Newspaper Advertising on-line

CASE 1: EDIFACT at Helsingin Sanomat

CASE 2: Artwork Delivery System at Associated Newspapers

Digitising the booking of advertisements as well as delivering the content of the advertisement digitally have several advantages. Ad orders and/or content in digital format enable faster and cheaper communication by using normal telephone lines or ISDN. Less human interference decreases the possibility of mistakes and saves labour costs. And if methods and applications used are standardised, the accessibility of newspapers to the advertisers is increased.

This report is continuation to the Special Report 6.14.1 "Introduction to the basic principles of EDIFACT" and consists of two case studies. The first case study presents the Finnish newspaper Helsingin Sanomat and how they are using EDIFACT for electronic booking of ads. In the second case study digital distribution of artwork is studied by presenting ADS (Artwork Delivery System) developed by Associated Newspapers in London; UK.

There are other applications in the market being used especially for digital distribution of advertising data and IFRA shall report on them in “Newspaper Techniques” as they develop.

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CASE 1.
HELSINGIN SANOMAT

Using EDIFACT for electronic booking of ads

1.1 The Newspaper

Helsingin Sanomat, published in Helsinki, Finland, is the biggest Scandinavian morning newspaper with a circulation of 480,000 copies on weekdays and 570,000 on Sundays. The average number of broadsheet pages for weekdays is about 56 and more than 80 for weekends. The advertising volume is currently 35 column kilometres per annum as it is defined in Finland. This corresponds to about 2000 advertisements per day.

1.2 First phase - Transmitting Advertisement Orders via Teletex

The basic idea about transmitting Advertisement Orders digitally started at Helsingin Sanomat already back at 1986, at a time when newspapers knew nothing about EDI. The idea was put into practice with one major customer (The association of car retailers in Helsinki; HALY) by sending the orders via Teletex which was a Telex system containing an expanded set of characters. A printer was connected to the Teletex terminal and the printout was input manually into the Helsingin Sanomat advertising system.

To avoid manual inputting, a tailored piece of software was later written to interpret Teletex messages and to transmit them by using an RS 232 connection directly to the Tandem-based SII advertising system at Helsingin Sanomat.

This was a very special solution applied only to one customer and needed a lot of co-operation before agreement of the message structure was found. But it was the digital transmission of Advertisement Orders that laid the ground for the coming solutions.

1.3 UN/ECE EDIFACT was applied in 1990

Obviously, when Helsingin Sanomat heard about the United Nations/Economic Commission for Europe’s EDIFACT project it raised a lot of interest at the publishing house. Since electronic transmission via Teletex had successfully been operational with HALY, it was first decided to further co-operate with them. Having only one operation partner made negotiating and reaching agreement easier and faster although it entailed the risk of the system becoming too specialised. This was taken into account when forming the EDI messages.

The result of these operations was HEDI (Helsingin Sanomat EDI) which has been used in practice between HALY and Helsingin Sanomat since 1990. It is based on the message format ORDERS 90.1.

1.4 Broadening the services - HEDI becomes MEDI

The benefits of HEDI were already noticed when using it with only one customer. It:

- made communication faster
- saved time in the production of ads
- decreased the number of complaints

Therefore, it was decided to form a working group in Finland to bring the subject of EDI into the reach of more parties, including advertising agencies, other newspapers and also magazines.

MEDI (Media EDI) Working Group started its operation in December 1990. The reasons to start the development were to be seen as:

- to offer better services to the major account customers
- to speed up the advertising process
- to decrease the cost of labour involved
- to avoid overloading the telephone services during peak hours
- to increase the co-operation between the media and the agencies

Representatives from 6 major advertising agencies as well as from 2 major publishers took part in the working group. The publishers did not only represent newspapers, but also a magazine publisher was present. This way the chosen message structures would serve the industry on a broader aspect which helps the implementation and use of EDI. In addition to the working group, a Steering Committee, consisting of upper management, was established.

