

## A CASE STUDY ON ELECTRONIC CONTRACTING IN ON-LINE ADVERTISING - STATUS AND PROSPECTS

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*Business-to-business electronic contracting has gained attention in recent years as a way to improve traditional contracting practices as well as a paradigm that allows the support of new business models in an enterprise. This paper presents the business case of the Dutch news medium Telegraaf for contracting of advertising spots in its on-line edition. We discuss replacement of current contracting practices with advanced electronic contracting that will allow Telegraaf to highly automate its contract establishment, enactment, and management processes. This high level of automation presents an opportunity to Telegraaf for organizational restructuring and for the support of new business models that improve the competitiveness of the company.*

### 1. INTRODUCTION

Since the very beginning of human history, people have been exchanging values. Contracts between value-exchanging sides have been adopted to specify the exchanged values and the rights and obligations of the participants. Nowadays, contracts are an indispensable tool in business exchanges. In business-to-business relationships “all economic production and exchange processes are organized through contracts. Contracts are the instruments and the means for the organization of exchange relations” (Wigand *et al.*, 1997).

Business-to-business e-contracting uses information technologies for improving the efficiency and effectiveness of contracting processes of companies (Griffel *et al.*, 1998; Koetsier *et al.*, 2000). One way to implement e-contracting is by simply digitizing existing paper contracts and using fast communication channels for contract establishment (e.g., e-mail). We call this type of e-contracting “shallow e-contracting” (Angelov and Grefen, 2004). Shallow e-contracting improves the efficiency of the contracting process by reducing the time and costs for communication. However, shallow e-contracting requires significant human involvement and does not change traditional business and organizational models in a company. Shallow e-contracting can be supported by existing and widely accepted information technology (e-mail clients, scanners, text editors, etc.). An alternative

way to support e-contracting is by implementing a dedicated e-contracting system that can fully (or to a great extent) automate the e-contract establishment, enactment, and management. We call this type of e-contracting “deep e-contracting” (Angelov and Grefen, 2004). Deep e-contracting eliminates human participation in contracting processes (or significantly decreases it). The high level of automation of contracting processes allows companies to realize new business and organizational models that lead to improved market competitiveness. We call these new models the “paradigms of e-contracting”. In our previous work, we have identified five main paradigms of deep e-contracting (Angelov and Grefen, 2004), namely, the micro-contracting ( $\mu$ -contracting), just-in-time-contracting ( $\tau$ -contracting), precision-contracting ( $\pi$ -contracting), enactment-contracting ( $\varepsilon$ -contracting), and management-contracting ( $\gamma$ -contracting) paradigms. The micro-contracting paradigm represents the opportunity contracts to be customized on a mass scale. In the just-in-time-contracting paradigm, companies can establish contractual relationships in the most suitable for them moment, with the preferred contracting party and contracting conditions. In the precision-contracting paradigm, companies can automatically define and verify e-contracts. In the enactment-contracting paradigm, parties can automatically link contract establishment and contract enactment due to the use of electronic contracts and can subsequently automatically enact contracts. In the management-contracting paradigm, parties can automatically link the contract establishment process with the contract management process, and can subsequently automatically manage the contracting relations. In contrast to shallow e-contracting, deep e-contracting requires from an enterprise the implementation of an advanced information system that can support complex contracting processes in diverse business contexts.

Currently, the domain of advertising is based on relatively long lasting campaigns that are agreed upon significantly ahead of time (Angelov and Udo, 2005). Thus, advertising can be seen as a mainly static market. The reason for this status quo is the static space that was used until recently for advertising, e.g., newspapers, billboards, TV commercials, etc. Traditionally, the agreement between an advertiser and an advertising medium for an advertising campaign is stated in a written contract.

With the introduction of the Internet, a new advertising space that provides opportunities for dynamic advertising and precise audience targeting has appeared (The Economist, 2005). On-line advertisements are intangible products. Consequently, the delivery of the advertisement to the advertising medium and its publishing can be highly automated. However, traditional paper contracting requires many communications (which might require traveling) and legal and business expertise during the contract establishment and enactment. The slowness and the high costs of traditional, paper-based, written contracts make them unsuitable for the protection of the rights of parties in the dynamic, highly automated environment that is offered by on-line advertising. The possibility for dynamic and flexible agreement and execution of on-line advertising campaigns (already supported by a number of companies, e.g., Google and Yahoo!) and the need for legal protection of the trading parties in these highly automated settings (currently, marginally addressed by companies) were the incentive to select the domain of on-line advertising as a domain in which to discuss the application of deep e-contracting.

