Master's thesis in Media Technology and Graphic Arts

KTH School of Computer Science and Communication
Department of Media and Graphic Arts
Royal Institute of Technology, Stockholm SWEDEN

Survey of newspaper production flow for e-paper

Author: Johan Danckwardt
e-mail: danquen@kth.se
Supervisor at NADA: Tech. Dr Alex Jonsson
Examiner: Professor Nils Enlund
Commissioned by: Tidningsutgivarna, the Swedish Newspaper Publisher's Association
Supervisor at Swedish Newspaper Publisher's Association: Tech. Dr Stig Nordqvist

Survey of newspaper production flow for e-paper

Abstract

This Master's Thesis presents the Master's Project where a survey was performed regarding production flows for a future newspaper product, the e-paper edition. The Master's Project was commissioned by the Swedish Newspaper Publisher's Association (Tidningsutgivarna), intended to perform a case study regarding a potential e-paper production flow at Sundsvalls Tidning. The Swedish Newspaper Publisher's Association together with the Royal Institute of Technology, University of Halmstad and seven Swedish newspapers, among them Sundsvalls Tidning, run the Swedish part of a European research and development project under the ITEA label aiming at finding new ways of distributing and consuming the future newspaper. This project is called DigiNews and aims to investigate the possibilities for creating a mobile newsreader based on e-paper technology.

The Master's Project performed a survey to secure what content management systems a typical Scandinavian mid-sized newspaper (Sundsvalls Tidning) uses and how these systems, both internal and external could also be part of a future e-paper production flow. Can these content management systems and external content suppliers deliver content in suitable file types so that a future e-paper management system could transform them into an e-paper edition?

The survey was conducted by studying literature in the form of books, online articles and through interviews with relevant persons. The Master's project chose to interview employees at Sundsvalls Tidning and content suppliers that contribute to the products at Sundsvalls Tidning of today. The chosen employees at Sundsvalls Tidning were interviewed regarding their area of expertise.

The survey showed that the content management systems are all capable of delivering suitable file types. However, some systems can only deliver suitable file types after system adjustments. Up till today there are several different file types delivered by the external content suppliers. The interviews with the external content supplier's shows that they are all able to deliver their content in file types more suitable for the intended purpose. To get these suitable file types it requires that Sundsvalls Tidning reaches an agreement with the different suppliers, since the existing agreements probably do not cover other formats than the ones used today.

When all content intended to shape the e-paper edition is available in suitable formats, an e-paper management system is supposed to produce the product. Before such management system can be developed, there are several issues to solve for the DigiNews project. What file type should be used to display the finished e-paper product? The involved parties should agree on what advertisement formats to use in the e-paper edition. If Sundsvalls Tidning and the Swedish newspapers in general decide to develop an e-paper production system, it is my opinion that it is important for them to create a system that produces a unique product. In a news thirsting society of today I think it is important to create a product that offers the customers something unique.

Undersökning av produktionsflöde för e-papper

Sammanfattning

Examensarbetet gick ut på att undersöka produktionsflöden för en framtida tidningsprodukt, e-pappersupplagan. Uppdragsgivare till examensarbetet var Tidningsutgivarna och bestod i att undersöka möjligheterna till ett framtida produktionsflöde för e-papper på Sundsvalls Tidning. DigiNews är ett europeiskt forsknings- och utvecklingsprojekt tillhörande ITEA, de arbetar kring att finna nya vägar att distribuera och konsumera framtidens dagstidning. Tidningsutgivarna, Kungliga Tekniska Högskolan, Högskolan i Halmstad och sju svenska dagstidningar, däribland Sundsvalls Tidning driver den svenska delen av DigiNews. DigiNews i Sverige undersöker möjligheterna kring att ta fram en mobil läsplatta baserad på e-pappersteknik, som man skall kunna konsumera framtidens dagstidning på.

På Sundsvalls Tidning genomfördes en undersökning där de interna och externa innehållssystemen kartlades. Detta för att avgöra hur dessa skulle kunna utgöra en del av ett framtida produktionsflöde för en e-pappersupplaga. Undersökningen utrönte om de interna och externa innehållssystemen kan leverera lämpliga filtyper som ett framtida hanteringssystem för e-papper skulle kunna ta till vara på.

För att söka svar på de frågor uppställda i problemformuleringen studerades diverse litteratur i form av böcker och artiklar från databaser och Internet. Den stora delen i sökandet av information bestod i utförandet av allehanda intervjuer, detta med anställda på Sundsvalls Tidning och personer från de leverantörer av innehåll som Sundsvalls Tidning använder sig av. De anställda på Sundsvalls Tidning intervjuades inom det ansvarsområde de representerar.

Resultaten visar att de innehållssystem Sundsvalls Tidning använder kan leverera lämpliga filtyper. Dock kommer det krävas viss justering och utveckling av systemen för att de skall kunna leverera dessa filtyper. I dagsläget levereras det externa innehållet till tidningen som flertalet olika filtyper. Dock visade intervjuerna med de externa leverantörerna att det finns goda möjligheter att mottaga innehållet i format bättre lämpade för ändamålet. Alla de externa leverantörerna kan leverera sitt innehåll som XML eller som filtyper baserade på XML. I dagsläget sitter förmodligen Sundsvalls Tidning på avtal med de externa leverantörerna där inte leverans av dessa mer lämpliga filtyper ingår. Följer Sundsvalls Tidning detta examensarbetes rekommendationer krävs då förmodligen att nya avtal knyts med de externa innehållsleverantörerna.

När allt innehåll, text, bild och annonser finns tillgängligt som användbara filtyper, skall detta sättas samman till en tidningsprodukt lämplig att visa på en e-pappersterminal. Detta skall göras med ett hanteringssystem för e-papper. Innan ett sådant hanteringssystem kan konstrueras finns det diverse frågor som måste lösas. Svenska DigiNews måste bestämma hur de framtida e-pappersupplagorna skall presenteras och i vilket format. Dessutom bör en överenskommelse nås med inblandade parter angående format på annonser. Detta för att undvika framtida problem där olika format och filtyper används såsom det idag är på Internet. Om Sundsvalls Tidning tillsammans med andra svenska dagstidningar bestämmer sig för att satsa på en e-pappersupplaga, kan det vara av vikt att denna nya produkt är unik. I dagens nyhetstörstande och krävande samhälle är det viktigt att erbjuda en unik produkt som kan erbjuda mervärde för läsaren.

Acknowledgements

This Master's Project has been performed within the specialisation Publishing Technology at KTH School of Computer Science and Communication, Royal Institute of Technology.

I want to thank all persons that have contributed to my Master's Project. Especially, I want to show my gratitude to my supervisor at the KTH School of Computer Science and Communication, Tech. Dr Alex Jonsson. Other parties that I want to thank are Sundsvalls Tidning, the interviewees and the Swedish Newspaper Publishers Association.

Finally I want to thank my mother, sister and girlfriend for their support during the work of the Master's Project. Without my mothers support this Master's Project would not have been finished.

Johan Danckwardt

Stockholm September 2005

Table of contents

Figure index

Table index

1 Introduction

This chapter will describe the background of this Master's Thesis, and why it is regarded as an important survey for the continuous work with the e-paper project DigiNews.

1.1 Background

DigiNews is a European research and development project under the ITEA label aiming at finding new ways of distributing and consuming the future newspaper. The aim is to investigate the possibilities for creating a mobile newsreader based on e-paper technology. The Swedish Newspaper Publisher's Association is responsible for managing the Swedish part of the project among with the Royal Institute of Technology in Stockholm and University of Halmstad [DigiNews, 2004].

The e-paper technology offers a display with optical reflectivity and contrast characteristics similar to ordinary paper. An ordinary paper is flexible, lightweight and shows text and picture with reasonably high resolution and contrast. One of the drawbacks with ordinary paper is that once it has been printed, the content cannot be altered. The e-paper product is also flexible, shows text and images with high resolution and contrast (170 dpi) and its content can be reloaded over and over [Ritter, 2003].

