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New Perspectives on Individualization and Controlling of Web Sites for the Financial Services Industry

by

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Abstract: *Forced by market pressure financial services providers are searching for promising concepts that can guide them towards success in the private customers sector. Individualization of financial solutions as well as of interaction seems to be a reasonable possibility. Because of its tremendous growth rates in usage and its multimedial possibilities especially the internet channel is suitable to be used for this. Likewise the task of controlling of their web sites has become important for financial services providers in order to tighten their internet activities.*

The authors of this paper show steps towards controlling and individualization of web sites of the financial services industry both based on customer tracking. For this they have developed a system of controlling measurements that help financial service providers to optimize their web sites towards the interests of their anonymous users. By tightening controlling towards the interests of single users the web site can be individualized regarding the presented content as well as its navigation. This paper was created against the background of a project that the authors are doing with a major German private bank.

1 Introduction

This paper is inspired by a project the authors are currently doing with a major German private bank. The business of the bank is to provide individualized premium financial services to high net value customers. These customers in the past had individual consultants as predominant interface to the bank. In early internet times the bank established a web site that offered information and interaction on a 'me too' level. With the rise of the internet the bank got aware of the fact that this will not be enough to meet customers' needs in the future and chose to go for a leading position in the FSI[1] pear group. As a consequence a number of projects were started in order to improve the web site. When the number of web projects was rising the question got louder which project was how successful and in what direction the bank should go on. In this context the idea was born to develop a concept that was not only able to individualize the web site towards the interests of every single customer for differentiation but also to control the usage of the web site based on one and the same data source. In the following chapters we will describe some basic ideas for controlling and individualization of web sites based on tracking information gained by recording the customers interaction with the web site. We will start our considerations in the next chapter by describing the market conditions that have led to a situation where on the one hand individualization of communication with the customer and on the other hand strict controlling of the banks web activities is necessary .After describing our research framework we will introduce goals and figures of web site controlling in chapter 3. Thereafter our focus will change to the question how customer

[1] Financial Services Industry

data can be used in order to individualize the web site. Our paper will close with an outlook and thoughts about the next possible steps of implementation.

1.1 Individualization as reaction to market developments in the financial services industry

The business of (traditional) providers of financial services has become more difficult in the last years. By the rise of the internet former barriers of entry based on the necessity to establish expensive branch offices were pulled down. By this innovative newcomers like e-trade (www.e-trade.com), netbank (www.netbank.com), consors (www.consors.de) etc. could relatively easy step into the market. As a consequence prices for standardized products like brokerage or current accounts were beaten down dramatically. The believe in high quality consultation through established players was unsettled when a number of publications showed (cp. [Finanztest 2000] or [Tennhagen 2000]) that low quality of consultation is not the exception but rather the standard. By this the trend towards using the services of new, maybe better but definitely cheaper market players was supported. Being confronted with these developments the big and settled market players especially in the area of high value customers recognized that they have to overcome their old fashioned market treatment. [Buhl et. al. 2001] who have described the development of markets in more detail recommend the production of *individualized* solutions instead of standardized products. Individualization in that context has to be seen as a concept of mass customization. Financial products are tailored to the individual customer's individual needs. The advantages customers gain through such individualized solutions have been calculated several times, e.g. in [Wolfersberger 2002], [Buhl et. al. 1999a] or [Buhl et. al. 1999b]. From the provider's point of view individualization may lead to increased customer loyalty because the engagement and trust between customer and financial

services provider has to be higher than with standard products. [Tilmes 2000] estimates that the economic benefits of individualization in Germany for all involved parties could be worth about 1,5 Billion German marks (about 650 million US-$).

1.2 The Role of the internet channel

When discussing about banking and individualization is also necessary to think about different communication channels, because nowadays the customer is able to interact face to face, by telephone, by www, etc. with his financial services provider. Thus, modern banking often is called “Multi-Channel Banking”.(cp. Figure 1)