The publishers and agencies had only little knowledge about the details of EDI messages. Therefore, an EDI consultant was hired to help in the project. The consultant, however, had only little knowledge about the practice of advertising in printed matter. To overcome these problems, and also to investigate all existing methods of booking advertisements, the consultant carried out a research study before the working group had its first meeting. The main task of the study was to find out the flow of information concerning the booking and production of advertisements. The results of the study were published in an intermediate report and were delivered to the working group and it served as a basis for the negotiations.

One of the first tasks the working group tackled was an agreement of the terminology to be used. Each newspaper and advertising agency used their own terminology when dealing with the ordering and material of advertisements. It was essential, in the first place, to harmonise this terminology.

Each publisher and agency also had different systems and routines in use (studied in the intermediate report). Taking the various processes into account and “melting” each structure to suit the needs of EDI was the major task of the working group. When using EDI (or any other computer interactive method without human interference) it is vital...
that all terms, codes and commands are clearly described and well known by all parties involved. When orders are handled verbally, clarifying questions and requests for missing information can easily be done. This is not possible when EDI is used.

Altogether the working group met 15 times during a period of 6 months. The relatively short time was possible because of the thorough prework done by the consultant.

The concept of MEDI, including all the necessary message structures, was completed in spring 1991. Helsingin Sanomat was elected to act as a pilot company with one of the major advertising agencies (Datum). Actual testing started in October 1991 and it has continued successfully since then. At the moment actual transaction is being started with the same agency.

Before going into practice with Datum the content and meaning of each field within the EDI message was once more gone through. This is, according to the experiences of Helsingin Sanomat, needed with every new customer because EDI messages are loose in a way. For example, if repetition of the same ad is used, MEDI gives a possibility to indicate this by using a code. What this code actually means, must be agreed between the advertiser and the media.

At present, the number of EDI messages received per week by Helsingin Sanomat is about 500. Of these, 300 are based on HEDI and 200 are based on the new version, MEDI (the system at Helsingin Sanomat is capable of recognising which version of EDI is used and to interpret it accordingly). The implementation at other agencies has been somewhat slowed down by the decreasing advertising volumes but as the recession becomes history the volumes handled by using EDI are expected to rise.

Another factor that is slowing down the progress is reluctance to change. This is especially encountered at the advertising agencies, who are not always willing to invest in the computers, software, modems and education needed for EDI. This, of course, is very much dependent on the status of different agencies. The ones already familiar with computer technology and its benefits are more willing to use EDI. Generally speaking, it seems that the benefits of EDI are more tangible for the publisher than they are for the advertising agency since the benefit of sending orders later, receiving confirmations automatically and immediately, reducing errors and handling invoicing electronically are sometimes more difficult to justify than a straight reduction in the manual inputting of the orders or even contents into an advertising system. Also the number of orders handled by one agency is a lot smaller than the number handled by a publisher.

For the reasons mentioned above as experienced by Helsingin Sanomat, the initial and driving force must come from the publishers’ side. Practice in other fields (automotive industry, chemical industry, inter-banking, paper shipments etc.) has shown that once EDI is running, the benefits for all parties are manifold.

1.5 The principle

MEDI is used for electronic transactions between the buyers of advertisements (usually advertising agencies or larger retailers) and the sellers of advertisement space (newspapers, magazines). It covers the following data flows:

- Advertisement Order
- Verification of Advertisement Order
- Advertisement Invoice

The associates involved can include also:

- Advertiser
- Advertiser’s concern
- Art Director
- Supplier of the Advertising Material
- Receiver of Proof
- Billing Clerk
- Receiver of the Invoice

One advertisement message normally applies to a single publication date. This is, however, being changed to make ordering special advertisement packages easier. One Advertisement Order may apply to several advertisement spots located in different positions in a single issue of a given publication.

The structure of the Verification of Advertisement Order is identical to the structure of the Advertisement Order.