The e-paper terminal is based on the e-paper technology and comes in several different layouts. Some of the e-paper terminals come in a similar design as a PDA with a screen size as an A5 sized paper, with a rigid, fixed form factor. The final target platform in mind for the DigiNews project it not as similar to a PDA, but rather one with a flexible screen and which is rolled up inside the hardware unit between uses. The e-paper terminal is supposed to be used as a hand held newsreader where you can read an electronic edition of the newspaper, books, magazines et cetera.

The e-paper terminals solution consists of printed flexible electronic circuits and connected to substrate with ink (E-ink). The electronic ink consists of tiny capsules which react to electronic charges. Depending of if the charge is positive or negative, short or long, the capsule attracts various amounts of either dark or light pigment particles. The E-ink is molded into a plastic film that is laminated onto a layer of circuitry [E-ink, 202]. The circuitry dictates the patterns created on-screen (microchips) [Appelgren, Sabelström Möller and Nordqvist, 2004].

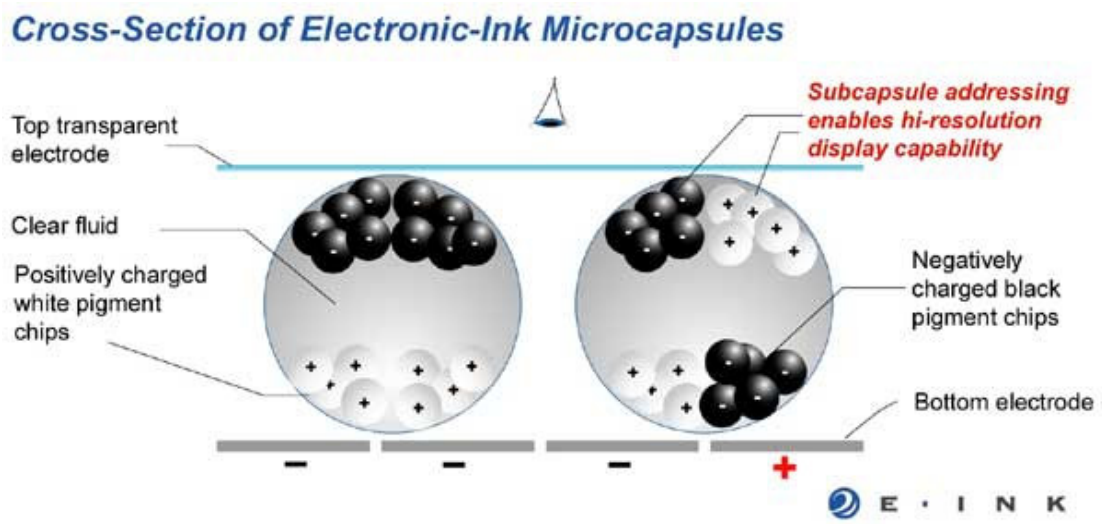


Figure 1, Illustration of electronic ink [E-ink, 2002]

A big benefit with the e-paper is that power consumption to operate it is very low. Once an image or text is loaded, it no longer requires use of electric power. If the battery of an e-paper terminal would run out while reading a page, it would not affect the display. Rather, the image would stay the same even without any power supply, degrading only after being idle for several hours [E-ink Key Benefits, 2002]. At the moment there are e-paper terminals available in black and white (2-bit greyscale) for the public, but there are research efforts carried out to bring e-paper to the market that can display colour.

The distribution of an e-paper edition, from the editorial to an e-paper terminal has not yet been solved. The DigiNews project is looking at several different techniques of delivery. Martin Klarström states in his Master's thesis that there are several interesting techniques that could be used to such system of delivery. For the business traveller, techniques like WLAN or UMTS would be applicable when these techniques have both local and global spread, high transferring speed and the techniques are or will be available at the places that a business traveller visits. It is more difficult to find a technique to use outside the urban areas because that none of the systems has a full 100% coverage of the country.

In the DigiNews project, one idea is that the e-paper terminal is not going to be online continuously. The consumer will download the newspaper's e-paper edition whenever he or she desires, for offline viewing [Nordqvist and Sabelström Möller, 2005]. However there are many issues to solve before reaching a complete e-paper product intended to substitute other editions of a daily newspaper.

1.2 Problem definition

Commissioned by the Swedish Newspaper Publisher's Association this master's project studied the content production flow for e-paper at a Swedish newspaper. In this case, the chosen newspaper for the study was Sundsvalls Tidning. What can be done with the existing publishing systems and what is needed, in order to produce a product ready to be displayed on an e-paper terminal? The first part of the Master's project studied the conditions of Sundsvalls Tidning and found out what complementary tools were needed to create a working production flow. If time was given, the latter part of this master's project would study the adaptiveness for new media channels of several different brands of content systems in order to form a

general recommendation for Swedish newspapers. Is there a substantial difference between the different business leading advertising systems, editorial systems and subscription systems?

Comprehensive questions, central to this study:
- How should the production flow be designed in order to create a product suitable for an e-paper terminal?
- What is Sundsvalls Tidning's vision regarding the production flow and design for a future e-paper product?
- How should the organisation at Sundsvalls Tidning be designed in regards to the editorial flow, advertisement flow and image flow?
- How should an optimized organisation be tailored regarding the editorial flow, advertisement flow and picture flow in the current circumstances at the Swedish newspapers?
- What parts of the production flow should be automated? Should it be fully automated? What tasks are suitable to be automated?
- What are the plans for Sundsvalls Tidning and how will these parameters affect an automated production flow?
- Should the production flow be updated continuously or should there be a set number of editions per day? The expression *on demand* is nowadays used in several different situations, for example Print-On-Demand and Video-On-Demand [Lotsson, 2001]. In this situation of an *on demand* newspaper, it implies that whenever the consumer chooses to read his edition of the requested newspaper he downloads an edition with the latest news. This edition would be updated continuously around the clock depending of what happens in the world.

- Should the e-paper system use static or dynamic templates? Is it possible to use templates and what do Sundsvalls Tidning consider about using templates? I.e. each page would have an identical layout?
- What format is suitable for the e-paper depending on the desired flexibility and interactivity?

1.2.1 Editorial system

Today there are several editorial systems on the market [Fahlström, 2004]. According to Nordiska Tidningsregistret there are well over twenty different suppliers of editorial systems in Sweden. The most common system in use is Wilkinson Scoop. Because of the multitude of systems, it is difficult to develop one easy solution on how to design a complete production flow for producing an e-paper product. The Master's project primary investigated what can be done with the editorial system (content management system) already in use at Sundsvalls Tidning. In addition this Master's thesis intended to compare the editorial system at Sundsvalls Tidning to other editorial systems on the market.

Questions to be answered:
- What can be done with the existing editorial system?
- What new tools, if needed are necessary to extend the existing editorial system, in order to create a well functioning production flow for an e-paper publishing channel?
- What underlying standards are used in the editorial system when handling the articles and their content? Are they based on XML?

- Is the image flow separated from the text flow in the editorial system? If so, how are these two components linked together?

1.2.2 Advertising system

Today there are three major suppliers of advertising systems in Sweden. The suppliers are Tieto Enator, Mactive and Atex [Rehn, J., 2004]. If the production flow is going to be automated the advertising system must be able to handle new formats for advertisement.

Questions to be answered:
- Is the advertising system prepared to handle new advertisement formats?
- Which formats are proposed to be used in an e-paper context?
- What is required from of the advertising system, in order to handle new formats?
- What new tools, if needed, are necessary together with the existing advertising system to create a well functioning production flow towards an e-paper product?

1.2.3 Subscription system

If the Swedish newspapers have well organized systems for managing subscribers, it may be possible to produce personalized editions of the e-paper. Today, several Swedish newspapers have different editions depending of where you live in the country. If geographical editioning is going to work in an e-paper product, it will create demands on the subscriber management system to be flexible and also requires the possibility to track various parameters relating on each customer. If the flexibility of today's subscription systems live up to these demands, it may also be possible for the advertisers to reach their desired target groups with personalized advertising.