In this paper, we investigate the current level of automation of the contracting process for on-line advertising in the Dutch news medium Telegraaf. We describe the currently implemented paradigms of e-contracting and the technology used for it by Telegraaf. Based on these observations, we discuss the implementation of deep e-contracting with its full potential, allowing Telegraaf to support all five paradigms of deep e-contracting. The consequences from the support of these five paradigms for the future of the on-line advertising business are addressed.

The paper has three main contributions. First, the paper contributes to the popularization of deep e-contracting. Currently, the opportunities offered by e-contracting are underestimated by the industry. The paper provides an elaboration of a practical example for the new opportunities revealed by deep e-contracting to companies that operate in dynamic and highly automated business environments. Second, the paper paints a picture for the future development of on-line advertising and the legal protection of the companies involved in it. Conclusions are based on the description of the case of Telegraaf (which involves the usage of explicit business contracts but lacks dynamics) and on the dynamic and flexible advertising scheme supported by Google (which currently lacks advanced contracting support). Last but not least, the application of research results from the domain of e-contracting on a real business case allows us to validate existing, theoretical, research findings.

This paper is organized as follows. In Section 2, we provide a description of the case. The contracting process at Telegraaf and its level of automation are discussed. In Section 3, we analyze the case in terms of supported e-contracting paradigms and the possibility for their full support. In Section 4, validation of the conclusions from Section 3 is presented. The validation is based on the on-line advertising scheme of Google. The paper ends with conclusions.

## 2. CASE DESCRIPTION

The Dutch news medium Telegraaf offers advertising space on its network of electronic editions to potential clients. Its network includes the main news web site<sup>i</sup>, as well as a number of specialized web sites (e.g. "Auto Telegraaf" is dedicated to trading of cars).

This section contains a description of the contracting practices for on-line advertising at Telegraaf. The usage of a contracting framework for the case description facilitates the elaboration of a well-structured discussion that focuses on the main contracting issues. That is why, in this section, we use the "4W framework for contracting" (Angelov and Grefen, 2003). The 4W framework defines and describes the main contracting concepts and the relations between them, and is thus a convenient tool for capturing the key elements of the case and for its structured presentation. The 4W framework is constructed on the basis of the four interrogatives (hence the name 4W), namely, "Who" (describing the *actors* involved in the business relationship), "Where" (describing the contracting *contexts*), "What" (describing the *values exchanged* and the *conditions* for their exchange), and "How" (describing the *means used* and *processes performed* during the contracting relationship). Next, using the 4W framework as a guiding tool, we discuss the main contracting concepts in the case of Telegraaf (shown in the text in italics).

## 2.1 Who

Four main *parties* can be involved in the on-line advertising scenario. Telegraaf plays the role of a *service provider*. The Advertiser (i.e., the *service consumer*) can create and plan its advertising campaign in-house (see Figure 1). If this scenario takes place, the Advertiser directly establishes a contract for its campaign with Telegraaf. Alternatively, an advertising agency can be used by the Advertiser as a *mediator* for planning and handling its advertising campaign. If an Advertiser makes use of an advertising agency, it signs a contract for its campaign with the agency that in turn signs a contract with the medium where it will advertise the products/services of its client (in this case Telegraaf). Additionally, a graphical media company can be used by the Advertiser as an *auxiliary implementor* for the creation of the advertising material. If an Advertiser makes use of a graphical media company, it signs a contract with it. In scenarios which involve a graphical media company and/or an advertising agency, the Advertiser forms a virtual enterprise (VE) with them. From the perspective of Telegraaf, the client may appear to be the Advertiser or the advertising agency. The case presented in this paper investigates both, the classical scenario of contracting between the Advertiser and Telegraaf, as well as the more complex scenario of contracting between the virtual enterprise and Telegraaf. In the case description, often, the general term “client” is used to denote the counter party of Telegraaf, abstracting from the type of the client. When the difference in the type of counter party introduces differences to the trading scenario, advertisers and advertising agencies are explicitly distinguished.