An Advertisement Invoice may cover one or more orders by the same subscriber and billing clerk.

1.6 Description of the MEDI EDIFACT messages

1.6.1 Advertisement Order

By using the Advertisement Order the buyer of an advertisement space conveys to the medium the pertinent information required in publishing and invoicing the advertisement. This does not normally include the advertisement material. However, the alphanumeric text material of an ad may be transferred by the order message.

An Advertisement Order always contains information about the buyer, the medium, date of publication as well as size and price of ad and so on. An Advertisement Order can be either preliminary or binding.

A preliminary Advertisement Order remains valid until the final advertisement order date (equal to the previous final reservation date) announced by the medium. By that date the subscriber is to change his order to binding in order to maintain his rights to the advertising space. The preliminary Advertising Order may be due to expire previously provided that the medium, after having received a binding order from another party concerning the same advertising space, notifies the party having placed the preliminary order about it, and provided it fails to change its order to binding within a reasonable period of time. A reasonable period of time is usually approximately three weekdays.
A binding Advertisement Order is valid unless cancelled by
the buyer. The medium has a right to sanctions if a binding
order is cancelled after the final advertisement order date
announced by the medium. Also, any changes made in the
original Advertisement Order after the final advertisement
order date, can be separately charged provided that they
cause expenses to the medium.

The content (described in paragraph 1.7) of the Advertisement
Order is structured in such a way that it is applicable
for both the preliminary and binding orders.

1.6.2 Verification of Advertisement Order

By sending a Verification of Advertisement Order the medium
first of all confirms that the Advertisement Order has been received. At the same time possible changes, in regard
to the order, concerning the publication or invoicing the advertisement are notified by the medium. The Verification
of Advertisement Order is sent immediately after the order has been handled in the advertising system of the medium.

The verification always contains individualised information of the orderer, party identification of both the subscriber and the medium, and the identifier expressing the content of the verification. The verification of the preliminary advertisement order contains, additionally, the expiration date by which the preliminary order must be changed to a binding order.

Other than that, the verification only contains information concerning any changes to the original order. The changes may concern basically only information on prices, advertisement material or, in some cases, publication space. The subscriber confirms having received the verification merely with technical acknowledgement. Consequently, no verifications of verifications.

The main headings for the verification are:

Accepted Unamended
The ad will be published and invoiced according to the order

Accepted Unamended, additional information
As above, the verification including additional information

Accepted with changes announced in the verification

Unprocessable
Information is defective or inadequate, the reasons being stated in the references of the verification

Advertisement Unpublishable (ad space not available)
Space reserved until deadline (=final ordering date of the ad)

Requesting binding order by deadline (someone else placed a binding order)

The requested binding order can be handled only after the final date (someone has placed a preliminary order)

Verification of Order includes third-party information (the order will be processed further by the receiver of the verification)

Because of the difficult interaction between the SII advertising system and the PC and Unix based EDI system the Verification of Advertisement Order is not yet being used. It will be taken into practice later when the software for the conversions needed have been written.

1.6.3 Technical Acknowledgement

The “Technical Acknowledgement” is sent by the Unix workstation that carries out the EDI-in-house conversion. Its format is based upon the international recommendations about technical acknowledgement. The purpose of the technical acknowledgement is to check whether the message sent is in accordance with the EDI syntax and whether it can be translated or not. Correspondingly, the technical acknowledgement is either positive or negative. If a negative acknowledgement is sent, it is accompanied by a text describing the reason why it could not be translated.

1.6.4 Advertisement Invoice

Electronic transmission of Advertisement Invoices causes no major changes in present procedures. The verification of Advertisement Order acts as a significant deterrent to complaints.

The Advertisement Invoice has to be in accordance with the latest Verification of Order. A valid verification, consequently, binds the media and, in principle, also the subscriber provided that he has not reclaimed it.

The earliest possible date for invoicing is the publication date of the ad. Need for verification may postpone invoicing to a later date.