1.3 Purpose and aim

The purpose of this Master's project was to survey the future production flow of e-paper at Swedish newspapers. The primary aim was to survey the present workflow at Sundsvalls Tidning and examine the different systems supporting the production flow. On the basis of the survey, the master's project forms a recommendation of what is needed to be done in order to create an automated production flow suitable for Sundsvalls Tidnings editorial department. The recommendation is intended for the Swedish newspapers with an interest to produce an e-paper edition. If time was given the Master's project would also look at other content management and advertising systems, i.e. their capabilities compared to the systems Sundsvalls Tidning uses. Hopefully other Swedish newspapers can use these recommendations as guidance in their future work with an e-paper production flow, thereby reducing their development costs of similar system.

For Sundsvalls Tidning, the idea of maximising the level of automation in the production flow is to avoid a demand of additional personnel [Bodström, 2005]. The production workflow will not be fully automated however because of willingness for reviewing the content of the e-paper prior to distribution. Due to the fact that the editor at chief at a Swedish newspaper is the legally responsible publisher, all the publishing channels are reviewed to prevent the occurrence of faulty or otherwise unsuitable information [Tidningsutgivarna, 2005].

1.4 Delimitations

The intended area of this Master's project is to examine what happens internally at the newspaper. The objective was to investigate the e-paper production flow, from end-to-end of production. The end of the e-paper production flow is defined as when the e-paper edition is finished, but before actually delivered to the consumer. Everything external, except the incorporation of third party news content, is not handled in this thesis. External newspaper content could be weather reports, stock quotations or sport results.

Figure 2, Intended area inside red rectangle

2 Method

2.1 Choice of method

This Master's project is based on general knowledge of the newspaper business. To collect the accurate data and information to the Master's project, it depended on interviews with people with knowledge in the intended area. Because of the decision on making a few interviews the method of quantitative interviews was rejected. Therefore the decision was to make a qualitative survey.

A survey of the different systems and present production flow was carried out. The purpose of the survey was decide what the opportunities are offered by the different systems are and how they are linked together.

2.2 Qualitative interviews

A qualitative interview is when you seek a pattern in the intended subject [Trost, 2005]. The Master's project intended to show a possible production flow for e-paper manly on one Swedish newspaper and the interviews were at start focused on employees with knowledge in their profession. The main areas of interest were at a start people with knowledge in advertising and advertising system, editorial system (content system) and subscription system. When the interviews with people at the newspaper were finished, the Master's project intended to interview suppliers of the systems to Sundsvalls Tidning. To gain a more general understanding, the aim was to interview suppliers of similar systems to the ones at Sundsvalls Tidning.

The interviews were informal and focused. The decision to use informal interviews was to create a conversation on the intended subject. When interviews were held with specialists in the different systems at the newspaper or the suppliers of systems, the interviews were focused on the usage, functionality and possibilities of the system in question. The interviews did not follow a manuscript to the letter because of the difficulty to predict sequential questions.

2.2.1 Documentation

When performing the interviews, documentation was carried out in the form of a dictaphone or by taking notes. The decision of what documentation method to use depended on whether there was any recording equipment accessible.

The positive side of using recording equipment is that you can listen to the interview repeatedly and you can concentrate on the questions without taking any notes during the interview. The downsides if recording the interviews is that it takes a lot of time to listen to the recordings and it can be hard to review in search of a specific detail. You also lose the ability to see facial expressions [Trost, 2005]. You could use video recording to pick up facial expressions but like the usage of a dictaphone this method demands a lot of time, probably more when you will try to pick up the facial expressions afterwards. The interviewees were informed of that the interview is going to be recorded and they are asked to give their approval. If the interviewee did not approve the recording, the interviewer was forced to take notes.

If the interviewer did not have access to any recording equipment the interviewer was forced to take notes. The downside by taking notes is that it can be hard to get all the important

information and it can be hard to get a desired interaction flow during the interview. If the interviewer does not take notes continuously during the interview, the interviewee can become suspicious of when the interviewer chooses to take notes or not. In such situation it is possible that the interviewee thinks that he or she said something wrong or uninteresting [Trost, 2005].

2.3 Reliability

Reliability is a measurement to which extent an instrument or an approach gives the same result independent on which point in time under the same circumstances [Bell, 2000]. Because of that Sundsvalls Tidning is a part of the DigiNews project it is in their interest that the survey performed by this Master's project is correct. That's why the interviews must be seen as reliable. The reliability concern the situation of today and the development of content systems, advertising systems and subscription systems is hard to predict. It is hard to tell if the results will be the same in the future. It is impossible to tell where the development of publishing systems will take us in the next five years. A demand from Tidningsutgivarna is that the knowledge from this master's project shall be applicable for three years.

2.4 Validity

Validity is a measurement of if a certain line of questioning actually measures or describes what you want it to do [Bell, 2000]. The validity of this Master's project is harder to predict than its reliability. For example when interviewing a person on his area of expertise, it is possible that this person has an incorrect answer. For a person without this expertise the answer might sound reasonable and the information might be used in the continuous work. An error like this could have effects on the continued work. The only way to prevent these types of errors is to double check the answers when possible. This applies to other sources as well.

2.5 Literature Study

This section presents how the relevant literature was found and what other sources of information that is intended to be used.

2.5.1 Key words

To find relevant literature to this Master's project the following keywords where selected when searching in databases and search engines.

Key words	Database	Used / Type of media
e-paper AND e-ink	Compendex	1, full text
e-paper	Compendex	2, owner Ifra, received by the Swedish newspaper publisher's association
On demand	Ebrary	1, e-book
Report AND writing AND scientific	Ebrary	1, e-book about scientific reports
Kvalitativa AND intervjuer	KTHB's catalogue (library of the Royal Institute of Technology)	1, book

Table 1, Key words and databases

2.5.2 Relevant literature

Since the research of e-paper on newspapers is a relative new there is just a minor quantity of relevant literature and articles. The tutors at the Swedish Newspaper Publisher's Association

and Royal Institute of Technology have assisted with project reports from the DigiNews project, along with articles and reports from IFRA and useful links to relevant web pages.

2.6 Proposed interviewees

Company	Activity	Position
Sundsvalls Tidning (ST)	Newspaper	Head of market and business department Managing Director Editor at chief Responsible of content system Quality development Head of web department Head of information technology department Advertising system specialist Subscription system specialist
Infomaker	Supplier of ST's two content systems	Technician Technician
Tieto Enator	Supplier of advertising system (ST) and subscription system	Technician Technician
Newspapers	Newspaper	Experience of multi channel publishing
Suppliers	Suppliers of subscription systems	Technicians

Table 2, Proposed interviewees

The possible interviewees at Sundsvalls Tidning were suggested by Svenåke Boström the Quality Development Manager. Svenåke Boström is a member of the Swedish DigiNews project group. Other possible interviews was proposed by the supervisor Tech. Dr. Alex Jonsson or found by collecting statistics of which from the leading suppliers of newspaper production systems. The statistics are collected from Nordiska tidningsregistret 2004 [Rehn, 2004].

3 Theory

This chapter describes how the present production systems function today and what role the different systems have in the production flow.

3.1 Editorial workflow

To create a functioning production flow for an e-paper edition there must be a well developed editorial workflow as a foundation. If there would not be a functioning editorial workflow, there would not be any articles or images for building a new channel of publishing.