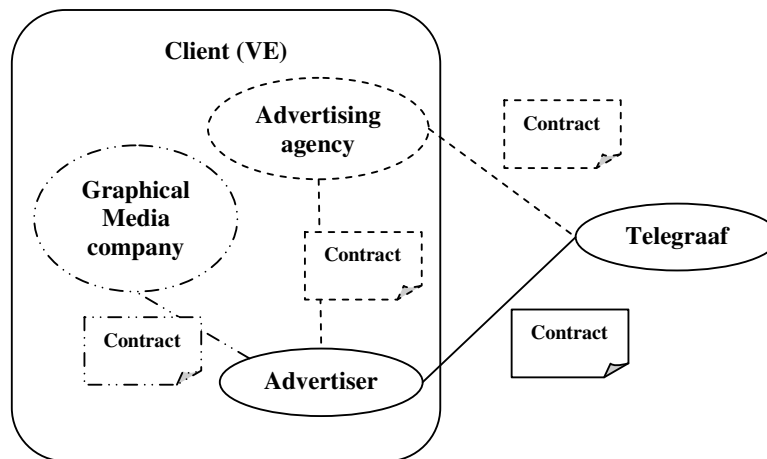


Figure 1 - Actors in the case

## 2.2 Where

A number of *business* and *legal* issues define the *context* in which contracting relations between Telegraaf and its clients take place.

Telegraaf plays the dominant role in the business relation. It controls the contracting process, provides the contract offers, etc. Clients are usually large or medium-sized companies that want to advertise their products or services. Clients that are recognized by the ROTA organization (Council for Control and Supervision of Advertising) are allowed to make their payments on fixed dates (regardless of the date of the invoice) and can be given discounts at the discretion of Telegraaf. Usually, ROTA recognized clients are advertising agencies.

A new contract is established for each advertising campaign and no contract dependencies exist. Each contract between Telegraaf and a client is bounded to the general provisions of Telegraaf.

### 2.3 What

Telegraaf offers the *service* of publishing digital advertisements in its on-line editions. In return, clients must provide a corresponding *financial reward* to Telegraaf, i.e., an agreed payment.

Telegraaf offers different advertising plans. An advertisement can be agreed to be published on the main news web site of Telegraaf, on one of the sites part of the network of Telegraaf, or on a sub-section of the news web site (international news, sport, weather, etc.). An advertising plan is assigned a fixed tariff ("BasicTariff"). For each advertising plan Telegraaf offers several types of advertisements, i.e., banners, large rectangles, pop-unders, screen-ads, textlinks. Each of these types of advertisements is assigned a factor ("Factor") that shows its "advertising power".

Telegraaf requires a minimum amount of 1000 euros for an advertising campaign. The price for a campaign is based on the number of desired impressions (an impression is the delivery of a single advertisement to a single viewer one time). The advertising tariff for one thousand impressions (also known as CPM - cost per thousand) is calculated through the formula:  $\text{Adv.Tariff} = \text{"BasicTariff"} \times \text{"Factor"}$ .

For advertising in Telegraaf, a number of general *provisions* apply. These provisions are contracting clauses that are valid for any contract of Telegraaf on on-line advertising and express general rights and obligations of the contracting parties. The complete set of general provisions is provided on-line<sup>ii</sup>. Examples of such provisions are:

- The client has to deliver its advertisement at least two days before the beginning of the campaign.
- Each of the parties can end the contract by means of a registered letter out of court, if the other party fails to fulfill its obligations.

The conditions that are specific for the business relation are specified in the contract in the form of *exchange value provisions*. A reference to the general provisions of Telegraaf is included in the contract.

### 2.4 How

Typically, during a *contracting process* a client will read the proposed advertising plans by Telegraaf and the general provisions imposed by Telegraaf. After consultation with representative of Telegraaf, it will inform the sales department of on-line advertising at Telegraaf for its decision on the preferred advertising plan and campaign. Telegraaf will send a signed contract to the client, which the client will

sign and send back. As a last step the client will send the advertisement and after he receives an invoice will pay the required amount. Telegraaf will feed the established contract into its advertising system. It will check the advertisement for compliance with its requirements (optionally, it might make changes on the advertisement) and will publish the advertisement as agreed in the advertising plan. Depending on the level of trust in the client, Telegraaf will send an invoice to the client and expect payment prior to the start of the advertising campaign or after it.