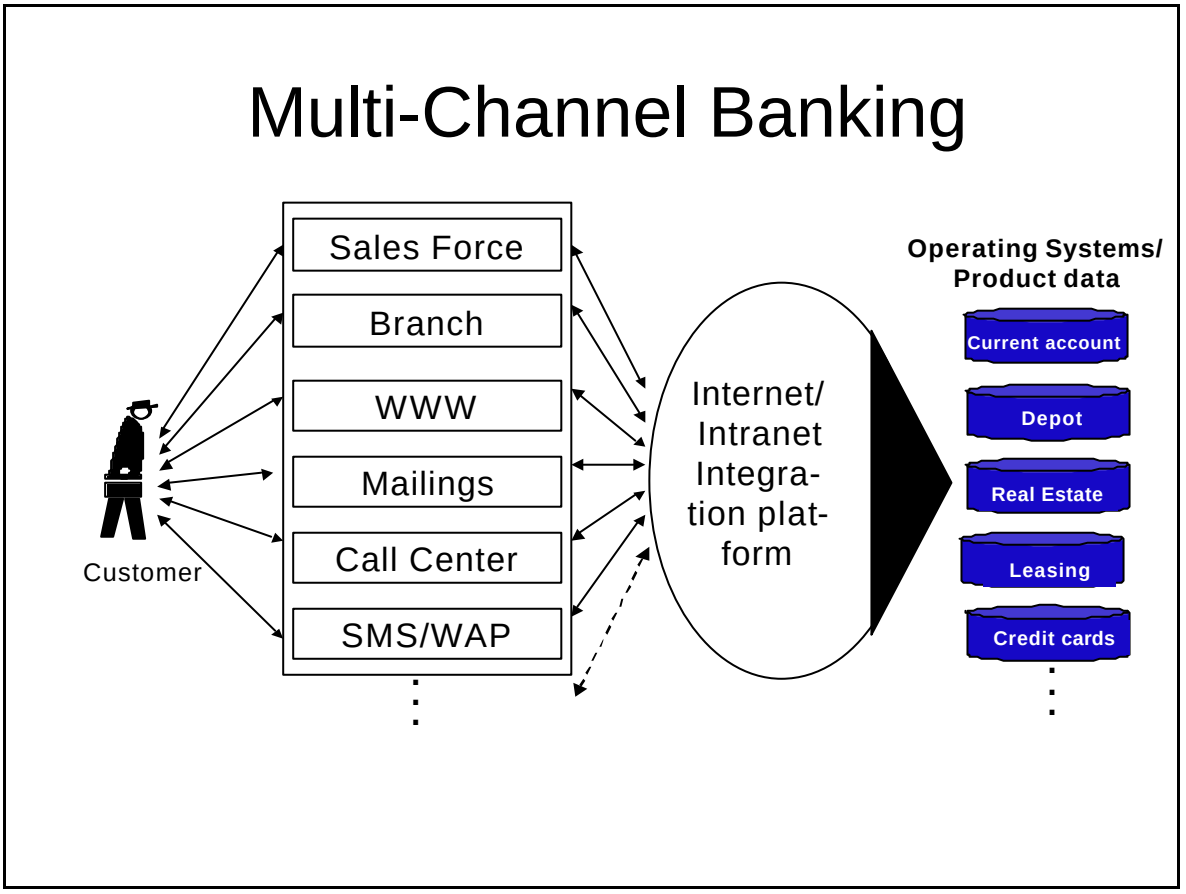


Figure 1: Multi-Channel Banking

If comparing the relevance of the different channels in recent years especially the www has reached an outstanding position. As an impressive example the number of online banking accounts in Germany has nearly multiplied tenfold from 1997 to 2000

to a total number of ca. 15 million. (cp. [BDB 2001]). With this more than 40% of all German internet users are doing online-banking compared to 18% in USA or 2% in France (cp. [Kerridge 2001]). Based on their characteristics like flexibility in communication, speed of information distribution, etc. it may be reasonable to use the channels for different objectives. [Kundisch et. al. 2001] have developed a model that selects channels based on content characteristics. Because of its high usage growth rates and its excellent multimedial abilities the internet channel takes an excellent position for individualization. Consequently as part of their individualization efforts German financial services providers try to utilize the internet channel for individualization. Impressed by growth rates financial services providers as well as other companies were not asking questions about the economic efficiency of internet activities. But since it has became obvious that a lot of the highflying projections for the future of the internet will not become true very critical questions referring to the efficiency of every single effort are asked. So when developing new web activities it will be necessary not only to think about new possibilities but also about ways of controlling success of operations.