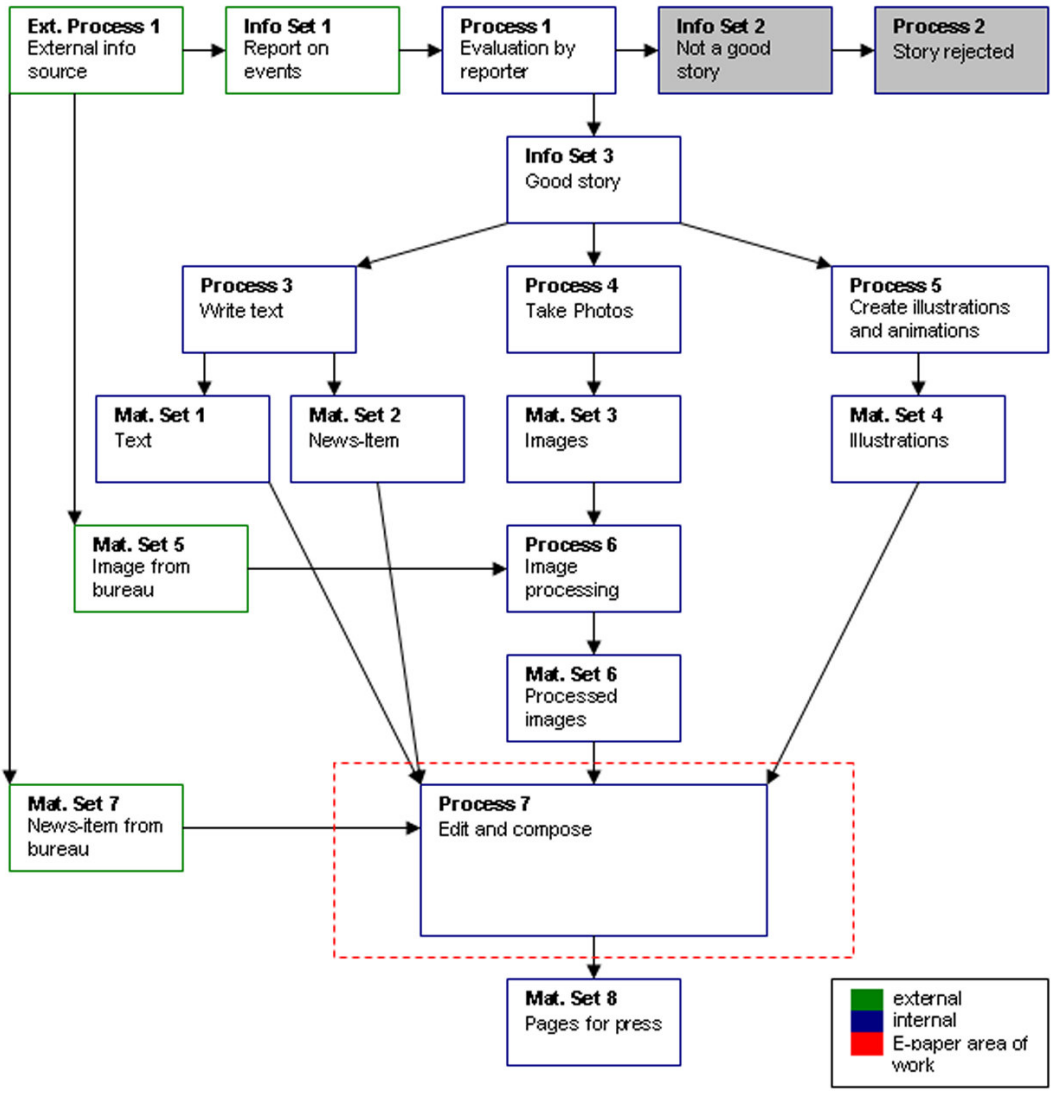


Figure 3, Editorial workflow [Sabelström Möller, 2001]

The flowchart above describes how the editorial content is produced at a newspaper. The external content in *Figure 1* are in the case of Sundsvalls Tidning as follows, weather reports, domestic and international news, television charts as well as stock quotations. The external content is delivered electronically in several different file formats, e.g. open Quark Xpress documents, XML-files and TIFF images [Kjellin, 2005].

3.1.1 Editorial content production flow

The editorial content production system at a newspaper usually consists of one main system and several subsystems. The task of the main system is to collect and put together all the different content and the subsystems have different tasks like storage of images, storage of advertisement and delivery of sport results [Jonsson, 2005]. It is not common for a Swedish newspaper to use only one manufacturer for all the different systems [Rehn et Al., 2004].

Text editor
In the case of Sundsvalls Tidning, the text editor divides the headline, preamble and text and the content is written directly into the system by the reporters [Eklund, 2005]. Some systems use plug-ins as text editors such as Microsoft Word [Jonsson, 2005]. If the texts is brought by an external source as a news bureau it could be delivered e.g. as XML or open Quark Xpress or InDesign documents. The television chart and stock quotations are always delivered by external sources to Sundsvalls Tidning [Kjellin, 2005].

Image flow
Usually the images published in the newspaper and on the web are imported to the main content system via an image system. Today Sundsvalls Tidning uses two different systems, Pickup as a archive for older images and Newspilot for new images [Eklund, 2005]. As in the case with editorial texts the image system can import images from external image bureaus.

Advertising systems
Today there are three manufacturers of advertising systems used in Sweden, Teito Enator's MPress, Mactive's Adbase and ATex [Rehn, 2004]. The advertising systems consist of a database containing information about the advertisements, a folder structure with the actual advertisements, a planning tool and a booking mechanism. Placing the advertisements is the first step in creating the layout of a newspaper. The advertisements are placed on the planned pages of the newspaper and then sent of to the editorial department who place the editorial content, such as the images and texts [Jonsson, 2005, Kjellin, 2005].

3.1.2 Subscription system

Compared to the suppliers of advertising systems, there are several suppliers of subscription systems at the Swedish market today. According to Nordiska tidningsregistret [Rehn, 2004] the three main suppliers are KANAL-DATA, Leissner Data and Tieto Enator. These are just the main suppliers among several others. Worth considering is that the data in Nordiska tidningsregistret [Rehn, 2004] is insufficient because of that several newspapers did not report of what system they are using. A number of newspapers stated that they have developed their own subscription system.

Sundsvalls Tidning uses the supplier PRESSsystem's subscription system PASSAD [Teir, 2005]. PASSAD handles subscribers, single copies, distribution and sales of newspapers in the same system [PRESSsystem, 2005]. The PASSAD system will be an important part of a future e-paper production flow at Sundsvalls Tidning. If Sundsvalls Tidning decides on the possibility for subscribers to subscribe on personalized e-paper editions the PASSAD system will be the system to handle customer information.

3.2 Editorial parts at Sundsvalls Tidning

The following systems are used by Sundsvalls Tidning and will probably be an important part of a future e-paper system.

Task	Manufacturer	System name
Content system	Infomaker	Newspilot
Text editor	Infomaker	Newspilot
Image system and archive	Infomaker	Newspilot, Pickup
Advertising system	Tieto Enator	MPress
Video	Infomaker	Newspilot
Subscription and delivery system	PRESSsystem	PASSAD
Editing and design	Adobe	InDesign
Sport results	Infomaker	iPlay
Web system	Sundsvalls Tidning	-
System getting external content		
Task	Supplier	
Weather reports	SMHI	
Stock quotations	VLT Futurum	
Television chart	TT Spektra	
Domestic and international news	TT & TT Spektra	

Table 3, Systems used by Sundsvalls Tidning [Rehn, 2004; Kjellin, 2005; Teir, 2005; Eklund, 2005]

3.3 Workflow for the web

The content on a newspapers webpage is often reused content from the printed edition together with used content. The editors responsible for the webpage can use the content as soon as the newspaper has been sent to the printing house. The texts and images are customized for the newspapers webpage so it will fit in the online templates [Jonsson, 2005].

When a reporter at Sundsvalls Tidning writes his or her article in the Newspilot editorial content system he or she has two choices to make: Either to publish the article at once or to publish the article at the same time as the printed edition reaches the subscribers. The Newspilot content system generates an online adapted XML-file. From this XML-file the web management system creates an online article [Lindström, 2005]. Therefore the online edition uses exactly the same material as the printed edition at Sundsvalls Tidning.