Humans from both contracting parties are required for the negotiation of the advertising campaigns and the contract formation. Negotiations concentrate mainly on the duration of an advertising campaign, as well as on the values of advertising-related parameters (type of advertisement, network in which the campaign will take place). The possible sets of values for these parameters are pre-defined by Telegraaf. Constraints on selection of an advertising plan can be set by Telegraaf due to limited availability of spots and inventory. Negotiations for campaigns that include a single advertisement can be seen as multi-attribute negotiations. Negotiations for campaigns that involve a set of advertisements become of heterogeneous nature. However, Telegraaf has no special policies for negotiations on bundles of advertisements (negotiation on bundles of goods is an attractive form for exchanging values and has received a significant attention (Somefun *et al.*, 2004)). The time for contract establishment may vary from minutes to hours (or even days), depending on the need for verification of the client and the speed of decision making and contract confirmation from the client's side. The contract offer can be sent to the client by mail, fax, or e-mail. Telegraaf and its clients make use of popular applications like e-mail and text-processing tools, which lead to decreased costs and time for *communication* and contract establishment. In addition, Telegraaf uses two information systems for the *contract establishment* and *contract enactment*.

The "contract establishment system" supports the creation of contracts, as well as reservation of advertisement spots. For the contract *content*, predefined *templates* are used. The system provides an interface to human operators for selecting the proper template and filling it in. It supports *human-readable* representation, as well as *machine-readable representation* of contracts. The contract offer is sent to the client in a human-readable representation. The "contract establishment system" is based on an old legacy system that has recently been tailored by Telegraaf to support its needs for higher automation of the contracting process.

As soon as a contract offer is accepted by a client, a representative of the sales department of Telegraaf sends the machine-readable representation of the contract (provided by the "contract establishment system") to the "advertising system". The "advertising system" interprets contracts and starts the advertising campaigns. It automatically publishes the advertisements as agreed in the contract. Thus, the "advertising system" supports automation of the contract enactment and its *management* during the advertising stage. By the end of an advertising campaign, the system informs the sales department of Telegraaf.

### **3. CASE ANALYSIS - STATUS AND PROSPECTS**

Next, we briefly evaluate the level of automation of the contracting process in the current business settings at Telegraaf and explain the benefits that full implementation of deep e-contracting may introduce to this case.

#### **3.1 Status**

The usage of information technology during contract establishment and contract enactment is a step towards deep e-contracting. From the case description, it can be concluded that Telegraaf with its contract establishment and advertising systems supports the enactment-contracting paradigm. The management-contracting paradigm is supported only partially in the contract enactment phase.

However, the involvement of humans required for contract establishment, does not allow Telegraaf to support micro-contracting, just-in-time-contracting, and precision-contracting. The lack of a dedicated information system for the automation of the contract management requires human involvement in the contract management during the contract establishment and enactment.

#### **3.2 Prospects**

In a possible future scenario, Telegraaf could implement deep e-contracting in its full potential. Telegraaf could employ all five paradigms of e-contracting, i.e., micro-, just-in-time-, precision-, management-, and enactment-contracting improving significantly its market competitiveness.

Micro-contracting will allow Telegraaf to support low-cost campaigns allowing small-size companies to use on-line advertising as well. For example, a campaign with a budget of 10 EUR will allow the publishing of about 500 advertisements. As on-line advertising allows precise targeting of advertisements to the proper audience, small campaigns may still bring benefits to an advertiser.

Just-in-time-contracting will allow Telegraaf to support contract establishment in the moment preferred by its clients. For example, clients might prefer to agree on an advertising campaign moments (minutes, seconds) before the actual start of the campaign. Incentives for clients to establish a contract at this late stage may be lower prices of advertising spots, publishing of news that will be of interest to the audience targeted by the client, occurrence of an event that will attract a huge amount of readers, etc.

The support of the micro- and just-in-time-contracting paradigms will lead to increased market dynamics in advertising. The high market dynamics will create an incentive for Telegraaf to support more flexible pricing policies, diverse bonus strategies (e.g., contracting of advertising bundles), and other complex business rules. For the dynamic establishments of such complex contracts, automatic contract verification is a prerequisite. Thus, precision-contracting will be required for the dynamic establishment of correct, complex contracts.

The employment of the contract-management paradigm in its full potential will allow Telegraaf automation of the management of contracting of advertising campaigns, further minimizing the requirements on human power at the department of on-line advertising sales.

By employing micro-, just-in-time-, and precision-contracting, and combining them with the already employed enactment-, and management-contracting paradigms, Telegraaf will achieve full automation of the contract establishment, enactment, and management processes. Only checking of advertisements for compliance with the company policies may still have to be performed manually. However, as estimated by Telegraaf, this step requires currently between 15 and 120 seconds and will not cause substantial delays. Furthermore, in the case of repeated campaigns, this step can be omitted. Another manual work that currently cannot be automated is the editing of advertising materials that do not comply with the requirements of Telegraaf. At this point this step requires at minimum 1 day (it can require up to 5 days). Thus, just-in-time- and micro-contracting will be applicable for clients with repeating campaigns and/or for clients that provide correct advertising material.

