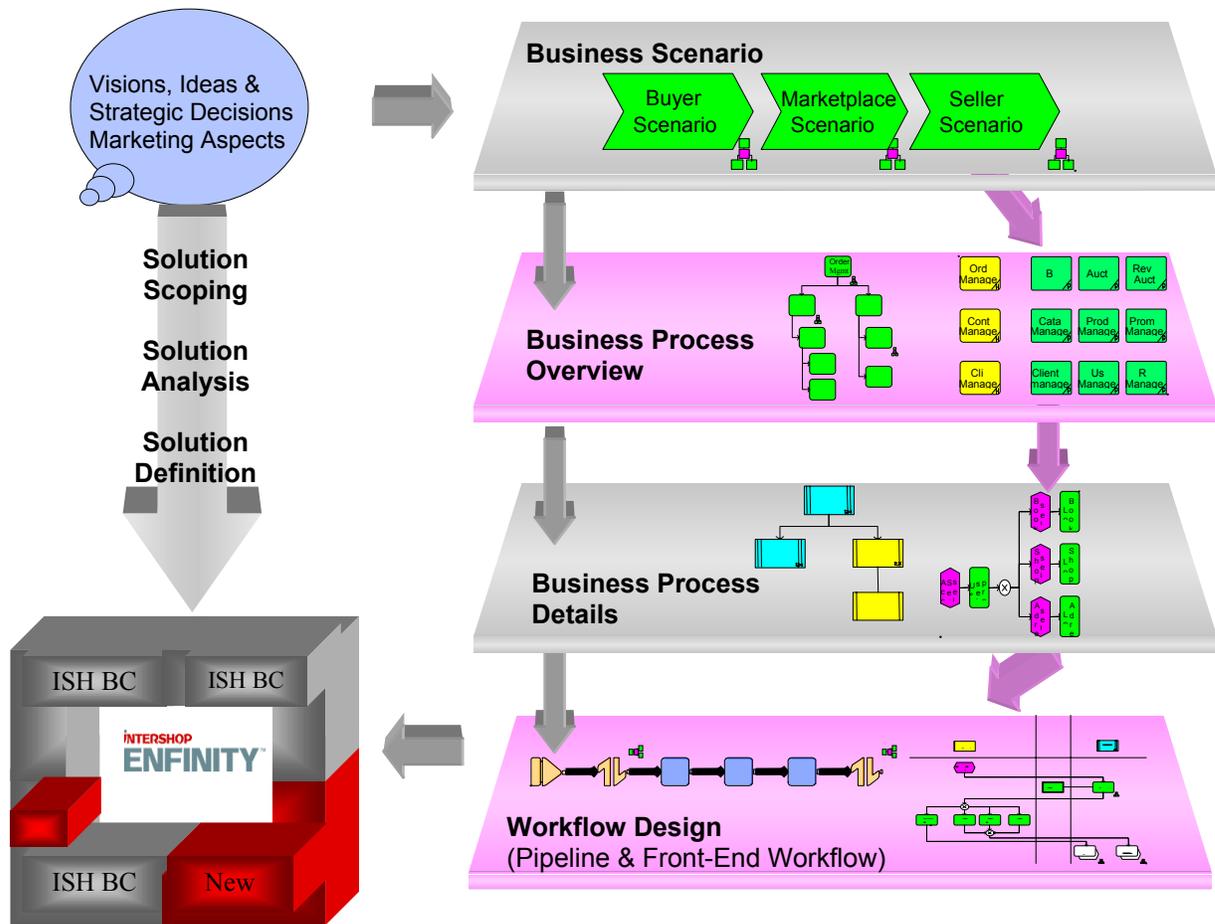


Figure 2: eBusiness Modeling Approach & Methodology - Overview

2.2 Solution Scoping

In the Solution Scoping phase, the first step is to elaborate and define the business vision and strategy together with the customer. Potential business models and business scenarios are analyzed and eBusiness Modeling starts based on first customer information. This is initiated by a *Strategic Scoping Workshop* and the result is a Customer Strategy Definition (CSD), which covers the following:

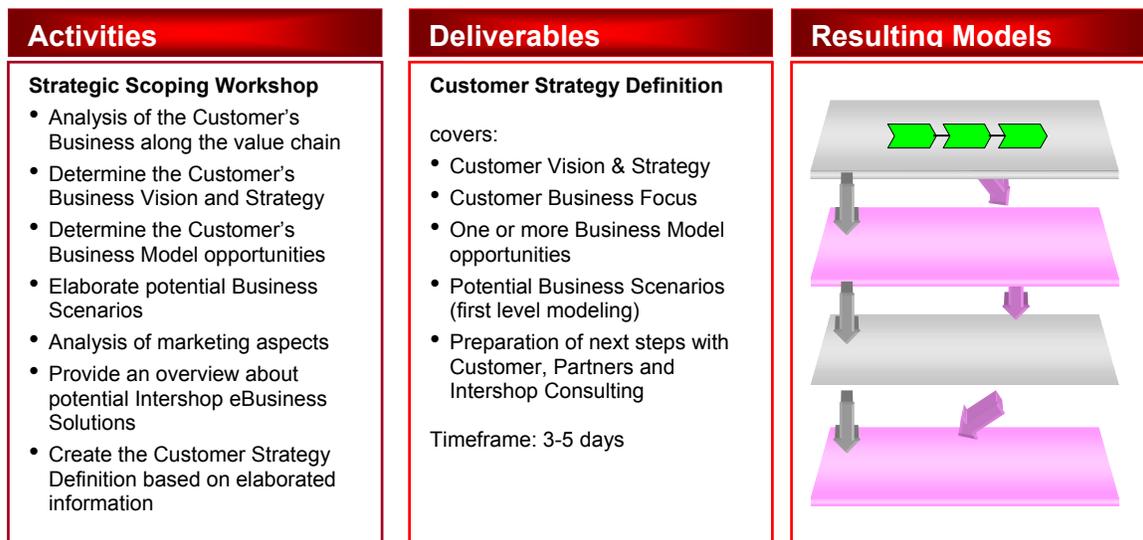


Figure 3: Result of the Solution Scoping phase: Customer Strategy Definition (CSD)

2.3 Solution Analysis

After determining the customer's business vision and strategy including business model and business scenarios, the next step is the Solution Analysis phase.