Invoicing is not yet carried out by using EDI at Helsingin Sanomat. The major reason, again, being the interaction with the proprietary Advertising System. Once the problems with the Verification are solved, the problems with invoicing will be tackled.

1.7 Basic content
of the MEDI EDIFACT messages

The structure and the data elements of the Advertisement Order and the Verification of Advertisement Order messages are a subset of the UN/ECE standard message, Purchase Order (UNSM: ORDERS 90.1). The structure and the data elements of the Advertisement Invoice are a subset of the UN/ECE standard message (UNSM: INVOICE 90.1). Data segments used in messages conform with the standard index for data elements (EDSD 90.1). Information in data segments is based on UNTDED 1990 directory. Information for identifier code values is, when applicable, in accordance with the UNTDED 1990. In addition, a portion of identifier information has been assigned their own code values. They have been chosen in a way as to prevent duplication with UNTDED 1990 specifications.
The interchange separators for beginning and ending, UNA, UNB, and UNZ, are a part of the EDIFACT grammar and, therefore, not included in the recommendation.

Data presentation specifications are as follows:
M = Mandatory field
C = Conditional field

<table>
<thead>
<tr>
<th>Type of Information</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha characters</td>
<td>a3 = three alphabetic characters</td>
</tr>
<tr>
<td>Numeric characters</td>
<td>an..7 = up to seven alphabetic or numeric characters</td>
</tr>
<tr>
<td>Fixed length</td>
<td>N = fixed length</td>
</tr>
<tr>
<td>Undefined length</td>
<td>..N = undefined length, up to N characters</td>
</tr>
</tbody>
</table>

Currency fields are given as pennies. Pennies and marks are not separated from one another (e.g., decimal separator is not used). The fields for percents are given as hundreds of percents without decimal separator. The fields for dates are given as YYMMDD in accordance with the ISO standard 8601.

The next two pages and Figure 1 describe the message structure and contents of MEDI Advertisement Invoice.

Because of the similarities with the Advertisement Order, Advertisement Invoice message structure is not explained here.

For more information, see IFRA Special Report 6.14.1

The complete message description of MEDI is available at IFRA in the English language.

1.8 Hardware, software and telecommunications used by Helsingin Sanomat

EDIFACT communication is always interactive. The customers send the Advertisement Orders in an EDIFACT format to the medium and the medium responds to these messages first by sending a technical acknowledgement and later by sending the verification which is to confirm that the message has been received and entered into the advertising system. Later an invoice is sent from the medium to the customer.

This gives rise to the need in most cases for the messages to undergo several file format and protocol conversions which require special software or even services from the telecommunication companies.

1.8.1 Receiving EDIFACT messages

An EDI connection can be established in numerous ways. The case presented here is one example of a configuration being used between a customer’s system and Helsingin Sanomat (Fig. 2).

In a typical case, the customer produces an Advertisement Order on a PC in the normal way. Then a software, an EDI converter, running in the same PC converts the Advertisement Order into an EDIFACT message. In other words, it makes an in-house EDIFACT conversion. To be able to do this, the EDI converter must have the description of the in-house format used. If several in-house formats are used (different ones for different media or newspapers), the converter must have the description of all of them. This means that the EDI conversion software has to be tailored for each agency using a different in-house format, but by doing so, the agency can continue using the format it has used before EDI. EDI conversion software is supplied by various companies.