Exceptions that will require performance of certain activities by humans (e.g., the provision of a non-compliant advertisement will require its manual editing by Telegraaf) may occur in all scenarios. The future e-contracting system used by Telegraaf should support seamless transition from automated to human execution of activities. For the development of its e-contracting system, Telegraaf may use existing research results on design of e-contracting architectures (Angelov, 2006).

#### **4. VALIDATION**

Clearly, the management-, enactment- and precisions-contracting paradigms bring benefits to Telegraaf. A question that emerges after that discussion is whether advertisers and publishing media will be interested in providing higher dynamics in the on-line advertising domain by introducing micro- and just-in-time-contracting. Will it be beneficial to advertiser and publishers if advertisers can perform micro-advertising campaigns that last only a day or even less? Will companies be interested in having the opportunity of deciding on an advertising campaign at any moment, i.e., will they be interested in just-in-time-advertising? To answer these questions, we did two separate investigations. We presented these ideas to Telegraaf (Angelov and Udo, 2005), who found the new models highly intriguing and expressed intention for their support in the nearest future. Furthermore, we investigated the support for these new business models in one of the most advanced advertising schemes that currently exist, i.e., the advertising scheme offered by Google "AdWords". Next, we briefly discuss the AdWords advertising scheme.

##### **4.1 The AdWords scheme**

In the AdWords scheme, a company can publish a textual advertisement in the search result of a query submitted by a user (the popular term for this advertising scheme is "sponsored search" and was originally developed by Overture). To get its advertisement published, an advertiser participates in a fully-automated, multi-attribute, second-price auction performed at the time the query is sent. An auction on the relevant bids submitted by the advertisers is run every time a user submits a query. The duration of a "campaign" is dynamically defined by the client and can



last from seconds to months. The registration process takes few minutes and after its completion the bid of the client is considered in auctions.

The AdWords advertising scheme is a significant success for Google (The Economist, 2005). Its global reach, precise audience targeting, fast and cheap campaign set-up, flexible payment schemes, etc. are attractive to small, medium, and large advertising clients (Pennock and Asdemir, 2005). The micro-advertising and just-in-time-advertising business models are supported in AdWords, allowing companies to initiate advertising campaigns in the moment preferred by them with either smaller or larger financial resources. The possibility to constantly adjust their campaigns gives companies enormous flexibility.

#### **4.2 Discussion on the AdWords scheme**

The example of the AdWords advertising scheme confirms that the opportunity for dynamic advertising offered by modern technologies is appealing to advertisers and profitable to publishers. The innovative advertising schemes have been discussed in the research community as well. The sponsored search as a special case of on-line advertising has been discussed in two workshops (Karnstedt *et al.*, 2004), (Pennock and Asdemir, 2005). The similarities and differences between the generalized second-price auctions supported in AdWords and the classical Vickerey auctions are discussed in (Edelman *et al.*, 2005). A formal model of sponsored search auctions is proposed in (Kitts *et al.*, 2005). A more general mechanism for dynamic advertising through auctions is presented in (Bohte *et al.*, 2004).

Currently, the rights and obligations of Google and its clients are specified in a general set of "Terms and conditions" that are defined unilaterally by Google. However, researchers already look into the implementation of more advanced and complex contract provisions between Google and its clients that will be personalized for each client (Parkes and Sandholm, 2005). This will bring forward the need of establishment of personalized contractual relationships that will require deep e-contracting support.

## **5. CONCLUSIONS**

The domain of on-line advertising provides new opportunities to companies for more dynamic and flexible advertising plans. However, to provide legal protection to companies in the newly emerging dynamic business models in the domain of on-line advertising, a high level of automation of the contracting process is required. Deep e-contracting delivers the required automated support of the contract establishment, enactment, and management by using advanced information technologies.

It can be expected that having the example of sponsored search, Telegraaf and other on-line editions will implement a more flexible, dynamic, and highly automated advertising schemes, in which deep e-contracting is a necessity. Auction-based approaches for buying advertising space in on-line resources currently gain significant attention. In the context of advertising in on-line editions, such approaches may be applied as well. Similar to the current practice in sponsored

search, media may use auctions for just-in-time-advertising. Combinatorial auctions may be used to support simultaneous selling of sets of advertising spots.

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<sup>i</sup> <http://www.telegraaf.nl/>

<sup>ii</sup> <http://service.telegraaf.nl/tarieven/website/index.php?39>