

December 2002

Evolution of Electronic Catalogs to Customer Process Portals) A Structured Approach at ETA S.A.

Rainer Alt

University of St.Gallen, Institute of Information Management

Marc Caesar

University of St.Gallen, Institute of Information Management

Christian Reichmayr

University of St.Gallen, Institute of Information Management

Rudolf Zurmuehlen

ETA SA Fabriques d'Ebauches, Customer Service

Follow this and additional works at: <http://aisel.aisnet.org/bled2002>

Recommended Citation

Alt, Rainer; Caesar, Marc; Reichmayr, Christian; and Zurmuehlen, Rudolf, "Evolution of Electronic Catalogs to Customer Process Portals) A Structured Approach at ETA S.A." (2002). *BLED 2002 Proceedings*. 19.
<http://aisel.aisnet.org/bled2002/19>

This material is brought to you by the BLED Proceedings at AIS Electronic Library (AISeL). It has been accepted for inclusion in BLED 2002 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

15th Bled Electronic Commerce Conference

eReality: Constructing the eEconomy

Bled, Slovenia, June 17 - 19, 2002

Evolution of Electronic Catalogs to Customer Process Portals – A Structured Approach at ETA S.A.

Rainer Alt

University of St. Gallen, Institute of Information Management
Switzerland
Rainer.Alt@unisg.ch

Christian Reichmayr

University of St. Gallen, Institute of Information Management
Switzerland
Christian.Reichmayr@unisg.ch

Marc A. Cäsar

University of St. Gallen, Institute of Information Management
Switzerland
Marc.Caesar@unisg.ch

Rudolf Zurmühlen

ETA SA Fabriques d'Ebauches, Customer Service
Switzerland
Rudolf.Zurmuehlen@eta.ch

Abstract

First-generation E-commerce applications, such as corporate web sites or electronic catalogs have often been developed from a technological or marketing perspective. Technological features do not fit the customer's requirements or marketing does not conceive E-commerce as part of their customer relationship program. Disappointing transaction figures or business cases for E-commerce are the most common result. We argue that process thinking needs to be introduced in

E-commerce projects in order to match customer and internal processes. A structured approach to identify and decompose customer processes in portal elements has been developed together with ETA SA, a subsidiary of 'The Swatch Group'. In this process ETA's existing E-commerce system will evolve to become a customer process portal.

1. Introduction

1.1 Limitations of First Generation E-Commerce Systems

In many companies E-commerce is already becoming of age. During the so-called first phase of E-commerce, simple web pages were developed and successively expanded to catalogs. Despite the growing number of Internet hosts - from 43 million in 1999 to 125 million in 2001 [15] - the number of commercial electronic transactions has, however, been disappointing. Tempting technological systems have not met the customer's requirements: long interactions requiring manual data entry, confusing user interfaces with long download times, security concerns are only some examples. On the sell-side, many customers just stuck to conventional channels such as fax, call-centers, sales reps or physical stores.

Looking at the functionality, a study by Lohse/Spiller [44] revealed that out of 137 Internet retail stores only 6 percent offered a product search function, 4 percent a page index, 12 percent a help function and less than 9 percent an FAQ section. 47 percent offered no possibility of interactive communication by e-mail. Similar Studies, e.g. [43], [61], [28] or [23] also concluded that analyzed Internet sites lack functionality that would be required by customers. A more recent analysis by Dutta/Biren [22] shows that only one quarter of the 120 analyzed Global Fortune 500 companies fully utilized the possibilities provided by the Internet.

Thus, one of the foremost questions that need to be answered is how companies discover the functionalities which are required by the users. One explanation that many E-commerce-systems were unable to fulfill the expectations can be attributed to the lack of orientation regarding the actual customer needs (cf. [58], [49], [50]). In a survey of 60 managers from a group of the 2,500 world's largest companies Chatham et al. [9] confirmed that marketing and sales activities often focused on the offered products and did not address additional customer problems. For example, only 48% of the companies recognized the customer problem before the customer and 43% offered customer services based on the customer's profitability.

On the other hand, some examples illustrate that customers can be attracted to use E-commerce-Systems. Cisco Systems achieved cost savings of \$330 million by answering 83 % of their customers' support questions online and completing 82% of their purchases through Cisco's web site. Cisco was able to redeploy over 1,000

engineers and more than 600 customer service representatives to higher value-added tasks [14]. At General Electric, online transactions grew from \$0 in 1998 to \$1 billion in 1999 and to over \$7 billion in 2000. For 2001 15% of their total revenue is expected to come from online sales [26]. Clearly, combining technological innovation with customer-orientation is key behind such adoption rates.

1.2 Goal of Paper and Research Question

Good support of the customer's problem means understanding and supporting his processes [46]. A systematic analysis of customer activities and bringing them in sync with the strategic goal of a company needs to be one of the foremost tasks for E-commerce-developers. We believe that existing knowledge and experience in the area of Business Process Reengineering (BPR) is helpful to achieve this. In applying the Business Engineering methodology [45] we aim to present an approach which structures the main activities and results on the three layers strategy, processes and systems.

The present article uses the example of ETA SA, a subsidiary of "The Swatch Group", to illustrate how customer process-orientation was systematically implemented by enhancing the ETA Online Shop (EOS), a first generation e-commerce system, into a customer process portal. Chapter 2 presents different approaches from literature to "customer orientation" and various relevant development methods. In chapter 3 the building blocks of the method will be described. Finally, chapter 4 explains the situation at ETA SA and the existing EOS. Two techniques – customer process analysis and portal design – will be described to demonstrate how the result documents for the process portal have been obtained. Lessons learned and a summary follow at the end.