The aim of the Solution Analysis phase is to provide a proposal of the customer's potential eBusiness Solution. In order to detail the customer's requirements, Intershop's business-process-driven modeling method provides a way to refine a model of the proposed Customer eBusiness Solution based on elaborated information.

The result of the Solution Analysis phase is a Solution Proposal and covers the following activities, deliverables and results:

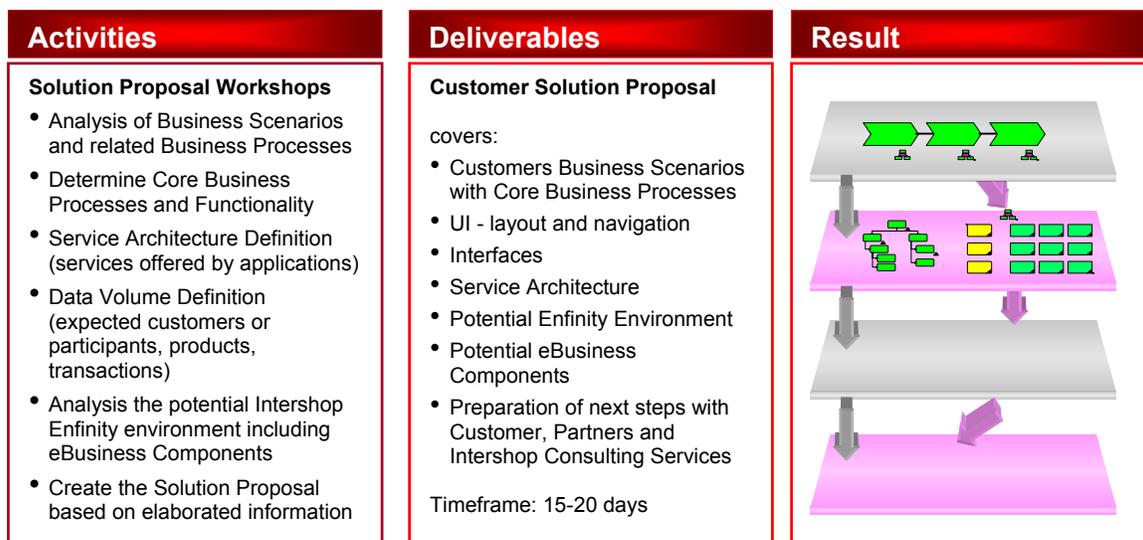


Figure 4: Result of the Solution Analysis phase: Customer Solution Proposal (CSP)

2.4 Solution Definition

During the Solution Definition phase, technical and business related issues are analyzed and defined in detail. Most eBusiness Solutions are growing very fast and there is a high risk that these complex systems are not manageable. Because of that, on the one hand it is essential to provide an overview of the whole proposed eBusiness Solution, and on the other hand, also the chance to trace down along an understandable and seamless model to an appropriate level of detail.

Intershop's eBusiness Components are shipped with reference models. These reference models haven been refined by deploying Intershop's business-process-driven modeling method.

Using *ARIS for Intershop Enfinity* it is possible to provide such a seamless model of an entire eBusiness solution - from a company's business strategy and marketing aspects over dedicated business cases including business processes, linked to front-end workflows and Intershop Enfinity pipelines.

This fact is a big advantage in order to provide reference models of Intershop's eBusiness Components and is the base for professional and effective business requirements mapping.

The result of the Solution Definition phase is the Customer's Requirements Specification (CRS) with the recommended Intershop eBusiness Solution as the basis for the eBusiness Solution design and implementation phase.