All MEDI messages addressed to Helsingin Sanomat arrive in TIETOTORI which is a digital mailbox running in a Unix computer. Since TIETOTORI is not physically located at the premises of Helsingin Sanomat, UNIXILMU is needed while it collects the MEDI messages from the TIETOTORI. It is not, however, only a physical link, since UNIXILMU also runs the EDI converter that converts the MEDI messages into an in-house format suitable to be transmitted to a PC (ILMU-PC) and for a print-out. This EDIFACT-in-house conversion is capable of recognising and converting different kinds of EDI messages (MEDI, HEDI). If the message type is unknown it sends the messages back to its origin. Other functions run by the UNIX-
Advertensiom order and Verification of Advertisement Order

<table>
<thead>
<tr>
<th>Message Structure</th>
<th>Description of important data segments</th>
<th>Examples of content of some data segments</th>
</tr>
</thead>
<tbody>
<tr>
<td>code M/C rep Name</td>
<td>UNH The data segment starts and uniquely identi-</td>
<td>1225 message function code</td>
</tr>
<tr>
<td></td>
<td>fies the used data representation recommendation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BGM Beginning of message</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1001 Document name</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1004 document number</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C031 date and time of document</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1225 message function code</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1154 reference number</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NAD Party qualifier, party identification, party name,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>street address, city name, postal code</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DOC Describes the quality and name of the advertisement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>material or the proofs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1001 document name, coded</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1000 document name, topic name or heading</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3153 communication channel, manner of conveying</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the advertisement material</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1220 quantity of originals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CTA Contact function, department, employee, phone</td>
<td></td>
</tr>
<tr>
<td></td>
<td>number</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IMD Item description used in repetitious advertisements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1001 Document name, coded</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Type of material</td>
<td></td>
</tr>
<tr>
<td></td>
<td>111 paper copy or paste-up</td>
<td></td>
</tr>
<tr>
<td></td>
<td>112 film</td>
<td></td>
</tr>
<tr>
<td></td>
<td>113 lay-out</td>
<td></td>
</tr>
<tr>
<td></td>
<td>114 to be typeset</td>
<td></td>
</tr>
<tr>
<td></td>
<td>115 MAC material</td>
<td></td>
</tr>
<tr>
<td></td>
<td>116 PC material</td>
<td></td>
</tr>
<tr>
<td></td>
<td>119 interchange within order</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3153 Communication channel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EI EDI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FX telefax</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MA mail</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TE telephone</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TL telex</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TM telemail (E-mail)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ZD delivered</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ZF to be picked up</td>
<td></td>
</tr>
</tbody>
</table>
UNS M Section Control

Specification Information

R2. C 1 9999 Advertisement Information-
(UN ORDERS group 10)

LIN M Line Item
RFF C 1..10 References
PIA C 1..10 Additional Product Identification

R3. C 1..200 Ad Lines
(UN ORDERS group 21)

SID M Subline Item Details
FTX C 1..5 Free Text

UNS M Section Control

Summary Information

FTX C 1..5 Free Text

R4. C 1..10 Price Information-
(UN ORDERS group 32)

ALC M Allowances and Charges

UNT M Message Trailer

R2
LIN Line item/basic information
1082 line item number, running number of advert.
1229 action request code, place of destination
7020 article number, location of advertisement
7023 article number identifier
7020 article number, colour of advertisement
6060 quantity
5110 unit price
5375 price type code
5284 unit price basis
6411 measure unit specifier
6170 number of pricing units, quantity*rate basis
5116 item amount, unit price*quantity of pricing units

FTX Free text can be used for the content of the ad.
1 - 5 lines which can be repeated 200 times

R3

ALC Allowances and Charges
Used to indicate the starting price, final price and possible discounts or increases in price. The starting price and final are always mandatory.

7020 takes the form of XXCBB in which xx=
number of colours (1C, 2C, 3C, 4C), C=
colour (e.g. B=blue) and CC is shade,
for example 2C2B.

5375 price type code
CA catalogue
SU Sunday
SE seasonal
SN special issue price
IN annex price list
SD special section price
DE agreed upon price

6411 measure unit specifier
ZCR columns * lines
ZCM columns * height mm
ZCP no. of parts/portion of the page
ZSE pages * edition
(e.g. 16p. annex* 20.000 edition)
ILMU are the sending of the technical acknowledgement and production of log reports.