1.3 The need for web site controlling as reaction to market developments in the internet sector

The design and management of companies' web sites today is widely done by artists. That seemed right for long as mainly creativity and intuition mattered: there were no rules that could be followed. What was modern today could be old fashioned tomorrow with much better solutions evolving in the meantime. So the focus of work lay in the field of designing revolutionary solutions. It seems like this period of rapid revolutionary evolution is slowly coming to an end. Most once new technologies evolved to a stage where it is more important to reuse and improve existing solutions instead of

constantly designing new ones. In our opinion the design of web sites is approaching that stage and the tasks of creating and operating web sites will have to be done less by intuition and more by engineering and business administration in the future.

That trend is also underlined by customers' interest in stable interfaces. Web sites in the beginning mainly were much like marketing flyers: they had to be appealing and eye-catching. Today web sites especially in the FSI are instruments of everyday work Customers require usability more than special effects. We think that more than sheer intuition is necessary to know what customers consider usable.

Another dimension of web site management is the economic aspect: until now it is fairly impossible to know anything about the cost-efficiency of minor changes or the whole site. That wasn't to bad in times when not money but time seemed scarce. Economic aspects grow in importance as the boom comes down a little. In our opinion a concept of web site controlling should be used to enable providers of financial services to control that their investments match the utility that is generated. At best this concept should not focus on click rates alone. If you take for example research information that is expensively bought, you could match the price of a customer's mouse clicks on news items with the revenues generated by this customer's related brokerage transactions. This enables the provider of financial services to decide to buy content not only considering the number of clicks but also their worth. So the provision of a content category with a relatively low number of clicks may be reasonable if the net-worth is high enough.

In our opinion all that contributes to the following: web site management has to change. It will become more like management and less like art. This requires changes of organisational structures and of controlling techniques.

2 The concept of customer tracking – our research framework

As mentioned in the introduction we are developing an integrated concept for individualization and controlling of financial services web sites based on data about the customer and her behaviour. Normally in such cases ‘web-log-mining’ is the first instrument of choice. ‘Web-log-mining’ addresses the analysis of standard log files like shown in figure 2. Information of this kind is helpful to get first and basic insights

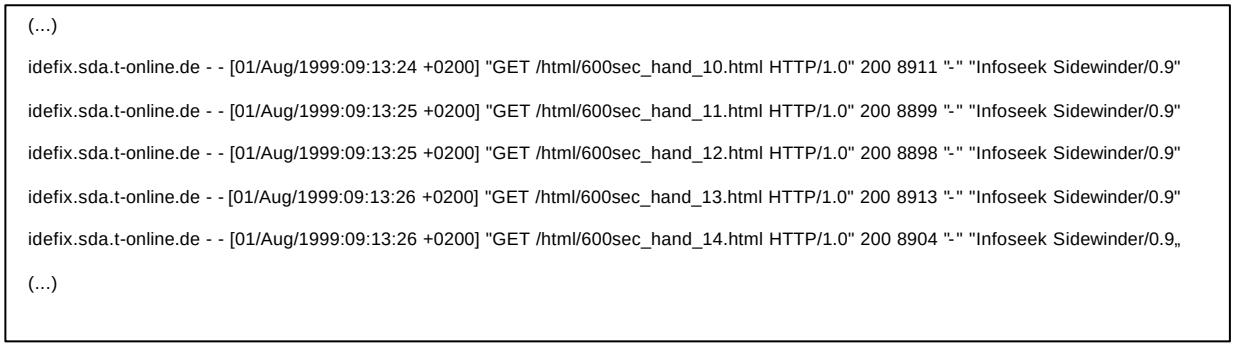


Figure 2: Standard Log File

about the usage of a web site. To achieve our goals of controlling and individualization we need to enrich the standard log files by additional elements that represent knowledge on customers. Furthermore we integrate interaction information gained by other channels to ensure topicality, correctness and consistency of the customer data base. This multi-channel analysis of customer behaviour is what we call customer tracking. This view is one of the main ideas of our general approach of research in the area of individualized financial solutions. Our research team has established a set of models we will now describe in short.