3.4 Production flow at Sundsvalls Tidning

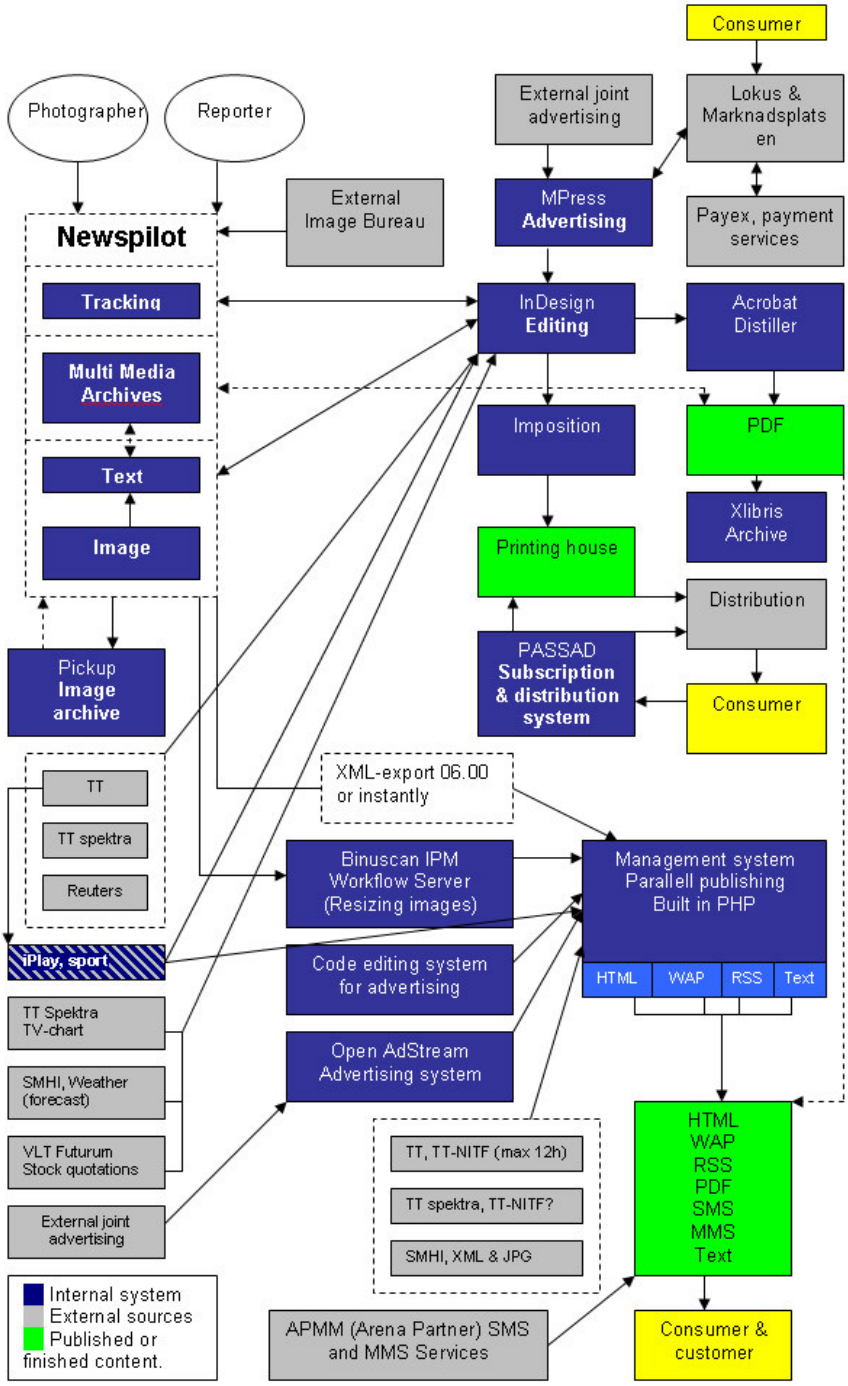


Figure 4, Flow chart of production flow at Sundsvalls Tidning, [Kjellin, 2005; Eklund, 2005; Söderlund, 2005; Boström, 2005; Teir, 2005; Lindström, 2005; Rehn et Al, 2004; Welander, 2005]

3.4.1 Description of systems and software

The production flow at Sundsvalls Tidning, just like most newspaper publishing companies, is supported by several systems and databases from different suppliers. This section describes the various systems in use, representing the production flow at Sundsvalls Tidning.

3.4.1.1 Internal systems

Newspilot
Newspilot is an editorial system able to handle parallel publishing towards several different media types, e.g. text, motion pictures and audio. The system is not proprietary towards any specific layout software, advertising system or platform [Newspilot, 2003].

The Newspilot system consists of a planning tool, text editor, parallel publishing tool, image editing, auto repro, tracking device and archiving. From the text editor, you decide where the article should be published. The articles can be used through any number the publishing channels of choice without any additional work. The planning tool can be used not only to plan the work, but also to keep track of what persons are working with which articles at any given time, and when to publish the articles or other media formats [Newspilot, 2001].

Newspilot has a tracking system for supervising the entire publishing process of a newspaper or magazine. This system can for example track who is working with what page in the layout stage. This makes it impossible for two persons to work with the same page at the same time [Kjellin, 2005].

Pickup
Pickup is supplied by Infomaker. Pickup is a system for handling production images, archive images, logotypes, other artwork and advertisements [Pickup, 2004]. The Pickup system that Sundsvalls Tidning uses is deployed as an image archive for older and new images [Eklund, 2005].

MPress
Tieto Enator Media Systems AB is the supplier of the systems MPress Annons, MPress Redaktion and MPress Upplaga. These systems can be used individually or as a connected system where all the MPress parts are integrated with each other [Rehn, J. et Al., 2004]. Sundsvalls Tidning uses the advertising system MPress Annons [Söderlund, 2005]

Adobe InDesign
InDesign is a layout and design software supplied by Adobe. At the editorial department, InDesign is used for creating the layout and manage the typography of the newspaper pages [InDesign, 2005].

Adobe Acrobat Distiller
This software from Adobe makes it possible to generate PDF from Post Script files. The software makes it easier to integrate Adobe PDF in document flows [Distiller, 2005].

PASSAD
PASSAD is a system for handling subscription, single copies, distribution and sales. The system is supplied by PRESSsystem [PRESSsystem, 2005].

Resizing images
Recently Sundsvalls Tidning took a new system into use, especially for resizing and resampling images intended for export to the web edition. The new system intended for resizing the images is called IPM Workflow Server and is supplied by Binuscan [Kjellin, 2005].

Archive
Today, Sundsvalls Tidning uses the archive system called Xlibris from the supplier Infomaker. In the nearby future Sundsvalls Tidning will launch their new Multi Media Archive also supplied by Infomaker. The Multi Media Archive is part of the Newspilot system [Kjellin, 2005].

Management System for parallel publishing
To publish the newspaper articles on the web Sundsvalls Tidning relies on a management system which is developed in-house. The system is able to publish content in several different channels [Welander, 2005].

Advertising system intended for the web
Sundsvalls Tidning uses two separate advertising systems intended for the web. The first is a system that makes it possible to edit code directly on the web pages. The second and main advertising system is Open AdStream. This system is a stand-alone solution and has no connections to MPress. Open AdStream is supplied by 24-7 Real Media [Welander, 2005].

iPlay
iPlay is a software that helps the newspaper to keep track of sport results and tables. The software is a web based multi-user system. iPlay allows several newspapers to share the same system to facilitate the work of adding results into the system [iPlay, 2002].

The iPlay system can export the tables to either Quark Xpress or to Adobe InDesign files. The system uses predefined typographed templates to ensure that the tables have the same format as the pages in the newspaper [iPlay, 2002]. Both the traditional newspaper and the web department use iPlay to publish the sport results [Welander, 2005; Eklund, 2005].

3.4.1.2 External systems and content suppliers

The Swedish newspapers are depending on several external content suppliers to the regular paper-based newspaper and the web edition. The content that is imported from external suppliers typically consists of domestic and international news, press items, stock quotations, sport results, weather reports, television and radio charts [Kjellin, 2005]

TT and TT-Spektra
Tidningarnas Telegrambyrå (TT) is a Swedish news agency cooperatively owned by all the major Swedish newspapers. The domestic material is produced by TT them selves and the international news are mostly produced by other news agencies in other countries [Hadenius, Weibull, 1999].

TT supplies an exhaustive news service with domestic and international news to the Swedish newspapers. The news service contains for example articles, background articles, facts, video clips and sport results. TT covers all the conceivable areas such as international and domestic news, economy, sports and science. TT also supplies an online service with news content intended for the web. TT distributes their news service via satellite in the format TTNITF. or on a customer's news service webpage. The online news service gives the newspapers access to all of the articles published by TT. Apart from ordinary articles the news service offers analysis, info boxes and sport results et cetera [TT[1], 2005]. After the end of this year (2005) TT will be able to distribute their services via FTP (File Transfer Protocol) [Pilhage, Andersson, Henriksen, 2005].