In some cases, the messages sent to Helsingin Sanomat travel via OIVA, a public message translation service. It converts file formats and transfer protocols originating from different types of systems to enable communication with the receiving system. Such a node is needed because of the heterogeneous network being used by possible partners. For example in the case of Datum (the advertising agency), OIVA converts the IBM SYNCRRA protocol being used by them to TCP/IP being used by Helsingin Sanomat and then transmits the message via LanLink to TIE TOT ORI. In practice, OIVA checks the Helsingin Sanomat mailbox that is located in OIVA and from time to time collects messages from there to be converted. OIVA uses the transportation frame of the ED1 message to find out where the message comes from and where it is addressed to. Based on this information it applies the conversions necessary. If the customer uses TCP/IP protocol OIVA can, naturally, be by-passed and the message is sent directly to the newspaper.

At Helsingin Sanomat, ILMU-PC is the PC used to trigger the collection of MEDI messages from TIE TOT ORI which is done manually shortly after the deadlines announced by the newspaper. From the ILMU-PC the Advertisement Order can also be printed in a “normal language” format. After that, ILMU-PC carries out the conversion to the APORT format required by the SII advertising system and finally sends the order there.

If the SII system cannot interpret the APORT file, it simply deletes the file. Therefore, a manual comparison between the “normal language” forms printed by the ILMU-PC and the list of orders in the SII system is always carried out.

1.8.2 Sending the technical acknowledgement

Each MEDI message that reaches the UNIXILMU server is confirmed by a technical acknowledgement. Receiving the technical acknowledgement is a sign for the customer that the message has been received by the medium. It also assigns the responsibility of publication or a request in one form or another to the medium.

Technically, sending the acknowledgement is not always simple because when using modem connections the line is disconnected as soon as the first message is received - that is before the message is interpreted and its content checked. Therefore, the receiver has to establish a new connection to the sender before an acknowledgement can be sent. If a permanent connection between the agency and the newspaper is used, the traffic in both directions is easier.

1.8.3 Sending the invoice

The invoice is not yet sent in EDI format because the SII system cannot communicate sufficiently with the EDI system. Since EDI is not a problem for banks, and quick and errorless invoicing is one of the major benefits of the EDI concept, this problem will be encountered soon by Helsingin Sanomat.

CASE 2.
ASSOCIATED NEWSPAPERS

Using ADS for digital delivery of advertisement data

2.1 The Newspaper

Associated Newspapers has during the last years acted as a forerunner in implementing and developing new applications to enable totally digital page make-up. The goal for them was always 100% digital prepress. This was achieved already in 1992 but it demanded scanning camera-ready advertising material into the system as lineart. This creates files of 200-300 MB which are tedious to transmit in the network and to operate in the workstations (even by using OPI). Also, scanning in halftone originals always deteriorates the quality to some degree.
Therefore, it is no surprise that it was Associated Newspapers who were the first to develop a software dedicated to enable sending digital files from computer to computer by using ISDN (Integrated Services Digital Network). It was done in co-operation with 4-Sight, a company specialised in ISDN technologies.

Today, ADS is being used by over 30 different production houses and newspapers. It is mostly being used for sending black & white classified and display ads in PostScript format. Sending colour is not a problem technically but will not be utilised until various bodies agree a standard specification for the industry. This is expected by Associated Newspapers within the near future.

2.2 ADS (Artwork Delivery System) concept

The ADS package consists of two software parts and an ISDN card running in a Macintosh environment. The communications application software that handles the ISDN connections is called Comms-Server. The other software is ADS itself which provides the interface to Comms-Server so that complete material for artwork, including text and copy instructions, may be sent directly to publishers or agencies.

The ISDN card is a standard NuBus card and can be installed in the NuBus slot in the Macintosh.

2.2.1 Comms-Server

Comms-Server’s main function is to transmit and receive data in the form of files. It operates purely as a messaging system, and is concerned only with ISDN facilities. Besides this, it includes accounting and logging facilities in order to control incoming and outgoing files.