The work of our research team generally aims at developing concepts and solutions that enable automatic, individual, multi-purpose and multi-channel customer care. Individualized solutions require to match information about the customer and his

needs with solutions or components of solutions (content and product components)

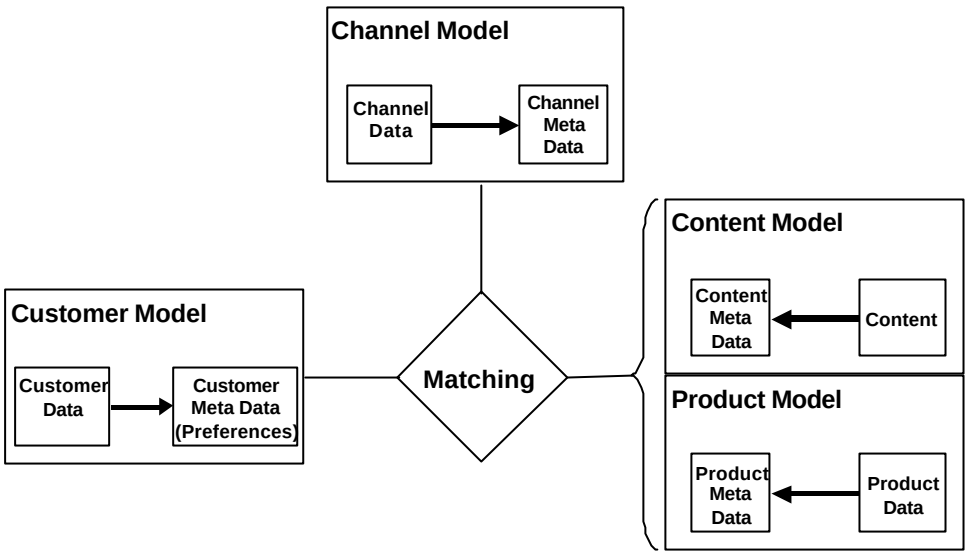


Figure 3: Research Framework

of the financial services provider. Additionally the selection of the appropriate channel for communication is included. Because of this the approach of our research team integrates customer-, content-, product- and channel model as basic components.

2.1 Customer Model

Our way of customer modeling was developed in [Fridgen et. al. 2000a] and refined in [Fridgen et. al. 2000b]. It is currently used for web site individualization of the news area at Deutsche Bank Private Banking. Basically individualization of a web site means to develop adaptive software. Since the 70th different approaches of user modeling were introduced [cp. Fridgen et. al. 2000a]. As far as we know most of them focused on the development of one isolated application. The ability to enable multi-purpose models was the main goal of our work then. The main idea is to provide an extra layer of abstraction. Traditional systems use AI concepts to deduce the required adaptations directly from interaction data. In our systems the data is collected throughout the channels, then consolidated by a special inference process and finally stored in an appropriate repository [cp. Fridgen et. al. 2000a]. This repository pro-

vides a semantically defined and stable interface that can be used for different purposes on different channels.

2.2 Content- and Product Models

The content- and product-models are designed similarly to the customer model. Anyhow this is not as important here as we do not live in a product centric world and the product models belong to a multitude of different domains and are used in a broad variety of applications. All of these applications match customers with content and/or products in order to find solutions that fit the customers' needs. [Kundisch et. al. 2001] describes a content model designed for news in the field of financial services.

2.3 Multi-Channel Model

The last component of our framework is the channel-model. Every channel used by the provider of financial services is modeled. The matching process that assigns solutions to customers may take into account through which channel the customer addresses the service. The channels differ for example in relation to bandwidth or interactivity.

3 Controlling as strategic and operative process

As we have shown in the introduction, changing internet times already do or at least will ask for controlling of web site-operations. This is also true with our partner. So we introduced a concept for controlling to our framework that we are currently implementing.

In our simple approach (web site-)controlling consists of the following elements

- A sound system of fundamental goals the organization aims at.

- Organizational know how on ways to reach the goals and on means to know whether a goal is reached.
- A system of figures that incorporates the latter know how and is suitable to show to which extend goals are reached.
- Organisational structures that define responsibilities and power with roles and persons so that know how leads to actions. Furthermore a concept that ensures that every organisational entity receives appropriate (neither too little nor not too much) information.
- And last but not least: awareness of the fact that the need for controlling will only cease to exist when you shut up your business.