2. Development of Customer-Focused Systems

2.1 Customer-Orientation and Process Portals

The primary goal of customer orientation is to achieve loyalty and a lock-in which is valued by the customer. Studies show that keeping a customer is five to seven times cheaper than winning a new customer [40]. A literature review revealed that dimensions of customer-orientation ranged from guidelines for the design of products, services, and related marketing strategies (cf. [39], [21]) to management philosophy and corporate culture (cf. [62], [41]). Others emphasize the role of IT and mention that the "consumer is being transformed from passive buyer to active

participant in co-creating value“ [cf. 50]. Companies are enabled to focus on the customer’s problem instead of concentrating on the product (cf. [59], [29]). Since customer-orientation originates from the supported processes, we use a more detailed perspective which emphasizes various process categories. According to Davenport [16], “processes at the customer interface are perhaps the most critical to an organization’s success.” For example, the customer resource life cycle (CRLC) presented by Ives/Learmonth [37] distinguishes between acquiring, using and owning a product or service. The underlying idea is based on the cycle of processes, which the customer goes through during the physical acquisition of products or services. It is comprised of four main steps (requirements, acquisition, stewardship, and retirement) and 13 partial steps.

Customer process portals start with the requirements of the customer process and cover the entire cycle as completely as possible [46]. They compile both their own services and those of cooperation partners and Web service providers (cf. [46], [53]). Kalakota/Robinson [38] define a customer process portal as an “aggregated set of services for a specific well-defined group of users“. Davydov [17] sees a portal as a “unification platform that allows for a collection of application services to work together to facilitate access to the world of information”. Innovative companies, such as Avnet Marshall, have already begun to support the entire customer process, i.e. the process that a customer goes through until his need is satisfied. They offer a single source for multi-vendor products, the necessary services and information that he needs as well as guidance in the performing the process steps. These companies adopt the role of service integrators and specialists for an entire process or at least parts of the customer process [46].

2.2 Methods for Developing Process Portals

Developing process portals is complex in nature and requires the analysis of multiple aspects on strategy, process and system level. Therefore, we apply a methodical approach for enhancing existing E-commerce-systems to become customer process portals. Literature provides a wide realm of research which is relevant to process portals, e.g. cooperation management, business process redesign , customer process analysis, portal/web design and IS implementation. Methods out of the above-mentioned areas were analyzed. Their strengths, weaknesses and usability to develop customer process portals are summarized in **Table 0-1**.

However, each of the methods covers only a small portion of the described problem of developing E-Commerce applications while allowing for customer process orientation. Due to the relevance of processes and the generalized nature, a BRP-approach has been chosen for the fundamentals of process design. In addition, elements of customer process and portal development methods have been included in the development of two techniques for process portals.

Strengths	Weaknesses	Examples
Methods for Cooperation Management		
<ul style="list-style-type: none"> - <i>Propose examples of models for establishing and managing co-operations</i> - <i>Often include political and social aspects</i> 	<ul style="list-style-type: none"> - <i>Lack advice on specific types of co-operations and the role of IT</i> - <i>Inadequate specificity concerning business or customer processes</i> 	[20], [27], [31], [12], [56]
Methods for Business Process (Re-)Engineering		
<ul style="list-style-type: none"> - <i>Generalized and applicable to a variety of industries</i> - <i>Specialized methods (e.g. for supply chain or customer relationship management) include specific knowledge</i> 	<ul style="list-style-type: none"> - <i>Low representation of customer-oriented activities</i> - <i>Specific methods neglect other processes, e.g. transaction processing in CRM-methods</i> 	[16], [32], [7], [13], [42]
Methods for Customer Process Analysis		
<ul style="list-style-type: none"> - <i>Provide support in analyzing the customer process from different perspectives</i> 	<ul style="list-style-type: none"> - <i>Theoretical approaches without instructions for workshops or links to other methods</i> - <i>Lack of structured result documents</i> 	[24], [18], [54]
Methods for Portal Design and IS Implementation		
<ul style="list-style-type: none"> - <i>Include valuable guidance to technological implementation and design</i> 	<ul style="list-style-type: none"> - <i>Strong bias towards on vendor and weak support at strategy and process levels</i> - <i>Neglect customer orientation, and focus on internal aspects</i> 	[5], [57], [36], [60]

Table 0-1: Overview of Existing Methods for Process Portals

3. Elements of a BPR-Method

3.1 Research Methodology

The development of the process portal method follows the action research approach. The researcher is directly involved in the project and becomes part of the experiment [10]. The technique for the one-day workshop has been applied three times so far: on July 12, 2000, at “The Swatch Group” headquarter in Biel, Switzerland, with 21 participants and 4 moderators, as well as on April 10, 2001, at ETA SA in Grenchen, Switzerland, with five participants and one moderator. A slightly modified version has been used on August 7, 2001, at BBraun in Melsungen, Germany, with eight participants and three moderators.

The design of the techniques itself followed the guidelines of method engineering which was developed by Gutzwiller/Heym (cf. [30], [33]) to ensure the systematic development of methods. It has been used in the definition of various methods, which are being used successfully in practice, namely a BPR-method [35] and a method for the implementation of standard application software [36]. Methods based on method engineering principles consist of five building blocks: the procedure model contains the recommended sequence of all top-level activities, techniques describe how one or more results can be achieved, result documents are produced for the documentation of results, roles describe who is participating, and a meta model contains the main objects of design and the relationships between these objects.