TT Spektra is a subsidiary to TT. TT Spektra's main task is to act as a complement to TT's news services. TT Spektra offers a online news service that makes all of their produced content accessible to their customers.[Hadenius, Weibull, 1999]. TT Spektra produces Pre-fabricated newspaper pages, television charts, feature material and finished supplements to the Swedish newspapers. TT Spektra covers the areas of television (both articles and television charts), sports & gambling, trotting, polls and video clips. At the time of big events, for example concerts, TT Spektra produces finished concert supplements to their customers. TT Spektra also offers a illustration service, where articles are accompanied by images and graphics upon request [Pilhage, Andersson, Henriksen, 2005].

The content delivered by TT Spektra is formatted as raw text or in a proprietary tagged information structure with corresponding metadata. By the autumn of 2005, TT Spektra expects that it will be possible to deliver the files in XML format.

SMHI
Sveriges Meteorologiska och Hydrologiska Institut is a government funded national authority in the field of metrological and hydrological studies. SMHI's comprises of supplying reports on weather forecasts and water conditions [SMHI, 2005]. SMHI supply Swedish newspapers with weather reports both for the printed newspaper editions and for the newspapers webpage. The newspapers decide themselves in what formats they wish to receive their forecasts and weather charts. The most common file formats to the paper based edition is as a PDF or EPS. For the web-based edition, there are several formats that are in use, e.g. XML and ECRM-script (formally java-script) in combination. SMHI prefers to deliver their content via FTP but the way of delivery is also up to the customer to decide [Nordqvist (SMHI), 2005].

VLT Futurum
VLT Futurum supplies Sundsvalls Tidning with the stock quotations. The stock quotations are delivered as finished pages to Sundsvalls Tidning in the format of PDF [Edlund, 2005].

APMM
APMM (Arena Partners Mobile Manager) is a gateway for SMS and MMS services supplied by Arena Partner. In Sweden, the product is represented by a company called Leanback. You can get various text content sent to you by SMS for a small fee at Sundsvalls Tidning's website. For example you can get the latest sport results and news concerning the local football team, the latest news headlines or the weather forecasts for a given area. Other mobile services available at Sundsvalls Tidning's webpage [www.st.nu] are on-line purchases of ring signals, logotypes and images [ST^2, 2005; APMM, 2005].

Payex
Payex is a payment service supplied by Wallit AB. Sundsvalls Tidning uses Payex to several services on their webpage, for example when buying a classified advertisement [Molin, 2005].

External Joint Advertising
The advertising flow on both the traditional paper based newspaper and on Sundsvalls Tidnings webpage, is partly fed by external joint advertising companies. Joint advertising intended for the paper-based newspaper comes from for example FLT or Media Industrikusten. Media Industrikusten only advertises in newspapers from the northern parts of Sweden [Dagspress, 2005].

At Sundsvalls Tidnings webpage there is some joint advertising occurring. Tidningsnätet is a joint advertising package intended for internet advertising and their advertisements occur at Sundsvalls Tidnings webpage, www.st.nu [Tidningsnätet, 2005].

3.4.2 Workflow order at Sundsvalls Tidning

When producing a newspaper, there is a certain working order in the production sequence. In this section, I will describe the production flow at Sundsvalls Tidning for all their current publishing channels.

3.4.2.1 Advertisement and planning

The advertising stands for the major part of the revenues at most Swedish newspapers. Without advertisements it would be difficult or impossible to produce and run a newspaper.

The advertisement sales staff at the newspaper handles the first step in the production flow of producing a newspaper. The advertisement department is roughly speaking divided into three parts, the sales staff, the production staff and the private advertisement staff. The newspaper also produces the actual advertisement for many of their customers, e.g. car dealerships.

The advertising sales staff sells predefined spaces or so called modules in the newspaper. The different spaces could for example be a full page, a centrespread or a quarter page. The module system is based on that the page is divided into a table. The price is set depending on how many rows and columns you want for your advertisement [VLT, 2005]. Sundsvalls Tidning uses the module system [ST[1], 2005]. When an advertiser buys an advertisement space in the newspaper, the sales staff states in the advertising system what place in the newspaper the advertisement should appear, what date it should be published and more additional data. To state in what section of the newspaper the advertisement is going to be placed the newspaper uses placement codes. The placement codes are normally a collection of characters. The characters together tell us where the advertisement is going to be placed. Sundsvalls Tidning uses up to ten characters for their placement codes [Lidin, 2005].

The advertisement meta information is stored in a database of the advertising system. The actual advertisement is rather stored as a PDF and as an EPS in a directory file structure. The folder structure is shared depending on what order ID the advertisement has. The advertisements filename is the same as the order ID stored in the advertisement information in the advertising system. The major customers have their own folders where their advertisements are stored [Söderlund, 2005]. When it comes to the classifieds the advertisement information is stored the same way, only with less information about the customer.

The private advertisement staff produces the classifieds, the obituary notices and the family advertisements. To place a classified, obituary notice or a family advertisement there are two ways to go. All the three categories are possible to advertise though visiting the newspapers private advertisement desk. At the desk the customer state what sort of advertisement he or she want and what it should contain. Then the private advertisement staff produces the advertisement and it is stored in the advertising system. When the advertisement is finished it follows the same way in the advertising system as the business related advertisements.

The other way to place a private advertisement at Sundsvalls Tidning is to visit their website. This way of placing an advertisement only concerns the buy and sells classifieds. When you have stated what the advertisement will contain at the website, the advertisement is delivered

via ftp through a hidden production system to the newspaper where the advertising system picks it up and places it at the right place in the folder structure. Along with the PDF version of the advertisement there is a AdConnexion file. The AdConnexion file tells the advertising system what type of advertisement it is, when to publish it, where to place it in the newspaper and other data concerning billing and customer information et cetera [Gustavsson, 2005].

When booking a classified advertisement at Sundsvalls Tidning you go through the Lokus portal. Lokus is a cooperative between about 50 Swedish newspapers. At the Lokus portal the newspapers classified advertisements are published and made searchable. Lokus has a booking mechanism which several of the 50 newspapers use to offer web booking to their customers [Lokus, 2005].

When the deadline has passed and the advertisements are placed on the intended pages through the advertising system MPress's booking and planning tool, the pages are sent to the editorial department for continued work.

3.4.2.2 Editorial work

At the same time that the advertisement department sells and produces advertisements, the editorial department produces the articles and images. When a reporter and photographer at Sundsvalls Tidning get back from a job, they receive a template in the Newspilot system. In the template the reporter writes his story and the photographer drag and drops the images he or she wants to use. The reporter writes the headline, main text, and the caption of each image. The caption of the image is saved and added to the image metadata, but only if it is different from the existing description. When a new image is put down into the Newspilot editorial system the photographer state several parameters which will be added to the metadata. The new image is then transferred to the Pickup archive for later usage [Eklund, 2005].

When the advertisements are set in the current newspaper's layout, the pages are sent to the editorial department. Here the editorial staff starts to compile the newspaper of tomorrow using the layout software InDesign from Adobe. The staff extracts articles and images from the editorial system, in this case Newspilot (and Pickup for older images). Along with the content produced in-house, there are several sources of external content that have their respective place in the newspaper edition. The external content is delivered in different ways depending on what type of content it is and from which supplier [Kjellin, 2005].
The newspaper has predefined number of pages for each day of the week. The maximum number of pages is decided from what the printing house can handle. When all the intended content is placed, it sometimes occurs that there could be a odd empty spot on some of the pages. If this happens the newspaper uses their own advertisements to for example recruit new subscribers. These advertisements are often called plugs [Jonsson, 2005].

Parallel to the editorial work, the tracking system of Newspilot monitors every event. When the editorial department is finished with the layout of the newspaper it is sent to the printing house.