3.1 The fundamental goals

There are different valid reasons for establishing a web site. In the FSI the following ones are essential:

- Provide Services to customers in order to
    - Earn money
    - Intensify customers' satisfaction and thus loyalty
- Gain new customers

The natural goal of every business operation is to earn money. There are activities that do not lead to cash inflows directly but are of positive net present value in short, middle or long range because of their investment character or because they are contributing to other activities that lead to direct inflows. Today web sites rarely are a sustainable business activity if seen isolated. On the other hand we have shown that internet services are an integral part of a successful multi-channel strategy in the FSI. In the listing above this aspect is represented by the goal to intensify customers' sat-

isfaction and loyalty. This also is the case with our project. However the importance the bank attributes to direct revenues grows in the long range.

The indirectness of goals mentioned above makes it hard to measure the utility of activities. That furthermore attributed to the situation described where sheer intuition decided on means. So we generally and in the project have to deal with the problem of underdeveloped know how. Hence we will have to try and measure. It is still important to state that that does not mean to go on as before: by measuring we will acquire know how. This know how will be consolidated and stored in organisational memories.

3.2 A system of figures

As stated above, there is still a gap in scientific know how considering the relevance of figures. It is one of the goals in our project to close this gap empirically. So we start with a wide view. The catalogue of candidate figures was achieved by the review of literature and through interviewing prospective users. We identified the following domains of measurements as relevant for the purposes of web site controlling:

- System-measurements
- Usage-measurements
- Financial-measurements
- Economic-measurements

System-measurements include information on system-availability and performance. The main data source within the bank are system monitoring tools that are located at different points in the system architecture (e.g. the web servers, the application servers, different backend systems). Figures can be generated for the web site as a whole and for the components of the architecture. The purpose of these system

measurements is to assist for ensuring an appropriate availability of the technical infrastructure.

Usage-measurements are derived by monitoring the customers' usage of the web site. This is mainly done by analysing log files generated by web servers and application servers by means of standard tools. We are working on concepts to expand the range of information present in log-files using an XML-language that illustrates the semantics of page-elements. Currently we are concentrating on the following aspects:

- The 'site traffic' category contains the classic figures from page views and visits to site stickiness. Figures are generated on different levels of aggregation i.e. for the whole site as well as for site components such as the transaction area.
- The 'actions' category focuses on a finer granularity and a different point of view: the bank's web-projects frequently aim at special functionality. This functionality often is distributed throughout the site. In this category the customers' usage of such functionality gets documented.
- The 'customers' category contains information like the amount of first time visitors per time period or the registration rate that illustrates to what extent the bank's customers are also users of the web site. That information can as well be given at different levels of aggregation by e.g. the customers' regional origin.
- The 'actions' and 'customers' categories meet in 'scenarios'. Scenarios are series of page views that can frequently be seen with many customers. This scenarios are especially interesting for evaluation because they are results of the site-structure as well as of customers' interests. 'Good scenarios' have to

be distinguished from ‘bad scenarios’. The former lead to a result the customer wanted to reach, the latter are discontinued before a reasonable result is reached. Both can be subject to optimisation: the good ones could be shorter (i.e. the customers reach the goal with less clicks) or more frequent (e.g. if they are easier to find), the bad ones rarer.

Financial-measurements reflect the cost and revenue side of the web site. See bellow for components of the cost side. Each of them can be given for the site as a whole, for site-areas or for actions (as defined above).

- The costs of construction are derived from the bank’s accounting of project costs.
- Maintenance costs reflect the costs of maintenance projects. Naturally the amount of necessary or desirable maintenance varies with actions.
- The operating and indirect costs are extracted from regular accounting and contain general administrational costs as well as specific components such as the costs for content generation or purchase.

The revenue side is split up in direct and indirect revenues. Whereas direct revenues are easy to declare and emerge from pay-per-use offers like stock transactions, indirect revenues reflect the partnering of channels. It is extremely difficult to estimate the latter. That is true even if the utility effects we discussed above are kept out.

The **economic measurements** are aggregated from the other categories. They reflect the cost-utility consideration that drives economic decisions. In our project we installed a customer and an action oriented analysis. Both allocate costs, revenues and profits onto customers respectively actions. Again both can be generated on dif-

ferent aggregation levels. Moreover combinations (i.e. costs a specific group of customers generates by a certain action) are possible.