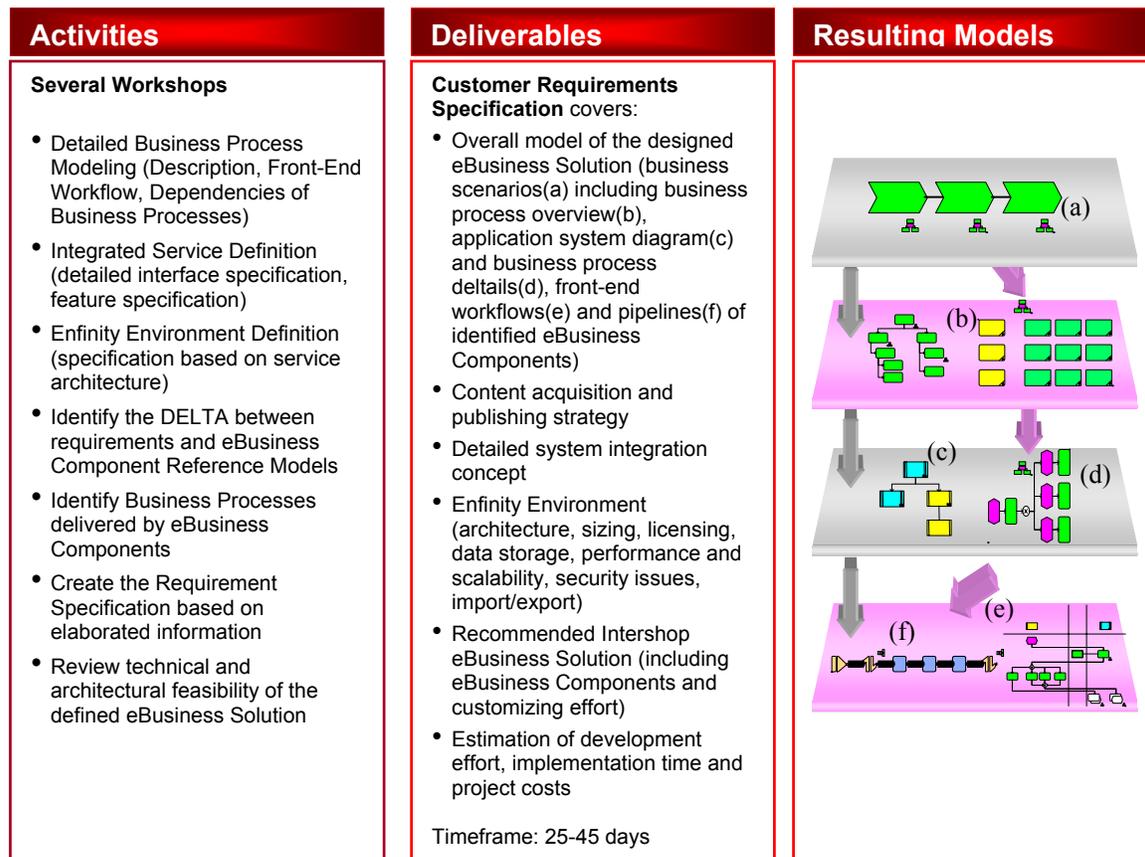


Figure 5: Result of the Solution Definition phase: Customer Requirement Specification (CRS)

2.5 Benefits of Intershop's eBusiness Modeling Approach

The following section summarizes the benefits of deploying Intershop's eBusiness Solutions with its outstanding eBusiness platform Enfinity and the eBusiness Components, straight ahead with the Intershop eBusiness Modeling Method.

Main benefits of Intershop's eBusiness Modeling Approach:

- a transparent eBusiness Modeling Method derived from project experiences
- one seamless model from business strategy and marketing aspects, over business scenarios including business processes linked to technical workflows based on Intershop Enfinity
- reduction of information loss
- a common base for communication and documentation
- providing a clear discussion and decision foundation by different model views
- reduction of project and development risks
- decreased time to market
- better maintenance and faster adaptation of implemented solutions
- reference models of business scenarios for shorter implementation time

3. Intershop's Visual Pipeline Manager

The Visual Pipeline Manager (VPM) is a development tool for designing workflows using pipelines. Pipelines are at the center of Enfinity's ability to separate business logic from code and web design. A pipeline is a symbolic representation (described in XML) of a workflow. It includes nodes that denote a particular type of execution step in a pipeline. In general, there are three types of nodes:

- pipelet node
- flow control node
- interaction node

The decisive marking points in pipelines are symbolized with flow control nodes, which are listed in the VPM editor in the upper left box (see following figure 6). The pipelet nodes are reusable steps that perform specific, discrete functions in a pipeline and are listed in the lower left box in the VPM.

When pipelines are executed, they begin with a "start" node and are executed step-by-step until they reach a stopping point, symbolized by an "end" node, a "jump," or a template symbol (called interaction node). Between the start and the end node is the business logic contained in the pipelets, and the flow control logic that dictates whether, for example, a yes/no branch in the pipeline needs to be followed, another pipeline must be called, or a template should be displayed. The flow control elements are common to all pipelines and can be re-used indefinitely.

The following figure shows the 3 types of nodes and an excerpt of a pipeline in Intershop Enfinity's Visual Pipeline Manager:

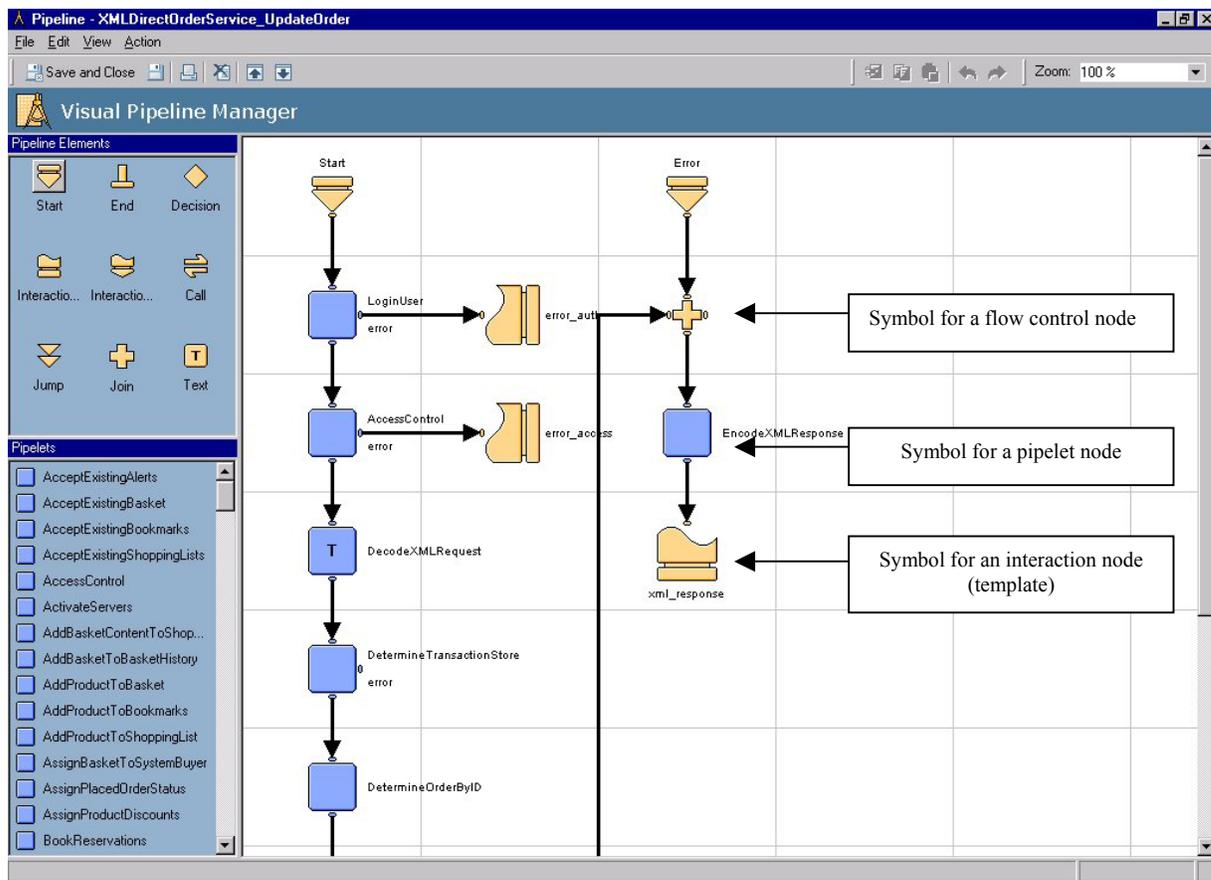


Figure 6: Intershop’s Visual Pipeline Manager

3.1 The Pipeline Process and the Pipeline Dictionary

The following section gives an overview about pipeline processes and the role of the pipeline dictionary.

❑ **The pipeline is called.**

This call can come from an HTTP request embedded in a front-end template, from a call or jump node in another pipeline, or from logic itself (for back office or scheduling pipelines).

❑ **Once called, the pipeline starts and initializes the pipeline dictionary.**

Any parameters passed to the start of the pipeline by the request are stored in this pipeline dictionary. The parameter name is the “key” and has an associated “value”. These are referred to as key-value pairs. They are maintained in the dictionary until the pipeline ends and clears the dictionary.

❑ **The pipeline executes each pipelet and flow control action in sequential order.**

Each pipelet may require a key-value pair (or pairs) to be available in the pipeline dictionary. The pipelet checks the pipeline dictionary; if it finds the necessary key(s), it executes its logic. As a result of executing, the pipelet may add other key-value pairs to the pipeline dictionary. The

dictionary cumulatively stores all the key-value pairs from all preceding pipelet activity until it reaches an end-and-clear point.

□ **Front-end processes often end with the display of a front-end template.**

After showing a template, the pipeline can either continue (and eventually show another template) or end and clear the pipeline dictionary.

Note:

- that a front-end workflow may include more than one pipeline, including "sub-pipelines" which are called into a process with a call node
- that every pipeline or sub-pipeline does not necessarily end in a template

4. Tool based modeling with AIRS Toolset

The usage of graphical business process models is with no doubt a means to reduce the complexity of today's business environment. However, the new and increased requirements that arise from the transition from traditional business to eBusiness increases the demand for integrated modeling architectures and modeling tools.

The "Architecture of Integrated Information Systems" (ARIS) provides several applications that support the transformation of the company's strategic decision into technically implemented processes.¹ The main reasons for Intershop to base its eBusiness Modeling Method on ARIS were as follows:

1. **The ARIS concept** provides a lot of different modeling methods that enable the user to describe a business process from various perspectives. The great variety of model types, such as the event driven process chain (EPC) or object oriented methods of the Unified Modeling Language (UML) offer the possibility to describe a business scenario completely. The combination of process and object oriented methods makes ARIS a flexible architecture to address the needs of a fast changing business environment.
2. **The ARIS Toolset**² integrates several tools that support an eBusiness implementation approach that is business-process-driven. With the add-on *ARIS for Intershop Enfinity* it is possible to combine the model-based optimization of a process with the customization of the corresponding workflows within Enfinity. ARIS allows to model a business scenario starting with the corporate strategy and continuing with the business processes. At the end the technical processes which implement those business processes are represented by Enfinity pipelines.
3. **The Intershop eBusiness Modeling Method** is built on Intershop's experiences in many eBusiness projects and the special skills that an eBusiness platform like Enfinity requires from the project team. ARIS facilitates the requirements analysis and the definition of the customers' eBusiness solution. Moreover it supports the Intershop methodology in a perfect way and has therefore turned out to be the tool that Intershop prefers as a basis for their eBusiness Modeling Method.

The ARIS add-on component ARIS for Intershop Enfinity is the result of the joint development between IDS Scheer (www.ids-scheer.de) and Intershop Communications (www.intershop.com). It integrates the ARIS Toolset with the Enfinity pipeline development tool Visual Pipeline

¹ Beinbauer, M.; Habermann, F.; Scheer, A.-W.: Integrierte E-Prozeßmodellierung, Industrie Management 16 (2000) 3, S. 19-22.

² IDS Scheer AG, Saarbrücken 2001.

Manager. The foundation of the tool is built by a bi-directional interface which allows a direct data transfer via XML. A seamless modeling from the strategic decision down to the pipeline workflow is possible. With this, the main benefit is that ARIS for Intershop Enfinity enables a “top-down” development of an eBusiness solution based on reference models.

Furthermore ARIS for Intershop Enfinity provides a rich set of features, for example:

- The import of Enfinity pipelets, templates and pipelines is used to create reference models as implementation basis. It also provides the instrument for a complete documentation of the system.
- The pipeline export transfers the pipelines XML representation to the Enfinity application server which processes them directly. Together with the connection and modification of business process models and pipelines one can directly customize its eBusiness system.
- With the extensive reporting abilities of the tool and the fact that there is one source of models, one can generate project documentation during the different phases of a project. Starting at the Solution Scoping phase, continue with a solution proposal, moving forward with the requirement specification the process models are the basis for the technical specification, the project estimation and at last the system documentation.

The following figure shows a window out of ARIS Toolset with an opened toolbar of *ARIS for Intershop Enfinity*. Furthermore there is a front-end workflow diagram in the left and the linked pipeline diagram in the right.