3.4.2.3 Imposition and printing

To get the pages in the correct order in the finished newspaper the single pages must be placed in a specific order on the printing plates. This is called impositioning. When the

imposition is finished the printing plates can be produced and mounted in the printing presses and then the newspaper is ready to be printed.

3.4.2.4 Web based publishing and other publishing techniques

When the reporter at Sundsvalls Tidning writes an article he or she has two choices regarding publishing on the web. The reporter can choose to publish the article at the regular time of publishing at 6 AM, the same time the subscribers get their newspaper in the morning. The other choice is to publish the article at once. The second choice is often used when there have been some international or domestic event of importance [Lindström, 2005]. The publishing time of 6 AM is set to correspond to the delivery of the traditional paper-based newspaper to the newspapers subscribers.

Each article is also saved as a XML file. The XML files are adapted to the web publishing standards of Sundsvalls Tidning. The collected articles in form of XML files are transferred at 6 AM to the Management System for publishing at the Sundsvalls Tidning's webpage. The Management System is built in-house by Sundsvalls Tidning using PHP code and is able to publish content on their webpage, on WAP and RSS channel. The Management System also generates a text version of the newspaper, meant for readers using a PDA or users on the web just wanting the articles [ST^3, 2005].

4 Results of system survey

On the basis of the survey, this chapter will describe the capabilities of the systems that Sundsvalls Tidning uses. Are they able to function in a future production flow for an e-paper edition concerning what file types and ways of storage the system uses?

4.1 Interviewees

The chosen interviewees have because lack of time and priority only been selected from Sundsvalls Tidning and suppliers of Sundsvalls Tidning. The idea of interviewing other similar suppliers of content systems et cetera. was put aside because other parts of the thesis took longer time than expected. The interviewees have been interviewed in their area of work and the results from the interviews have been of satisfaction.

4.2 Content Systems and file types

The following table consists of names and a short description of the interesting systems, software and file types used at Sundsvalls Tidning.

Systems name	Internal/ External	Supplier	Type of system	Comments
Newspilot	Internal	Infomaker Scandinavia AB	Editorial content system, tracking system and multi media archives	Texts and images (high resolution JPG's) stored in databases. Possibility to create XML files. Soon to act as a Multi Media Archive.
Pickup	Internal	Infomaker Scandinavia AB	Image archives	Images stored in database. Sundsvalls Tidning uses the image formats JPG and EPS. Will be closed down at activation of the Multi Media Archive.
MPress	Internal	Tieto Enator	Advertising system	Files and information stored in databases and folder structure. All advertisements are saved as a PDF and EPS into a folder structure.
PASSAD	Internal	PRESSsystem	Subscription and delivery system	All data stored in databases. Possibility of CRM information. The database is built in 4D.
IPM Workflow Server	Internal	Binuscan	Image processing server	Resizes and converts images intended for the web at the moment. The system handles e.g. the formats JPEG, TIFF, EPS et cetera.
iPlay	Internal/ External	Infomaker Scandinavia AB	Content system handling sport results.	Information is stored in database. The system can be shared along with other newspapers.

Xlibris	Internal	Infomaker Scandinavia AB	Archive	Archive system, this system will not be used in the future.
Parallel Publishing Management System	Internal	Built by Sundsvalls Tidning	Parallel Publishing Management System able to publish I several different channels.	System built by Sundsvalls Tidning them selves. Built in PHP and data stored in a MSSQL database.
Open AdStream	Internal	24-7 Real Media	Advertising System	Sundsvalls Tidning uses Open AdStream as an advertising system. Supports all the advertisement formats according to the supplier.
TT	External	Tidningarnas Telegrambyrå	Content supplier	Content supplier that delivers press items to the webpage. Delivers in TTNITF.
TT Spektra	External	TT Spektra	Content supplier	Delivers television carts to Sundsvalls Tidning. In XML by the autumn of 2005.
VLT Futurum	External	VLT Futurum	Content supplier	Delivers finished pages in PDF file format which contains stock quotations
SMHI	External	SMHI	Content supplier	Delivers weather forecast. In file formats, EPS, JPG and XML depending on what publishing channel.
Payex	External	Wallit AB	Web based payment services	Wallit AB supplies the payment services Payex. Sundsvalls Tidning uses Payex to their booking mechanism supplied by Citygate.
Lokus	External	Stadsporten Citygate AB	Advertising services	Lokus makes it possible for Sundsvalls Tidning to publish both their classified and regular advertisements on their webpage st.nu. Communicates with MPress via AdConnexion.

4.3 Internal systems and content capabilities

This is the result of the capabilities of the internal content systems at Sundsvalls Tidning.

4.3.1 Newspilot

The Editorial Content Management System Newspilot is a modern system with the intention to publish parallel in several different media channels. The system contains several functions that before were the sum of several different systems. The reporters use the text editor when writing their texts and the photographers upload their images directly into the systems image database.

The articles are stored in a table with additional information. To each article it is possible to ad up to nine images. As for the webpage it is possible to make Newspilot generate XML files of the articles and information. According to Sundsvalls Tidning it is not hard to make the system generate suited XML files for other purposes.

The XML files intended for the web looks like the following code:

```
<?xml version="1.0" encoding="UTF-8"?>
<newspilot_webexport>
<metadata>
  <created_by>Newspilot webexport, (C)Infomaker Scandinavia AB,
  www.infomaker.se</created_by>
  <name>Name of the article</name>
  <paper>Name of newspaper, in this case ST</paper>
  <pub_start>2005-05-10 00:00:00, When to publish the article</pub_start>
  <userdata>
     <subject>Inget</subject>
     <auto_export>true</auto_export>
  </userdata>
  <article_id>64141</article_id>
  <original_id>63890</original_id>
  <created_by>Name of reporter</created_by>
  <comment/>
  <department>Department at Sundsvalls Tidning</department>
  <section>Section in the newspaper</section>
</metadata>
<npdoc version="1.1">
<section type="Artikel">
  <head>
    <dateline>StockholmTT</dateline>
    <headline>Hedline of article</headline>
  </head>
  <body>
    <p>Here the reporter writes his text.</p>
    <p>Here the text continues in a new paragraph.</p>
  </body>
</section>
</npdoc>
</newspilot_webexport>
```

For an as automated production flow for an e-paper edition as possible it is important that the system can understand the importance (news value) of an article. The system must be able to understand that an event of major world importance, like the terrorist attacks on September 11:th, is more important than an article about the coltsfoot that has been sighted in the city park. Newspilot has a priority index function where the reporter states the importance of the

article. The priority index function is at the moment not in use, but it will probably have an important role in a future production flow. At the moment the priority index is always set to three, independent of which article it concern [Boström, 2005; Lindström, 2005].

In the XML code above it does not appear that there is any information on what image to use along with the article. The image belonging to the article has the same ID as the article, therefore the tag <article_id> tells the web Management System what image to use.

In the nearby future Sundsvalls Tidning will take the Multi Media Archive in use. The Multi Media Archive has a close connection to Newspilot and is intended to store all the different media types.

4.3.2 Pickup

The Pickup archive is at the moment used by Sundsvalls Tidning as an image archive. When Sundsvalls Tidning chooses to activate the Multi Media Archive, they will transfer all data and images from Pickup to the Multi Media Archive and close down the Pickup archive. When a new image is downloaded to Newspilot, Pickup picks up a copy of the image for storage. Nowadays Sundsvalls Tidning only use high resolution JPG or EPS. The connection from Pickup to Newspilot does not work at the moment just the other way around. This must be solved before activating the Multi Media Archive, so that the old images still will be within reach.

4.3.3 MPress

Sundsvalls Tidning uses their advertising system strictly for advertisement intended for their traditional paper-based newspaper. The customer, placement and advertisement information are stored in a database which withholds several different tables. The advertisement graphics are stored in a folder structure, depending on what order ID the advertisement has or from which advertiser the advertisement originate from. The major advertisers have their own folders in the structure independent on what the order id's are. Each advertisement at Sundsvalls Tidning is stored in two copies, one PDF and one EPS.

The MPress advertising system uses placement codes to decide where to place an advertisement. The placement codes consist of letters and numbers. Sundsvalls Tidning uses up to ten characters to each placement code. From some of the placement codes it is possible to tell what type of advertisement that uses the code. For example ETTA1 tells us that it is the first page in the first section of the newspaper and ETTA2 aims at the first page in the second section [Lidin, 2005].