3.3 Organisational structures and management reports

In our opinion this is a very important part in order to make the project a success. Most of the usage tracking projects we know just generate information without assisting in the process of using that information. If we fail to enforce the projected organisational changes, our figures will just add to the pile of paper on the bank's desks. Therefore it is extremely important to demonstrate the usefulness of the new tool. We developed a concept for the generation of management reports that shall make sure that everyone receives just the information she needs and/or wants. There also are alert mechanisms that allow hierarchical escalation if certain limits are exceeded and a concept for organisational feedback in order to validates the relevance of certain figures.

4 Individualization in the Financial Services Industry

4.1 The relation between Individualization and controlling

If we consequently execute our controlling paradigm in a world in which strategic as well as operative decisions should be made with having the individual customer in mind, the measurements suggested above are insufficient. They do not provide the foundation that is needed to enable individual treatment. Like ever appropriate actions require substantial knowledge on to customers' individual needs. Individualization in that sense is nothing more than consequent controlling based on detailed knowledge on individuals and appropriate processes that transfer this knowledge into web site improvements.

What this means will become clearer when we reconsider what we said on individualization in the FSI above. As argued there, nowadays Financial services are ‘one size fits them all’ and that will not be true in the future any more. Insurances, mortgage loans, etc. probably will not be standard products any more. In order to produce real individualized solutions that comply with customers’ needs and thus get closer to optimum, their characteristics (regular income, capital structure, attitude towards risk, etc.) have to be taken into account. Individualization also has to respect solutions that have already been chosen by a customer because their long time payment flow and taxation effects have influence on the utility of current options. [Schackman et. al. 2000] summarize this by asking for (amongst other things) complete information about the customers´ characteristics (= demographic information and details about the financial situation) as precondition for generating perfectly individualized solutions. Besides producing individual financial solutions, individualization in the FSI nowadays should also include the provision of adequate information whenever customers – e.g. especially in the field of brokerage – tend to produce the solutions themselves (here: buy and sell stocks) and therefore need adequate information.

In the context of our current project we are working to individualize the internet channel based on customer tracking and therefore have to substantiate what individualization means to this channel. It is clear that the main objective, namely the production of individualized solutions, remains unchanged. But we can certainly identify additional fields for effort to individualize the internet channel. In an abstract view a web site consists of two kinds of components: content and navigation. Hence not only the content but also the user interface has to be individualized towards the different characteristics and needs of each customer. Therefore we define as follows: Individualization of a web site (in the FSI) means to provide every single customer the content and user interface that perfectly fits his characteristics.

4.2 The role of customer tracking for individualizing a web site

As we have seen in the last chapter the preposition for the individualization of a web site is that the financial services provider has to be informed preferable complete and correct about the characteristics and needs of every single customer.. [Fridgen et. al 2000a] state: ”Information on customers is not scarce even if distributed throughout the bank from central databases to the customers’ individual consultant, (…).” The work that admittedly has to be done to exploit and consolidate these characteristics into a data warehouse based on a customer model like it is described by [Fridgen et. al. 2000b] is not subject of this paper. What is much more interesting in our context is the usage of tracking information as expression of the customers needs. Two customers with (nearly) the identical characteristics may be interested in totally different contents, e.g. customer A in stocks of the utility sector and customer B in high-tech stocks. Additionally Customer B may only read abstracts of articles while Customer A likes to read the detailed versions. So only by observing the single customers interaction with the web it is possible to find out what she is interested in and as reaction to try to individualize content and navigation for her. In order to be able to perform this task the semantics of the customers mouse-click as the only “footprint” that is tracked has to be adjusted to be sufficient for this task. In the following we will show some first consideration we have done within this area

4.2.1 The usage of content semantics for content individualization

We have to attribute adequate semantics to every of the customers mouse clicks (the only way for him to act) in order to be able to identify the type(s) of content the customer is interested in. Therefore reasonable categories for the classification of content have to be identified. Here we basically distinguish between the textual and the non textual dimension of content as well as an additional dimension that helps to

measure if the content of interest was really received by a customer. In order to categorize content towards its textual dimension we plan to divide up all of the bank´s content into a hierarchy of product or solution categories like capital building, insurance, etc. For being able to measure non textual attributes of content we additionally plan to add content dimensions like language, length, level, etc. As an example for reasonable non textual dimensions you may have a look at [Kundisch et al. 2001] that have developed a set of content dimensions for the financial news area.