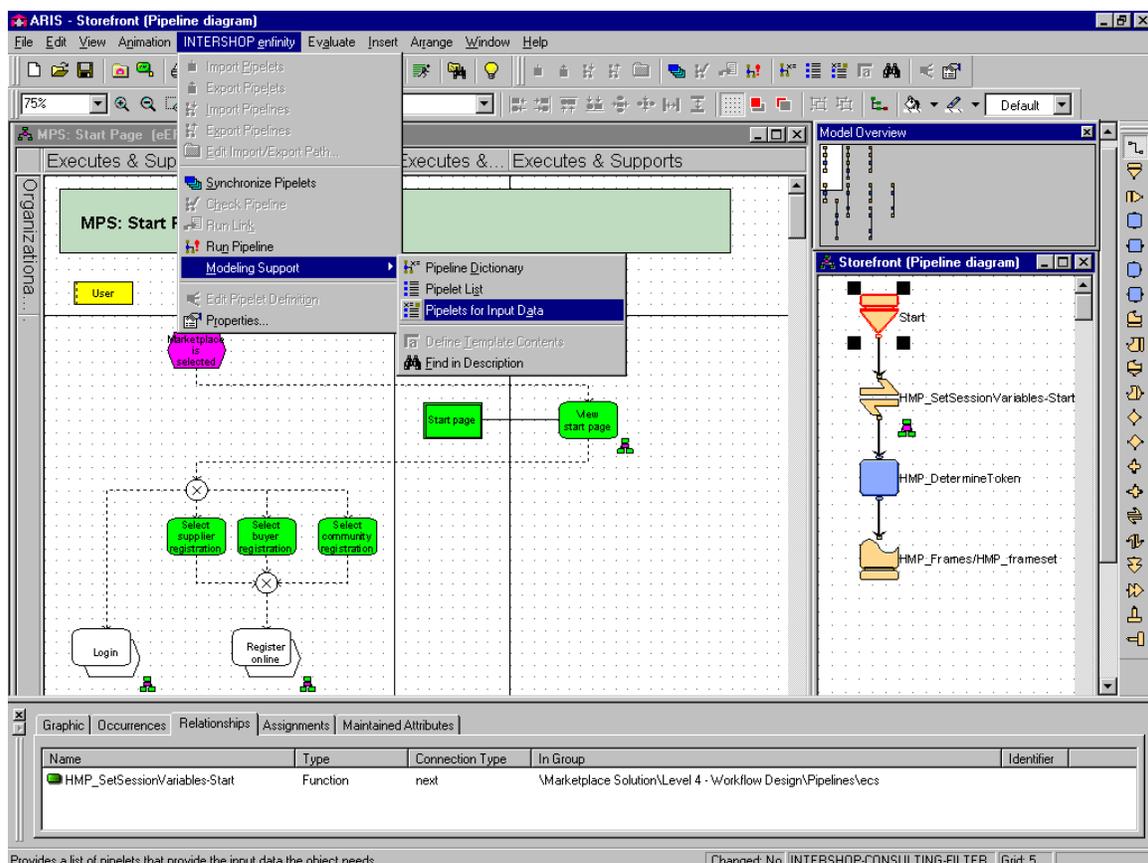


Figure 7: ARIS Toolset with ARIS for Intershop Enfinity

ARIS Toolset with its add-on ARIS for Intershop Enfinity fits different needs over the project life cycle. The project experiences have shown that ARIS simplifies the work during the requirement analysis and definition - furthermore reduces information loss over the whole project lifetime. In addition, the use of the tool leads to a better maintenance and faster adaptation of the implemented solution.

5. Reference Models

The *Intershop eBusiness Modeling Method* supports Enfinity projects during the whole project life cycle, e.g. the requirements definition is worked out in a business process driven way based on that methodology. Moreover, Intershop uses the *eBusiness Modeling Method* to create reference models of its eBusiness Components corresponding to that methodology. In that way these reference models enable the project team to easily define the requirements of the customer solution and to identify missing parts (DELTA) that need to be customized or developed. The following figure illustrates that approach.