3.2 Procedure Model and Techniques

The procedure used in developing process portals consists of two separate techniques that are subdivided into further steps (s. **Figure 0-1**):

- The technique *Customer Process Analysis* assists the initiator of the project in analyzing and modeling the customer processes, the required services, and the existing information systems. These form the prerequisites for the design and the implementation of a process portal. The method was developed during a preliminary study for the development of an employee portal for ‘The Swatch Group’ in cooperation with Linkvest S.A., Renens/Lausanne. It consists of two parts: (1) personal interviews with individuals from different corporate divisions, and (2) a one-day workshop.
- The technique *Portal Design* assists the initiator in developing a process portal on the basis of defined customer processes. This includes grouping the portal services according to portal components, assigning customers to customer groups, and allocating access rights to portal content and/or portal components, describing the customer process, defining IS requirements, and developing

and/or implementing a portal prototype, and roll-out. The procedure was developed and used for the creation of the process portal of ETA-Customer Services, Grenchen, Switzerland, between April and October of 2001.



Figure 0-1: Procedure Model and Techniques

3.3 Role Model

The assignment of activities to ultimate units of responsibility is referred to as the role model. Roles are assumed by a business unit or individual employees and involve tasks, competencies and responsibilities. The role model starts off by distinguishing the familiar roles of the people concerned: moderator, decision-maker, responsible person and supporter and includes as the key element business partners or customers. The project initiator applies the technique and uses the roles shown in **Table 0-1**.

Roles in General	Project Initiator (PI)	Pilot Partner (PP)
Moderator (M)	Internal or External Consultant	
Decision Maker (E)	Management Level	Departments and Management Level
Responsible Person (V)	Departments and IS/IT Department	Department and IS/IT Department
Supporter (U)	IS/IT Department	IS/IT Department

Table 0-1: Roles of 'Customer Process Analysis' Technique

3.4 Meta Model

According to Brenner [8], a meta model is the conceptual data model of the results of a method and represents the constituent parts of the major design results of a method. Its purpose is to ensure consistency, providing a rapid overview of description and design areas and the terminology employed. The terms and their interrelationships are explained for each level (strategy, process, IS). **Figure 0-2** shows the meta model at the strategy level with its entities and relationships.

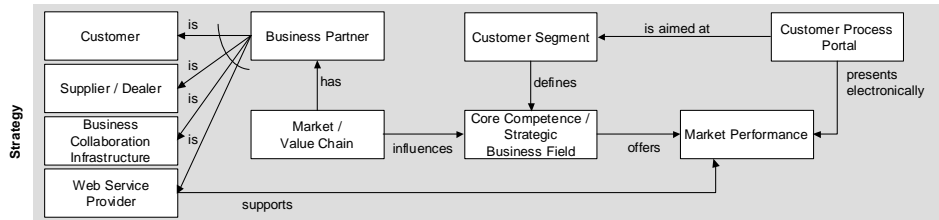


Figure 0-2: Meta Model at Strategy Level

4. Application of Method at ETA SA

4.1 E-Commerce at ETA SA

ETA SA Fabriques d'Ebauches in Grenchen, Switzerland, is a member of 'The Swatch Group', a global producer of watches for brands, such as Omega, Rado, Longines, Tissot, Certina and Swatch. The group consists of a number of individual companies, which among others, focus on watches, finished movements for watches, component production and research and development. Producing components for the individual brands involves various member companies. ETA SA employs about 10,000 people worldwide and supplies the movements and spare parts for watches to all brands of 'The Swatch Group'. As the world's third largest manufacturer of movements, ETA SA has over 15 production sites in Switzerland, Germany, France, Thailand, Malaysia and China.

The desire for greater customer orientation, improved cost efficiency, quicker order processing, and a global presentation was the starting point for the e-Business activities of ETA SA in 1998. The activities focused mainly on optimizing (transaction) processes in ETA's customer service (ETA-Customer Service, ETA-CS), which is responsible for the distribution of watch spare parts, repair of movements, and technical advice. ETA SA sells its products and services to approximately 1,500 business customers worldwide.

The result of the first phase was the realization of the ETA Online Shop (EOS) in December of 1999, a first generation E-commerce-solution for the distribution of watch spare parts worldwide (s. **Figure 0-1**). A detailed description of the initial situation and the development of the EOS can be found in [51]. The advantages of the EOS for ETA SA's business customers mainly consist of higher transparency of the offered services and processes, complete technical product documentation and installation instructions, and faster processing at lower costs. Today, approximately 60% of all spare parts transactions are processed via the EOS.

Although the EOS is already oriented towards supporting spare part customers, it still does not cover the customer process completely. Main functionalities are transaction handling, but important problems the customer is faced with before and after the purchase were not addressed by EOS. Among the examples are identifying, which spare part is needed in the first place, or the repair and maintenance of movements, etc. Therefore, additional functionality, such as stock policy, order, repair or parcel tracking, were developed and are available since December 2001 in EOS version 3.0.

ETA SA, Customer Service

PRODUCT LIST

I. Select product family then choose caliber

Productfamily:

Caliber:

II. Select caliber only

Caliber:

III. Type in caliber number

Caliber:

[Add not listed products](#)

You selected the caliber: 955.112.

Go to the [product description download area](#)

EO* = Emballage d'origine, originally packed

Quantity <small>(Please fill in)</small>	No. Article	Description	Price <small>(per 100 components)</small>	EO*
<input type="text"/>	00100.955112.41	PLATINE DORE/SABLE	SFr. 725.00	--

Figure 0-1: Screenshot of ETA Online Shop (EOS)

In view of the good initial acceptance the goal was set to use EOS also as communications channel to customers and to attract more customers in order to reduce the manual transactions which were not already supported. The key to both objectives was increased customer-orientation and, subsequently, the development of a process portal was decided. In addition, possible services, such as industry

information, events, training, mailings, error classifications, communities, etc. could not be integrated into the EOS from a technical point of view. Therefore, the process portal should integrate new services, which will comprise both the EOS, content of the ERP systems, and additional information (also from external suppliers). Using the techniques customer process analysis and portal design, the development of the CS portal is described in the following chapters.