To be able to measure if content was really received by the customer we recommend to introduce additional dimensions for measuring this aspect like a period of time within that a piece of content normally is read. So contents will be only counted as received if the next click (to leave this contents) is done after a certain period of time.

After having aggregated the semantic information on site usage in to the customer model it is possible to utilize this information for individualizing the content aspects of the web site. Regarding the textual aspects of content different steps as a response to obvious changes in the interests of a customer may be the consequence. If for example a certain customer's number of clicks into the mortgage loan content area exceed a defined number of clicks further actions in order to test the customers interest towards solutions in this area can be done. Such actions can be supported by any of the existing communication channels, maybe by sending a letter to the customer that informs about the advantages of a mortgage loan that is individualized towards her

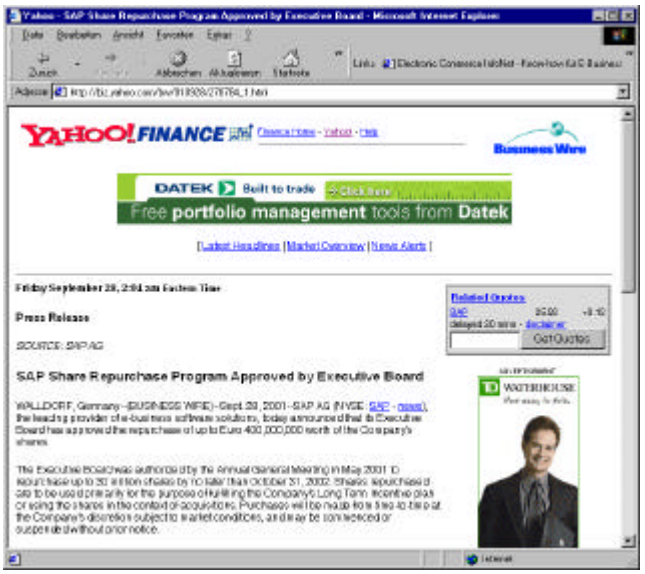
Semantic Dimensions of Content – Areas of Interest

What content is a customer interested in?

Textual Dimension
- regarding stock
  - name
  - sector
  - country
  - etc.
- regarding product
  - name
  - category
  - etc.
- etc.

What is the adequate form to present content?

Non Textual Dimension
- length
- language
- level
- etc.



Has the customer really recepted the content?

Reception Dimension
- time normally necessary for reception
- confirming mouseclick
- etc.

Figure 4 : Content Dimensions

characteristics.

The evaluation of the preferred non textual aspects of content can be used in order to individualize the presented contents towards the customers attitudes. So it is possible to take into account that that there e.g. may be customers that prefer to read texts in French or prefer a special author, etc.

By individualization based on customer information the bank up to this point would more or less only react passively to identified information needs. In order to improve the likeliness of presenting contents that match customers needs the bank could pre-select content based on assumptions about a typical customer lifecycle. A customer lifecycle describes an ideal life cycle of a bank customer. This means that on the ba-

sis of theoretical considerations, assumptions or empirical numbers the customer's lifetime is divided into relevant sections e.g. regarding typical requirements in different parts of life. Based on this assumptions the bank is able to select most likely interesting content categories and to place them within the customers web site. E.g. if a customer is identified as young and a job starter it seems to be reasonable to present him content that meets supposed needs of his situation, maybe information about insurances that protect against the financial risks of disability.

4.2.2 The usage of content semantics for individualized navigation

Because of the wide range of possible products and services in the financial services sector the web site of a big financial services provider normally is composed by a very high number of single pages. In contrast to a good financial consultant that only provides relevant information a standard financial services web site is confronting the customer with a very wide spectrum of information. This results in web sites that consist of a mix of relevant and non relevant information held together by complicated link structures. Thus it is very hard for the customer to find a navigational path that leads him directly to the content he is interested in. The more steps (= clicks) the customer has to do on his way the higher is the possibility of loosing the navigational path. The information on the value of content gained by customer tracking can be used in order to reduce the number of navigational steps. Obviously interesting contents can be linked directly or near to the customers entry site. Additionally the assumptions of the customer-lifecycle-model can be used in order to hide links that are most likely non interesting and by this to reduce the number of possibilities to navigate to irrelevant content areas.