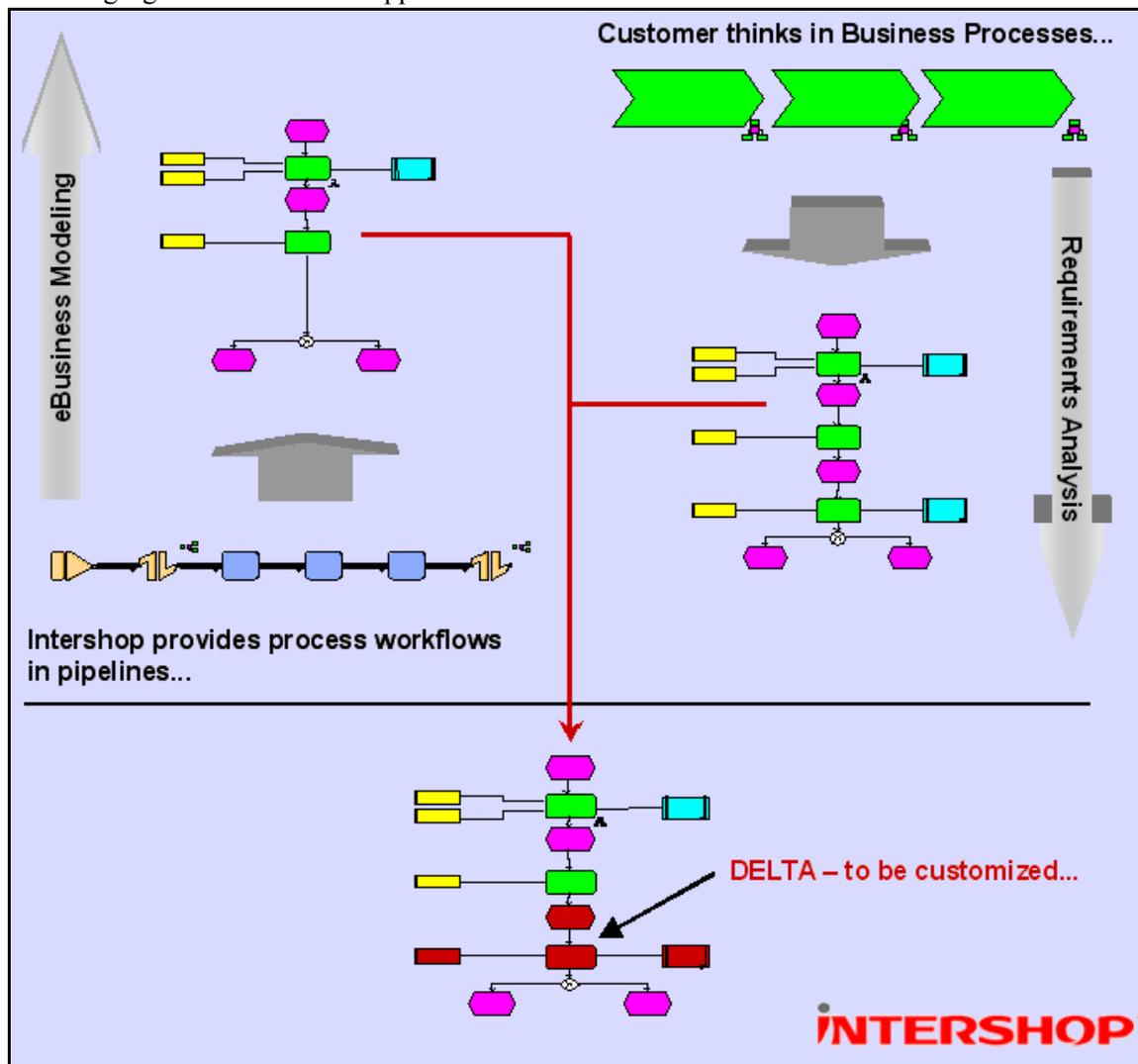


Figure 8: Intershop eBusiness Modeling Method – Requirements Mapping (DELTA Analysis)

Within the *Intershop eBusiness Modeling Method* processes are structured on four levels. Each level uses a collection of model types used for pre-defined purposes.

5.1 Level 1 – Business Scenario

The purpose of the first level is to provide an overview of eBusiness scenarios, common business models and the main business processes in the e-commerce sector. It is focused on the core business functions and their dependencies from a very high business perspective. The models support the first step of identifying an adequate business model for the customer's requirements. By identifying the business model and the related core processes, a first overview to specify detailed processes can be worked out.

The following model types are used on this level:

- value added chain diagram,
- process selection matrix/ diagram,
- business scenario diagram.

The major model type which is used on the first level is the value added chain diagram (see Figure 9). With this model type, the functions which are directly involved in the creation of a company's added value are identified. These functions are linked to the second level. The used objects can be arranged hierarchically, similar to a function tree. Additional information can be given to the viewer by modeling the functions' operators, with organizational units and information objects.

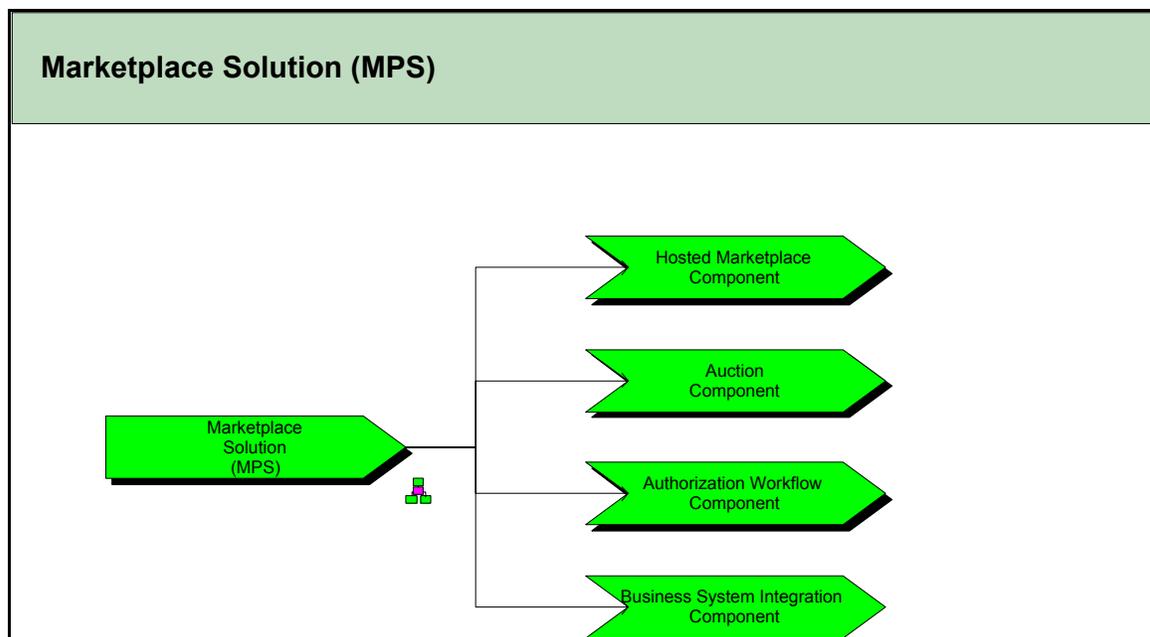


Figure 9: Example of a Value Added Chain Diagram - Level 1

5.2 Level 2 – Business Process Overview

At this level a segmentation of main processes according to different criteria takes place. The purpose of the models is to get an overview of the core processes of the customer solution and the associated sub-processes and functions. The models help to get a clear view of all customer requirements. The models are the basis for the Customer Requirement Specification and all following specifications.