In a multi user setup the Comms-Server would be the Macintosh which includes the ISDN card for outside connections. The users are connected to this server via a network and use only the ADS software which gives a transparent access to the ISDN so that the user is not directly involved with Comms-Server at all. The Comms-Server works in the background, in a way.

The configuration of the Comms-Server gives the user an option to set the system up as required. In a normal setup both ISDN channels as well as incoming and outgoing lines are enabled. The user can also select the number of retries and interval between retries taking into account the current regulations (Figure 3).

As it is important to control the amount of data stored on the server, the Auto delete function can be used to delete items automatically after a specified time. Another important facility is the accounting log, enabling the user to analyse the processing of all messages. The information available can be selected as seen from Figure 4.

Other features of the Comms-Server include rejecting, deleting and suspending files. The connection times can be specified to take benefit of possible cheaper rate periods in the telephone network.

2.2.2 ADS

The ADS part of the software is actually the one that the user deals with and it must be located in each workstation from which files are sent via the Comms-Server to remote computers. Each user, therefore, has to be connected via a network to the server. If ADS is used in a single user environment the ADS and Comms-Server software locate, naturally, in the same computer.
The main features of ADS include:

- electronic transfer of artwork files
- compression and decompression of files
- copy instructions attached to each item of artwork
- including of fonts or font outlines
- sending of files to several remote sites

ADS uses basically two baskets, the input basket and the output basket, to trigger the sending and receiving of files. Transmitting files is simply done by dragging a file into the output basket. Before this the user has selected the server (Comms-Server) he is using and an Output Stack on the server (this operation is only carried out for the first time of sending). Once the file to be transmitted is dragged into the output basket the software displays a window from which the destination is selected. If compression is used the compression method is selected from the same window. The dialogue box also asks whether fonts should be included or not. Actually, the fonts are never sent, but only outlines of the printer fonts which can only be used during output and are thereafter deleted. This should be according to the font licenses and therefore perfectly acceptable. After that the file can be sent by clicking the Send command (Figure 5).

New destinations can be added to the list by a feature that asks for the company name and the ISDN number.

The file formats accepted by ADS are TIFF, PICT, IPTC, Photoshop and EPSF which is the principle format and is recommended in practice.

ADS uses the Stuffit Engine for compression. Stuffit was selected because it is widely spread within the Macintosh environment and because it is a no-loss compression method having no effect on the image quality. It gives a compression ratio of 4 to 1. The decompression at the receiving site is carried out automatically.

At the receiving site the files can be directed to a specific destination according to departments for example. There the file is simply transmitted to a page make-up workstation where it is positioned on a page.

The incoming and outgoing files can be seen either as strings of text or as thumbnails. The size of the thumbnails can be chosen by assigning the pixel amount to be used in height and width. Also, a zoom option can be used to highlight details of an artwork.

One of the most important elements of ADS is the Copy Instructions attached to each file (Appendix 1). Without Copy Instructions the file cannot be transmitted and it follows the file at all times. This makes sure that the instructions are never lost and contain the original information.

The copy instructions are held in ASCII format and they usually contain information about the sender and the receiver. Reference number to the artwork is included as well as additional information in the form of free text. The content of the copy instructions has been agreed with the users and the Newspaper Publishers Association (NPA). A copy of their recommendation is presented in Appendix 1.

2.3 The benefits of using ADS

Transmitting the advertising material digitally increases the accessibility to press advertising. Since the content on an advertisement is in most cases done digitally, it is advantageous to keep the file digital as long as possible. This reduces the transmission costs and times thus making the medium easier and faster to access. In some cases, the deadline for digital artwork can be set closer to printing than for camera-ready material.

Using ISDN is not too time consuming. A typical B&W 1/4 page ad containing text and smaller images might be 1 - 2 MB in PostScript format. Associated Newspapers has calculated the efficient transmission capacity of ISDN to be approximately 1Mbyte per minute. Therefore, with compression the 1/4 page ad can be sent in less than one minute.