4.2 Technique: Customer Process Analysis

4.2.1 Business Goals and Portal Enablers

A company's (strategic) business goals and portal enablers are the starting point for the development of portal processes and services. Portal enablers are general conditions, which exert an influence on the design of the portal architecture and processes. They are derived from the business aspects of a network, from the policy and/or culture of the participating partners, from general functional and technical conditions of portal information systems, and from portal projects or from application architecture drivers. Portal enablers can be qualitative and quantitative by nature. Since companies normally apply only a few factors during the actual design process, the selection of the 'right' portal enablers is very important. Among the dimensions are:

- *Business/Networking*: Combines economic factors, which determine the portal architecture and processes.
- *Politics*: Refers to the acceptance of a planned portal and the processes considering the personal view of each of the participating enterprises/partners.
- *System*: Concentrates on the general functional conditions of a future portal.
- *Technology*: Determines the general technical conditions of current and future portals.
- *Project*: Provides reality check from implementation perspective and examines the feasibility of project portfolios.
- *Cost Drivers*: Offer a cost perspective of the drivers named above. They examine a solution's efficiency.

The results of comprehensive customer workshops at ETA SA in 1996 were revisited in April 2001 and scrutinized during a workshop with representatives of CS's management, project management, IT support, as well as the 'Customer Counter'. The most important results of the determination of the business goals and the portal enablers were the statements that ETA-CS should present itself more professionally to the customer, that its processes have to become more transparent,

and that the IS solution needs to be supported by CS's own resources. This affects both the creation of content, programming, and application maintenance.

4.2.2 Customer Segments and Customer Process Components

Getting the most important stakeholders in the boat is important for deriving the customer processes [25]. These customer segments are groups or persons to be addressed, who have a direct influence on the project's advancement and/or are directly or indirectly affected by the project goals [35]. The customer segments which were identified during the ETA-CS workshop in 2001 are shown in **Table 0-1**.

Component Customer	Component customer for movements and spare parts – non-SG brands, watchmakers, wholesalers, and SG brands
Business Unit	Business units ETA (except for ETA-CS)
Interested Persons	Every additional prospective buyer
Employees	ETA-CS employees

Table 0-1: ETA-CS Customer Segments

The portal's services, requirements, and expectations are determined individually for each customer segment. The results are then jointly categorized by the participants and form the customer process components (s. **Figure 0-2**). These establish a first pattern for sorting the future portal components. The workshop results were refined by the project team afterwards. The customer process components are created during the workshop for simplification reasons according to the main processes. In order to identify the services expected by the customer segments, the results were assigned to the internal core processes 'technical support', 'spares', 'repairs', and 'info'. Within these groups, services can be subdivided into additional sub-groups, e.g. 'info' can be split into the sub-groups 'daily news', 'general', etc.

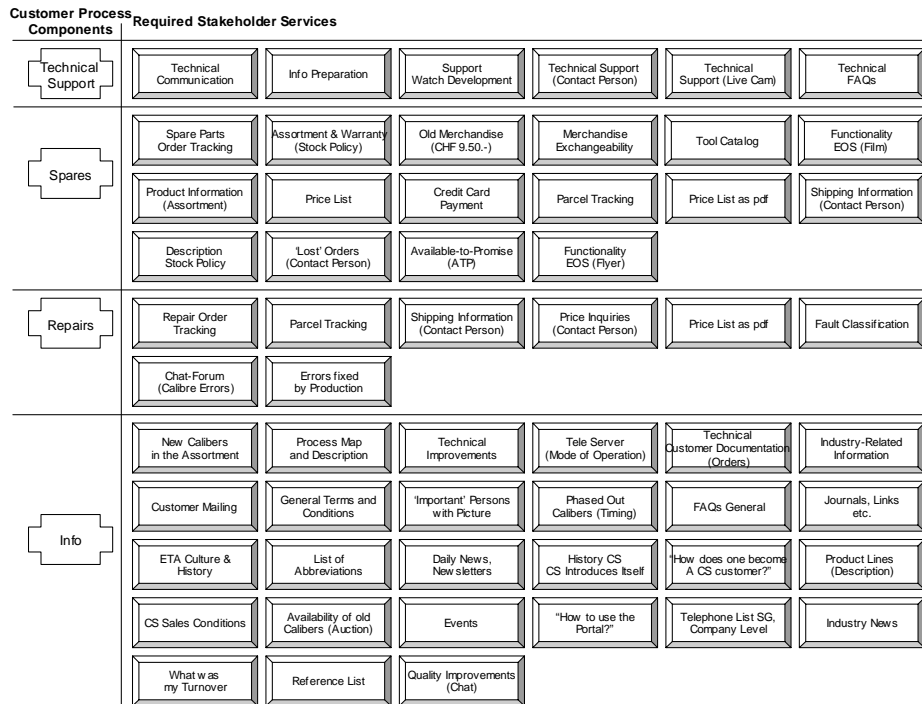


Figure 0-2: Customer Process Components and Services

4.2.3 Customer Process Activities and Services

To derive the customer process during a workshop, the ‘classical’ BPR-process analysis in the form of deriving the *process architecture* according to ([45], [2]) has been enhanced. The analysis begins with a rough overview, parts of which are then refined in several context diagrams. During the described workshop, however, all processes and their services are needed in context. Therefore, a so-called *customer process context diagram* has been introduced. It leads to a good overview and/or rough results within a short period of time. The advantage lies in the gradual analysis of the (1) processes, (2) services, (3) additional process participants, and (4) affected IS in a single process. The disadvantage of the customer process context diagram is that a separate moderator for small groups and a supervising moderator for all groups is needed, who motivates the participants and keeps them focused. According to their customer segment, the workshop participants are split up. The actual development of the customer process diagram consists of four steps (s. **Figure 0-3** and **Table 0-2**):

1. *Identification and/or breakdown of the customer segment.* The 8-10 main processes of each segment are lined up chronologically depending on a typical daily routine. Subsequently, the processes are described in a process register.