The used model types at this second level are:

- value added chain diagram,
- function tree,
- organizational chart,
- process selection matrix.

The next figure shows the function tree diagram (see Figure 10) on the second level. It represents the hierarchical structure of the functions occurring in a company which can be grouped by different criteria. Within the *Intershop eBusiness Modeling Method* the function tree is used to visualize the features of the customer's eBusiness solution. The model displays a graphical overview of the main features and additionally each object includes a verbal description of the feature. The objects are used in the processes on the third level.

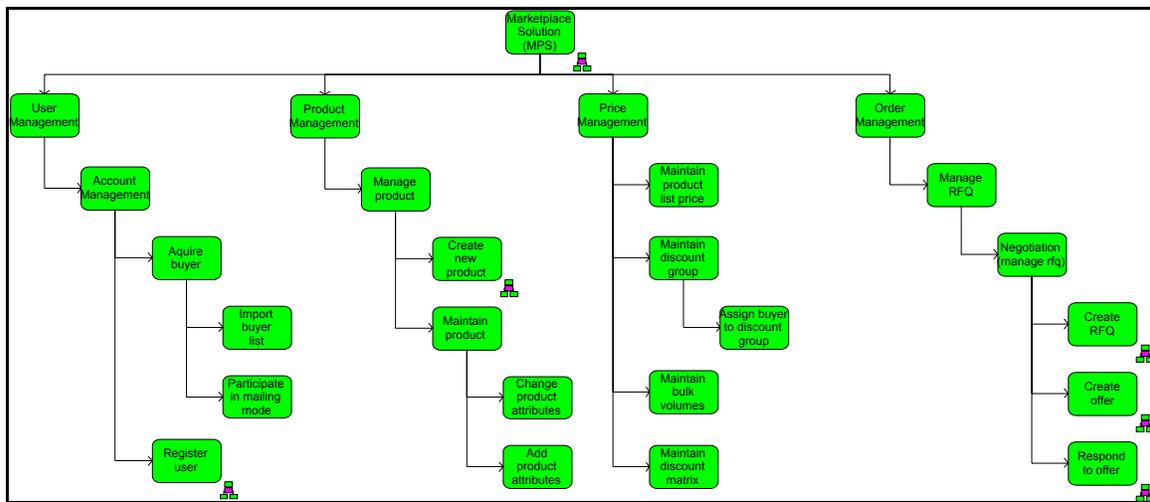


Figure 10: Example of a Function Tree Diagram - Level 2

5.3 Level 3 – Detailed Business Processes

That level shows models which are focused on the business process. They are modeled in a more detailed form by specifying different business functions. Such a business process is defined by a number of activities in a company which can be executed by different people and supported by different application systems.

Used model types on that level are:

- event driven process chain (EPC).

The event driven process chain diagram (see Figure 11) is used to model the procedural sequence of functions in the sense of business processes. This model type consists of two main objects:

- functions, which represent activities or technical tasks and
- events, which trigger functions or are the results of the processing of a function.

The business process model can be extended by a variety of information, such as the actor who executes the function or the application system which supports the execution. In order to keep the models structured and simple, the process chains can be modeled in a modular form. Thus, a core process is modeled in one overview EPC and the fine specifications are done in assigned sub-models.

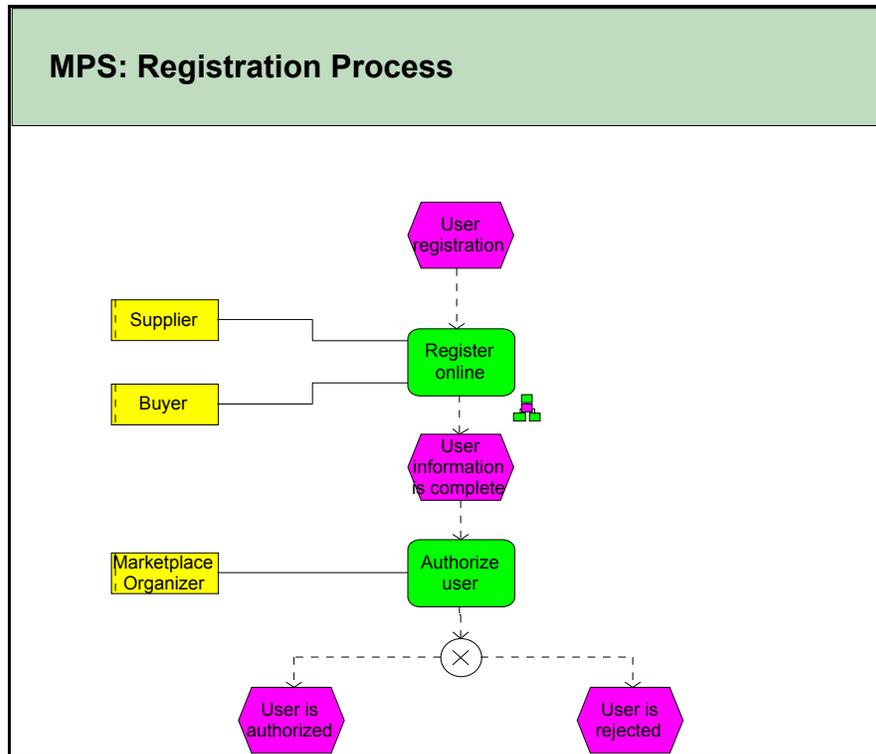


Figure 11: Example an Event Driven Process Chain Diagram - Level 3

5.4 Level 4 – Workflow Design

At this level the requirements are transferred to the Enfinity pipeline level by using existing pipelines, modifying existing pipelines or creating new pipelines. Via the existing bi-directional XML interface these pipelines can be directly transferred to the Enfinity system. Additionally the front-end workflow, meaning the interaction of the user with the system is modeled on that level. This type of modeling also provides the connection between the business process on the third level and the pipelines.