Keeping the file in a digital format also reduces the working stages that might involve copying, pasting and scanning which probably reduce the quality. The file sizes using PostScript are much lower than for bitmapped scanned data in a ratio of 1 to 10, depending on the data.

Since ADS files are PostScript files they cannot be edited or changed by the receiver. This gives the responsibility for mistakes and content to the sender and no reimbursement can be claimed from the newspaper (non-editability also creates some drawbacks covered in the next chapter). The files can, however, be stretched within the limitations of resolution which makes it possible to adjust the artwork to match the column widths.

Naturally, having the advertisement data in digital format finally enables totally digital page make-up, but the concept regarding this issue is too wide to be covered here.
2.4 Areas of concern when using ADS

Concerning quality, the use of ADS basically only shifts the output device from the premises of the production house to the printing plant. As long as it is made sure that both output devices operated equally (a digital 50% file produced a 50% halftone dot on a film or bromide in both places) the quality should be at least the same or better because of less working stages.

Outputting has so far been the costly part of pre-press production. Now that, actually, no output is needed at the production house almost anybody can purchase a scanner for input and start producing artwork. Here lies the danger of ADS (and also to a certain degree the reluctance of production houses to take ADS into practice). If newspapers start receiving files from various sources scanned by unskilled operators the quality of content and images will deteriorate rapidly.

In addition, having the file in a digital format should give the opportunity of not only producing identical files for each printer but to tailor the tonecurves in such a way that all printers would in fact print the same, maximum, quality. The tailoring could either take place at the sender or at the receiver. It would, however, seem more natural to do it at the receiver.

This is what Associated Newspapers is working on for the next versions of ADS. Perhaps one possibility would be to assign some principles of colour management to ADS. If printers could attach their press profiles stating the dot gain, grey balance and dot range, to the files, the results could be very positive.

2.5 Experiences of The Daily Mail

The Daily Mail is published by Associated Newspapers in the UK and has a circulation of 1.8 million copies daily. It contains 52-80 tabloid pages and carries about 200 ads daily. 1 - 5% of these ads are today received via ADS. The percentage is, however, increasing on a weekly basis as more repro houses use the product.

One of the benefits of ADS experienced by The Daily Mail is that the time and personnel needed for handling and content checking of the ads is reduced. Only the critical financial ads are checked by The Daily Mail, other ads are published without further inspection. The quality concerning B&W classified ads is improved. The Daily Mail receives all ads in correct size because they are sent by agencies that deal a lot with the newspaper and, therefore, are well familiar with their specifications.

The deadline for digital ads is the same than for analogue material but this could change in the future. Also, the price for both types of material is the same.

3. Conclusions

Handling advertisement orders and artwork data digitally are two separate issues. Both have their advantages which mainly can be seen as reduced errors, less human interference, faster communication and better accessibility to the media. All these benefits apply to both issues, booking of ads and digital delivery of artwork, even though they would be kept and processed separately.

It would, however, be natural if the two issues could be combined loosely by using digital links. Loosely, because the two issues must always be separate to some degree. Simply, because the booking of ads takes place long before the deadline for the artwork itself. In addition, the booking and delivery of artwork can, and very often is, carried out by different companies - the advertising agency books the space for an ad, makes the design and lets a production house do the inputting and finally delivery to the medium. A loose connection would be beneficial for the medium to be able to control and track the connection between the order and the material upon time of publication.

The connection, a digital link, could be created for example by using EDI in such a way that the order is sent to the newspaper as well as to the production house. At the newspaper the order is used as normally to reserve the space and colour capacity needed for that ad. At the production house the EDI message is used as a basis for the copy instructions which contains much of the same information than the order. This way the reference number of the ad is always correct and tracking, control and invoicing can be carried out more efficiently.

The IFRA working group on EDI and digital delivery of advertisements is working on these issues.
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Appendix I. Copy instruction fields