2. *Identification and classification of main services.* Services are placed to the left and right of the process row, which ‘flow from top to bottom’, e.g. from process 1 to process 3. To the right of the process row, services are placed, which ‘flow from the bottom to the top’, e.g. from process 5 to process 1. Each service is marked with a consecutive number and is subsequently described in a service register.
3. *Identification of additional process participants.* Additional customer segments to which relationships exist within the processes are described in a separate column of the service register and described in the customer segment register.
4. *Identification of existing IS.* The IS which support the services are documented in a separate column in the service register and described in an IS register.

A separate customer process matrix was developed for each stakeholder within approximately four hours and subsequently discussed with the participants.

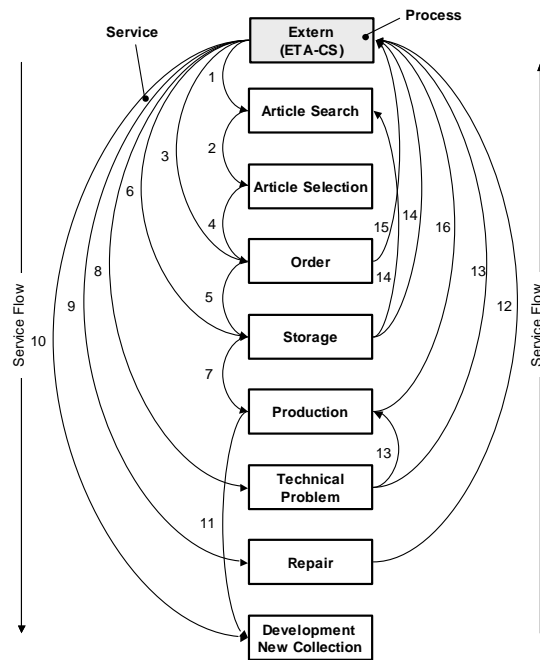


Figure 0-3: Customer Process Matrix for ‘Component Customer’

Process	Core Task		
Item Search	Identification of the spare parts to be ordered and determination of the item in the ETA-CS's assortment		
Order	Checking of purchasing and payment conditions and sending of order		
....	...		
No.	Services	Add tional Process Participants	IS
1	Technical information, information preparation, item interchangeability, stock policy	ETA-CS	A
2	Missing items, order quantity		B
...
Nr.	Supported Services	Name	Descrip ion
A	1, 3, 4, 6, 8	ETA Online Shop (EOS)	ETA-CS's e-shop solution
B	2, 5, 7, 11	Ramco	ERP system
...

Table 0-2: Process, Service, and IS Register of 'Component Customer'

4.3 Technique: Portal Design

4.3.1 Portal Components Identification

The final result of the customer process analysis consists of the specified customer processes as well as the defined portal services. During a first step, these are checked for their availability according to the following criteria: (1) electronically available, (2) not yet electronically available, (3) not yet available, and (4) not available, relevant only for (a) later version(s) of the portal. Accordingly, it is possible to early identify missing portal services. A schedule is developed and responsible persons are assigned to the creation of missing services and/or their conversion into electronic form. During the analysis of the portal services, it became apparent that only those services had been available electronically so far, which were already in use in the EOS or on ETA's general homepage. Important services, such as information on items, were available, but not in electronic form. The majority of services did not exist.

The portal services are classified according to the stages of the CRLC. During the creation of these portal components, a clear, intuitive, and particularly quick user guidance should be considered. For the CS portal, four portal components and special sub-components were defined: 'products & services' comprised all services around ETA-CS's core products. This includes the sub-components 'Technical Services', 'Spares Tracking', 'Repair Tracking', 'Products & Ordering', and 'Repair'. 'News & Links' contains general services around mailings and information on the industry with the sub-components 'CS-news' and 'Industry'. 'About CS' combines general services in respect to CS and 'Help & Contact' contains general assistance and information on contact persons and know-how.

4.3.2 Security and Authorization Concept

Not every user should be able to access all information or perform all processes unhindered. Authentication allows to identify each user and to assign certain rights and obligations within the limits of his authorization (cf. [1], [6], [3], [11]). To avoid that ETA needs to manage every user individually, roles or user groups were assigned which are equipped with rights and obligations [4]. These are defined and assigned in authorization and access control lists for specific services.

The access control list corresponds to the assigned portal services for portal components. The authorization list is oriented according to the EOS. The customer data is maintained in the ERP system, from where they are automatically transferred to the EOS in predefined cycles. However, not the personal data is saved as user data, but company and/or department data, e.g. Breitling Chrometrie, CH 2306 La Chaux-de Fonds, etc. and any contact persons. This being that ETA-CS does not have to maintain all employees of its business partners. A separate authorization list (s. Figure 0-5) consisting of three user groups (s. Figure 0-4) with individual rights is prepared for controlling access to portal services.