The following model types are used:

- event driven process chain in column display,
- Enfinity pipeline diagram.

The modeling of the user interaction with Enfinity is an important task on the fourth level. It links the business processes on level three with the Enfinity pipelines. The modeling is done in a front-end workflow model (left of Figure 12) which is also known as a “storyboard” and uses the EPC model type in column display.

The actors and the various systems, are modeled in the header of the columns. Each column contains the objects that are related to that actor. Starting with the triggering event of the process a pipeline is called in Enfinity (function in the right column). The result of the processing of that pipeline is the display of an HTML page (middle column) which builds the connection between the user and the system. The functions that are modeled in the left column below the HTML page are those that are available to the user. Mostly, those functions represent links or user inputs into a form. The functions lead to the next pipeline call, a resulting event or a sub-process.

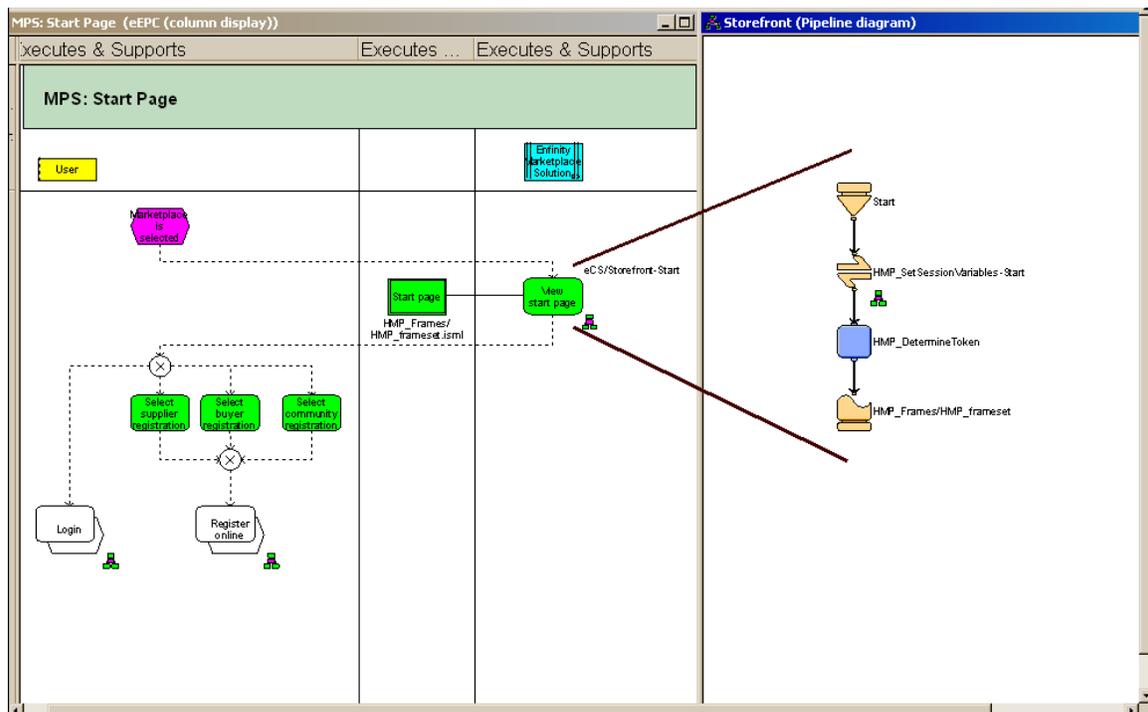


Figure 12: Example of a Front-end Workflow and a Pipeline Diagram in ARIS for Intershop Enfinity – Level 4

6. Summary and Outlook

The competition between standard eBusiness software providers is increasing. Customer expectations are not only a scalable and reliable eBusiness solution with a rich feature set out of the box and standardized interfaces to connect to, but also proven business components for supporting their business scenarios and a strong methodology to transform complex requirements into eBusiness technology. Also maintenance costs, efforts for further developments and return on investment of implemented solutions are essential for the customer.

Our real life implementation experiences in building successful eBusiness solutions showed us the importance of having the business model and the scenarios precisely defined, the most important business processes fixed, and the integration into existing process and IT landscapes defined and accepted, before starting the implementation of eBusiness systems.

The *Intershop eBusiness Modeling Method* is the result of eBusiness consulting experiences during lots of successful eBusiness projects. The business-process-driven modeling method is based on Intershop's eBusiness Solutions and *ARIS for Intershop Enfinity* of IDS Scheer's eBusiness Suite as the business process modeling tool.

During the entire life cycle of an *Intershop Enfinity* project, the *Intershop eBusiness Modeling Method* provides a common base of communication with all participants. The business-process-driven modeling method is also used to create reference models for Intershop's eBusiness Solutions.

This "best practice" approach builds the bridge for the successful transformation of business requirements into eBusiness technology - based on *Intershop Enfinity*.

The main reasons for Intershop's choice using *ARIS Toolset 5 - E-Business Suite as the business process modeling tool*, was the successful cooperation between Intershop and IDS Scheer during their joint development of *ARIS for Intershop Enfinity* and the great results in deploying *Intershop's eBusiness Modeling Method* in projects.

With the most recent release *ARIS Toolset 6 - Collaborative Suite*, IDS Scheer offers various functionality for designing, analyzing, implementing and optimizing business processes and disposes of a browser enabled Front-End. This means platform independence for users, worldwide availability, high scalability and low administration costs.

Intershop and IDS Scheer will proceed in working closely together with implementing further improvements on *ARIS for Intershop Enfinity* and will reinforce the *Intershop eBusiness Modeling Method* based on successful eBusiness project experience and professional Consulting Services.

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