5 Conclusions

As we have seen in this paper controlling and individualizing a financial services web site based on customer tracking are very widespread tasks that are linked together because they us the same source of data. Our aim was to show the whole breath of topics in order to demonstrate as much as possible of the benefits achievable through customer tracking. Inevitable we could only give first insights on a conceptual level and had to factor out especially detailed aspects. What we have learned in our project first of all is no matter where and based on what technology you track information on customers the limiting factor for later controlling and individualization is the number and the quality of the defined semantic categories. There are still quite a number of further steps we have to do in order to bring down the outlined ideas to working systems. Herby one of our next tasks will be to establish of a system of semantics we can use for controlling and individualization of the financial services provider's web site. The accelerating downturn especially in the web based business has confirmed our opinion that the area of creating web sites only by intuition has to be replaced by web sites that are an integral component of communication strategies and based on economically and technically sophisticated concepts.

6 References

[BDB 2001]: Bundesverband Deutscher Banken, available at http://www.bankenverband.de/ bdbsearch/03_geld/05-01/geld_0356.asp, tested 30/5/2001

[Buhl et. al. 1999a] Buhl, H. U.; Hinrichs, J.-W.; Satzger, G.; Schneider, J.: Leasing selbstgenutzter Wohnimmobilien, in: Die Betriebswirtschaft, 59, 1999, 3, pp. 316-331.

[Buhl et. al. 1999b] Buhl, H. U.; Sandbiller, K.; Will, A.; Wolfersberger, P.: Zur Vorteilhaftigkeit von Zerobonds, in: Zeitschrift für Betriebswirtschaft, 69, 1999, 1, pp. 83-114.

[Buhl et. al. 2001] Buhl, H. U.; Kundisch, D.; Leinfelder, A.; Steck, W.: „Strategies for the Financial Services Industry in the Internet Age", to appear in: Werthner, H., (Ed.)., Lectures in E-Commerce, 2001

[Dzienziol et. al. 2001] Dzienziol J.; Schroeder N.; Wolf, C.: Kundenwertorientierte Unternehmenssteuerung, accepted contribution for the WI-IF 2001 conference, Augsburg, 2001.

[Evans & Wurster 1997] Evans, P. B.; Wurster, T. S. . Strategy and the New Economics of Information, Harvard Business Review, Sept./Oct., pp.71-82.

[Finanztest 2000]: Baufinanzierung: Im Beratungstest ließen die Banken kaum einen Fehler aus - Passt selten, in: Finanztest, 2, 2000.

[Fridgen et. al. 2000a] Fridgen, M.; Schackmann J.; Volkert, S.: "Preference Based Customer Models for Electronic Banking", Proceedings of the 8th European Conference of Information Systems ECIS 2000, Wien, (Austria), Volume 2, S. 789-795

[Fridgen et. al. 2000b] M. Fridgen, S. Volkert, M. Haarnagell, D. Marko, S. Zimmermann: Kundenmodell für eCRM - Repräsentation individueller Einstellungen, 3rd. FAN-Conference 2000, Siegen, 2000.

[Kerridge 2001] Kerridge, S.: Deutschland führt im Online Banking, available at www.silicon.de/a40080, tested 30/5/2001

[Kundisch et. al. 2001] Kundisch, D., Wolfersberger, P., Klöpfer, E.: Enabling eCCRM: Multi-Channel Content Model and Management for Financial eServices, discussion paper WI-91, Department of Information Systems, University of Augsburg, to appear in: The International Journal on Media Management, 2001

[Schackmann et al. 2000] Schackmann, J; Steck, W.; Hummel, S., Roedl, K.: Eine ökonomische Betrachtung von Customer Relationship Management und individuellen Finanzdienstleistungen, 3rd. FAN-Conference 2000, Siegen, 2000.

[Tennhagen 2000] Tennhagen, H.-J.: Contra zu „Banken - ist der Kunde König?“, Rubrik „Konträr“, in: Die Bank, 8, 2000, p. 511.

[Tilmes 2000] Tilmes, R.: Der ökonomische Nutzen des Financial Planning, in: Die Bank, 8, 2000, pp. 550-553.

[Wolfersberger 2002] Wolfersberger, P.: „Individualisierung von Finanzdienstleistungen - die optimale Disagiovariante eines Festdarlehens“, accepted contribution for Zeitschrift für Betriebswirtschaftslehre (ZfB), 2002