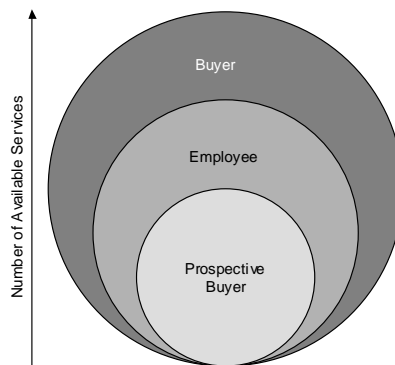


Figure 0-4: Portal User Groups

The access limitation is designed to enable the user group of the larger circle to access its own specific content and that of the smaller circle. For example, the user group ‘prospective buyer’ can only access public components such as e.g. ‘About CS’, or ‘Help & Contact’. The group ‘employees’, which normally includes spare parts and/or repair customers of CS, can also access the tracking applications, while only the user group ‘buyer’ is allowed to order spare parts via EOS (s. **Figure 0-5**). It applies both to the CS portal and to the EOS that the user data is maintained in an ERP system and transmitted afterwards. Accordingly, a clearly leading system exists and data is not maintained redundantly. The allocation of users to the portal user groups is also located in the ERP system.

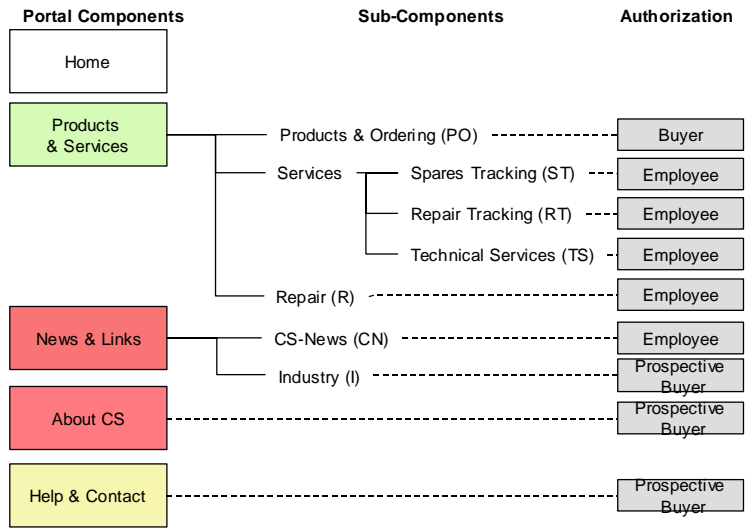


Figure 0-5: Portal Authorization List

4.3.3 Customer Process Representation

The representation of the customer process is decisive for whether the customer will find his way through the process portal and use it, or whether he will feel left alone with his problems. The implementation process has to be balanced individually between the extremes of ‘structured link collection’ and ‘completely predefined process sequence’ (workflow). Both extremes are oriented according to the underlying customer process. The structured link collection aims at users who are familiar with the use of portals and the arrangement of components and who will quickly find their way to the desired service. An example for this is the solution used by Avnet Marshall (www.avnet.com). The predefined process sequence mainly aims at one-time or first-time users. The tasks to be completed are

determined using questions, which anticipate the portal user's intention. An example is Yourhome used by Credit Suisse (www.yourhome.ch).

A mere link list becomes increasingly confusing when the number of services grows (regarding the example of the ETA-CS, 59 services were identified during the first workshop). A completely predetermined process sequence for the use of individual services, however, is time consuming and tends to be user-unfriendly. It is therefore used when absolutely necessary, e.g. shop-transactions, order tracking, etc. Link lists with corresponding components are used where the result can be understood intuitively. Both extremes can be supplemented with simple, intuitive questions that reflect the problem from the customer's point of view. The CS-portal is using both forms of representation. Process sequences are used by EOS, Spares, Parcel, and Repair Tracking. These represent the core services of the ETA-CS and the CS-portal. Link compilations were defined for the remaining services and additionally combined with intuitive questions for identifying services within the components.

4.3.4 IS-Specifications

The derived business goals and the portal enablers form the starting point for the IS-specifications. The definition of criteria of the IS-requirements follows the approaches of [34], [19], [48], [52], [47], [55], [17] and can be sorted along the portal functionality: presentation, personalization, security, integration, search/navigation, content management, collaboration, role management, and administration. The identified criteria are subsequently weighted and result in a 'criteria catalog' for the development of the IS architecture. Using a criteria catalog for the CS predetermined budget limits, and the Swatch Group guidelines, Microsoft Share Point was selected as the portal software.

4.3.5 Pilot-Portal and Roll-Out

By the end of September 2002, a pilot portal will be developed and subjected to a first testing phase by pilot customers. During customer workshops, the feedback of the pilot customers will be recorded. These change requests will be implemented subsequently before the integration of the EOS into the ETA portal can take place. The portal's global roll-out is scheduled to take place by the end of 2002.

5. Conclusions

Using the case of ETA SA an evolutionary path for first-generation E-commerce-systems has been described. Having explored the benefits of typical transactional catalogs and order-entry systems, such as e.g. reduction of article search times by 90 %, reduction of order cycle time by 60 %, improvement of article master data or transparency over internal processes, the question of how adoption can be increased has been addressed. Starting from our initial hypothesis customer-orientation was identified as the main design variable and as key to overcome adoption problems. We argued that BPR-thinking can be applied to discover the elements in the customer's process and to translate them into portal services. Starting from business goals and portal drivers, the method focused on the portal's stakeholders, their processes and consistently implemented these into the IS specifications.

Starting from an electronic catalog and homogenized master data, additional stages in the customer process were analyzed. The electronic catalog was enhanced with functionality concerning technical support, spare parts, repairs and information. Among the advantages of the presented action research methodology were:

- Customers participation was ensured at an early stage. The involvement of the different portal customers guaranteed to find out about the value-adding elements of an E-commerce-system.
- Providers of an E-commerce-system, such as ETA SA, obtained a profound understanding of the customers' requirements and closer relationships to their customers since they got detailed feedback about customers' needs and prerequisite for a customer process portal.
- A clear segmentation of customers into the different stakeholders such as component customers, ETA business units, other potential customers and internal ETA-CS allows for a tailored design of the services offered.
- A structured analysis of the complex design factors and a systematic documentation of the results obtained in the portal design process allows the guidance of the customer along his customer process.
- The design of portal interfaces depending on the user profiles and the according authorization and security concept are necessary building blocks to ensure a complete and consistent implementation of a customer-oriented process portal.

In the future, the evolution of the presented customer process portal might focus on a company-wide spare parts portal, which not only include products and services offered by ETA SA but also those offered by sub-suppliers and brands.

References

- [1] Ahuja, V., *Network and Internet Security*, Academic Press, Chestnut Hill, 1996
- [2] Alt, R., Reichmayr, C., Puschmann, T., Leser, F., Österle, H., An Engineering Approach to Develop Business Networks, in: Schmid, B., Stanoevska-Slabeva, K., Tschammer, V. (Eds.), *Towards the E-Society: E-commerce, E-business, and E-government*, 1st IFIP Conference on E-commerce, E-business, E-government (I3E), Kluwer, Norwell, 2001, pp. 209-228
- [3] Amor, D., *The e-business (R)evolution: Living and Working in an Interconnected World*, Prentice Hall PTR, Upper Saddle River, 1999
- [4] Balzert, H., *Lehrbuch der Software-Technik*, Spektrum, Heidelberg, 2000
- [5] Bayles, D., *Extranets: Building the Business-to-Business Web*, Prentice Hall, Upper Saddle River, 1998
- [6] Bernstein, T., Bhimani, A.B., Schultz, E., Siegel, C.A., *Internet Security for Business*, John Wiley & Sons, New York, 1996
- [7] Bowersox, D.J., Closs, D.J., *Logistical Management: The Integrated Supply Chain Process*, McGraw-Hill, New York etc., 1996
- [8] Brenner, C., *Techniken und Metamodell des Business Engineering*, Difo-Druck, Bamberg, 1995
- [9] Chatham, B., Orlov, L.M., Howard, E., Worthen, B., Coutts, A., *The Customer Conversation*, Forrester Research, Inc., Cambridge, 2000
- [10] Checkland, P., Holwell, S., *Action Research: Its Nature and Validity*, in: *Systemic Practice and Action Research*, 11 (1998) 1, pp. 9-21
- [11] Chesher, M., Kaura, R., *Electronic Commerce and Business Communications*, Springer, Berlin etc., 1998
- [12] Chisholm, R.F., *Developing Network Organizations: Learning from Practice and Theory*, Addison Wesley Longman, Bonn etc., 1998
- [13] Christopher, M., *Logistics and Supply Chain Management: Strategies for Reducing Costs and Improving Services*, Financial Times/Pitman Publishing, London, 1998
- [14] Cisco, *Revolutionizing Business in the Internet Economy: New World Customer Care - An Overview of Cisco New World Customer Care Solutions*, Cisco Systems, Inc., San Jose (CA), 1999
- [15] Consortium, I.S., *Internet Domain Survey*, July 2001, <http://www.isc.org/ds/WWW-200107/index.html>, 04.02.2002
- [16] Davenport, T.H., *Process Innovation: Reengineering Work Through Information Technology*, Harvard Business School Press, Boston, 1993

- [17] Davydov, M.M., *Corporate Portals and e-Business Integration*, McGraw-Hill, New York, 2001
- [18] de Bakker, C.-P., Seebacher, U.G., Konzeptionelle Entwicklung von Internet-Portalen, in: *Information Management & Consulting*, 15 (2000) 2, pp. 19-23
- [19] Delphi Group, *An Enterprise Portal Bridge to E-business*, The Delphi Group, Boston, 2000
- [20] Doz, Y.L., Hamel, G., *Alliance Advantage: The Art of Creating Value through Partnering*, Harvard Business School Press, Boston, 1998
- [21] Drucker, P.F., *The Practice of Management*, Harper & Row, New York, 1954
- [22] Dutta, S., Biren, B., Business Transformation on the Internet: Results from the 2000 Study, in: *European Management Journal*, 19 (2001) 5, pp. 449-462
- [23] Elliot, S.R., Mørup-Petersen, A.S., Bjørn-Andersen, N., Towards a Framework for Evaluation of Commercial Web Sites, in: *13th Bled Electronic Commerce Conference*, Bled, 2000, pp. 69-86
- [24] Fleisch, E., Customer Focused Business Network Analysis, in: Fleisch, E., Schertler, W. (Eds.), *Reorganisation und Standardisierung im Tourismus: Enter '96*, Oldenbourg, Wien/München, 1996, pp. 147-156
- [25] Fleisch, E., *Das Netzwerkunternehmen - Strategien und Prozesse zur Steigerung der Wettbewerbsfähigkeit in der "Networked Economy"*, Springer, Heidelberg, 2001
- [26] GE, GE's e-Volution of 2000, General Electric, <http://www.ge.com/news/spotlight/evolution.html>, 17.07.2001
- [27] Gomes-Casseres, B., *The Alliance Revolution: The New Shape of Business Rivalry*, Harvard University Press, Cambridge, 1996
- [28] Griffith, D.A., Krampf, R.F., An examination of the web-based strategies of the top 100 U.S. retailers, in: *Journal of Marketing Theory and Practice*, 6 (1998) 3, pp. 12-23
- [29] Griffiths, J., Elson, B., Amos, D., A Customer-Supplier Interaction Model to Improve Customer Focus in Turbulent Markets, in: *Managing Service Quality*, 11 (2001) 1, pp. 57-67
- [30] Gutzwiller, T.A., *Das CC RIM-Referenzmodell für den Entwurf von betrieblichen, transaktionsorientierten Informationssystemen*, Physica, Heidelberg, 1994
- [31] Hakansson, H., Snehota, I., *Developing Relationships in Business Networks*, Routledge, London, 1995

- [32] Hess, T., Brecht, L., State of the Art des Business Process Redesign, Gabler, Wiesbaden, 1995
- [33] Heym, M., Methoden-Engineering, Rosch-Buch, Hallstadt, 1993
- [34] IBM, IBM WebSphere Portal Server - Product Architecture V1.2, IBM Corporation, http://www-4.ibm.com/software/webservers/portal/pdf/WPSWhitePaperV1_2.pdf, 18.10.2001
- [35] IMG, PROMET-BPR: Method for Business Process Redesign, IMG AG, St. Gallen, 1997
- [36] IMG, A., PROMET SSW: Method for the Implementation of Standard Application Software Packages, Release 3.0, IMG AG, St. Gallen, 1998
- [37] Ives, B., Learmonth, G.P., The Information System as a Competitive Weapon, in: Communications of the ACM, 27 (1984) 12, pp. 1193-1201
- [38] Kalakota, R., Robinson, M., e-Business 2.0: Roadmap for Success, Addison Wesley Longman, Boston, 2001
- [39] Kotler, P., Armstrong, G., Saundres, J., Wong, V., Principles of Marketing - the European Edition, Prentice Hall Europe, 1996
- [40] Kotler, P., Bliemel, F.W., Marketing-Management. Analyse, Planung, Umsetzung und Steuerung, Schäffer-Pöschel, Stuttgart, 2001
- [41] Kramer, M.S., Produkterfolg durch Customer Focus, Springer, Berlin, 1996
- [42] Kuglin, F.A., Customer Centered Supply Chain Management: A Link-by-Link Guide, Amacom, New York, 1998
- [43] Liu, C., Arnett, K.P., Capella, L.M., Beatty, R.C., Websites of the Fortune 500 Companies: Facing Customers through Home Pages, in: Information & Management, 31 (1997) 6, pp. 335-345
- [44] Lohse, G.L., Spiller, P, Electronic Shopping, in: Communication of the ACM, 41 (1998) 7, pp. 81-87
- [45] Österle, H., Business in the Information Age: Heading for New Processes, Springer, Berlin etc., 1995
- [46] Österle, H., Enterprise in the Information Age, in: Österle, H., Fleisch, E., Alt, R. (Eds.), Business Networking: Shaping Collaboration between Enterprises, Springer, Berlin etc., 2001, pp. 17-54
- [47] Ovum, Enterprise Portals: New Strategies for Information Delivery, Ovum Ltd, London, 2000
- [48] Peoplesoft, A Business Person's Guide to Enterprise Portal Terms and Business Impacts, Peoplesoft Inc., http://www.peoplesoft.com/en/media/new_wp/PWSB4799GOC_MDA.pdf, 18.10.2001
- [49] Prahalad, C.K., Ramaswamy, V., Co-opting Customer Competence, in: Harvard Business Review, 78 (2000) January-February, pp. 79-87

- [50] Prahalad, C.K., Ramaswamy, V., Krishnan, M.S., Consumer Centricity, InformationWeek.com, <http://www.informationweek.com/781/prahalad.htm>,
- [51] Reichmayr, C., Alt, R., Zurmühlen, R., Developing eCommerce within Business Networks - The Case of ETA SA, in: Global Networked Organizations, Proceedings of 13th International Bled Electronic Commerce Conference, Bled, 2000, pp. 183-199
- [52] SAP, mySAP.com Workplace - Enterprise Portal: Personalization and Roles, Applications, Information and Services, SAP AG, Walldorf, 2000
- [53] Schmid, R., Eine Architektur für Customer Relationship Management und Prozessportale bei Banken, Difo-Druck GmbH, Bamberg, 2001
- [54] Schulze, J., Prozessorientierte Einführungsmethode für das Customer Relationship Management, Difo Druck OHG, Bamberg, 2000
- [55] Sybase, Sybase Enterprise Portal 2.0: A Product White Paper, Sybase, Inc., Emeriville, 2001
- [56] Sydow, J., Strategische Netzwerke: Evolution und Organisation, Gabler, Wiesbaden, 1992
- [57] Tibco, Portal Execution Plan, TIBCO Software Inc., München, 2001
- [58] Vandermerwe, S., Jumping into the Customer's Activity Cycle: A New Role for Customer Services in the 1990s, in: Journal of World Business, 28 (1993) 2, pp. 46-65
- [59] Vandermerwe, S., How Increasing Value to Customers Improves Business Results, in: MIT Sloan Management Review, 42 (2000) 1, pp. 27-37
- [60] Wen, H.J., Chen, H.-G., Hwang, H.-G., E-commerce Web Site Design: Strategies and Models, in: Information Management & Computer Security, 9 (2001) 1, pp. 5-12
- [61] Young, D., Benamati, J., Differences in Public Web Sites: The Current State of Large U.S. Firms, in: Journal of Electronic Commerce Research, 1 (2000) 3
- [62] Zink, K.J., Bäuerle, T., Kundenorientierung und -zufriedenheit in Business Excellence Konzepten, in: Hinterhuber, H.H., Matzler, K. (Eds.), Kundenorientierte Unternehmensführung, Gabler, Wiesbaden, 1999, pp. 291-319