Placement code	Explanation
TEX03	Text page number three
VINJH	Vignette at the last page on the right
DÖDE	Obituary notice
MOBIS	Persons selling their cars
SPORT	The sport pages

Table 4, Examples of placement codes at Sundsvalls Tidning [Lidin, 2005]

External joint advertising is part of the advertising industry of today. Several external joint advertising packages use Sundsvalls Tidning as an area for their advertisements. Today, the order and booking procedure works as if the advertisements were ordinary single advertising

and they are handled manually [Lidin, 2005]. Therefore no other external advertising system must be taken in consideration when constructing a production flow for an e-paper edition.

4.3.4 PASSAD

PASSAD is the subscription and delivery system that Sundsvalls Tidning uses. The PASSAD system is developed using a high-level programming tool called 4th Dimension. The 4th Dimension system is supplied by 4D [Lind, 2005]. Today the system is prepared to handle CRM information but it is not in use. This could be an interesting function to look at in the future for creating personalized advertising. Though, it is necessary that some type of e-paper subscription can be stated in the system when an e-paper edition is taken in use.

Because of several requests for CRM similar functionality to support the production flow, questions have been sent to the supplier of PASSAD, PRESSsystem, regarding the possibility to create a similar function handling different types of subscription.

In their reply, PRESSsystem stated that this would not be difficult to create and design. This would make it possible for the customers to subscribe to a personalized e-paper edition. For example someone only wants to subscribe on the domestic news and the sports would have the opportunity to do this. This subscription function would also be able to handle geographical editions, one edition for Sundsvall and one national edition. Sundsvalls Tidning does not use different editions depending on where you are in Sweden so that part is not important for now.

4.3.5 iPlay

The software iPlay can be seen as both an internal and external content source. The job of feeding iPlay with sport results could take a lot of time depending on the activity in the world of sports, therefore the system can be divided between several newspapers. The idea is that each newspaper can feed the system with their local sport results and reduce the burden for all the newspapers. The results are stored in a database with different tables. Both the editorial department and the web department use iPlay to publish the sport results. Normally the iPlay system generates Quark Xpress files or Adobe InDesign files but according to Anders Bjarby at Infomaker Scandinavia AB it would not be any problem to generate XML files from the iPlay system. It is my opinion that it is more suitable if you can get all content in similar file types.

4.3.6 IPM Workflow Server

The IPM Workflow Server is used by Sundsvalls Tidning for automating the image workflow from Newspilot to the Parallel Publishing Management System. The system is used because of the differences in size and resolution between a printed image and an image displayed on a screen. The system can handle file format conversions (JPG, EPS, and TIFF et cetera.), geometrical operations and various corrections. Today Sundsvalls Tidning uses high resolution JPG or EPS images for their printed newspaper and JPG to their website.

4.3.7 Xlibris

Sundsvalls Tidning uses the Xlibris archive to store the PDF of the printed newspaper among other things. In the near future the Xlibris archive will be taken out of use, because of the activation of the Multi Media Archive. Therefore the Xlibris archive will not be part of a future e-paper production flow.

4.3.8 Parallel Publishing Management System

The Parallel Publishing Management System is built in-house by Sundsvalls Tidnings technical staff. The system is built in PHP (PHP Hypertext preprocesser) which feeds the data to a Microsoft SQL database. The system receives the articles in XML format from Newspilot and transforms it to suitable formats intended for the different publishing cannels. The system supports publishing to the web, WAP, RSS channel as well as a text edition intended for PDA's. It is possible that the system could serve as a base for a future e-paper edition generator.

4.3.9 Open AdStream

Sundsvalls Tidning uses the Open AdStream system for their advertising intended for the webpage. The system supports several different advertisement formats such as GIF. The system is also capable of delivering advertisements to streaming media and WAP. The system keeps track of the number of times each advertisement is delivered to a specific customer as well as targeting a specific domain, country or operating system with a specific advertisement [Durkin, 2003].

4.4 External systems and content capabilities

This is the result of the capabilities of the external content systems and content suppliers for Sundsvalls Tidning.

4.4.1 TT

TT delivers their content in two different flows, one intended for the printed newspaper edition and one for the newspapers web edition. To the webpage TT's staff makes selections of what articles in their news flow to deliver to their customers. Any given TT news item can be found at Sundsvalls Tidnings webpage for as long as one week after its first publication [Welander, 2005]. TT delivers their content in the format desired by the customer. The most interesting format that TT is able to deliver is TTNITF.

TTNITF is TT's own version to define content and structure in articles. TTNITF is based on the standard SGML and NITF that the International Press Telecommunications Council (IPTC) has developed [ST^2, 2005]. NITF, News Industry Text Format is an international standard for defining news content and structure. NITF is an application of the eXtensible Markup Language (XML) to define the content [NITF, 2004].

4.4.2 TT Spektra

Today TT Spektra delivers their content either as texts suited for Windows or Macintosh or computers or texts with tag information. Later this autumn (2005) it will be possible to receive the content in XML format.

4.4.3 SMHI

SMHI delivers their content to Sundsvalls Tidning in two separate flows. For the printed edition SMHI delivers the weather forecasts in EPS format, while the weather forecasts intended for Sundsvalls Tidnings webpage are delivered as JPG and XML. The XML intended for the webpage can for example in a shortend version look as below.

```
<?xml version="1.0"  encoding="ISO-8859-1"?>
<PRODUCT PRODUCTID="03" DESCRIPTION="Standard_5D_weatherforecast"
CUSTOMER="Not defined" GENERATOR="BESTWEATHER">
  <PUB>2003-05-19</PUB>
    <PROGNOS5DYGN ORTNAMN="Oslo" ORTID="0203001">
      <VALIDTIME>
        <dateTime>2003-05-19 12:00</dateTime>
           <WINDSPEED>3</WINDSPEED>
           <WINDDIR>3</WINDDIR>
           <WINDDIR_LONG>6</WINDDIR_LONG>
           <MAXTEMP>11</MAXTEMP>
           <MINTEMP>10</MINTEMP>
           <SYMBOL>12</SYMBOL>
           <PHRASE_LONG>139</PHRASE_LONG>
      </VALIDTIME>
      <VALIDTIME>
        <dateTime>2003-05-20 12:00</dateTime>
           <WINDSPEED>4</WINDSPEED>
           <WINDDIR>4</WINDDIR>
           <WINDDIR_LONG>8</WINDDIR_LONG>
           <MAXTEMP>12</MAXTEMP>
           <MINTEMP>8</MINTEMP>  <SYMBOL>4</SYMBOL>
           <PHRASE_LONG>10</PHRASE_LONG>
     </VALIDTIME>
.
.
    </PROGNOS5DYGN>
</PRODUCT>
```

The uncut version contains all of Europe's capitals and contains a forecast over a five day period. There is a similar XML file containing weather information handling worldwide.

4.4.4 VLT Futurum

The stock quotations that Sundsvalls Tidning uses in the printed edition are delivered by VLT Futurum. They are delivered in a finalised page section in the PDF format once a day but there are other possibilities regarding file types. According to Gide Johnsen at Ecovision (supplies VLT Futurum with the stock quotations) it is possible to deliver the quotations in several different formats depending of what application the quotations are intended for. The system "printing out" the quotations sends out items throughout the day regarding important events et cetera. It does not say if it is possible to get updates on the actual stock quotations more than once a day.

4.4.5 Payex

Payex is one of the actors offering web payment services on the today. According to Nicklas Molin at Wallit AB, the supplier of Payex, it would not be any problem to use Payex as a payment method on a new publishing channel such as a newspapers e-paper edition. The Payex system is flexible and designed to handle payments for other types of media than the web. As long as the e-paper terminal is online and able to perform two way communication during the entire transaction there should not be any problem to use Payex as a payment service.

5 Analysis

The following chapter describes how the results from chapter four can be used when planning for a suggested production flow for an e-paper product.

5.1. Interesting parts of existing production flow

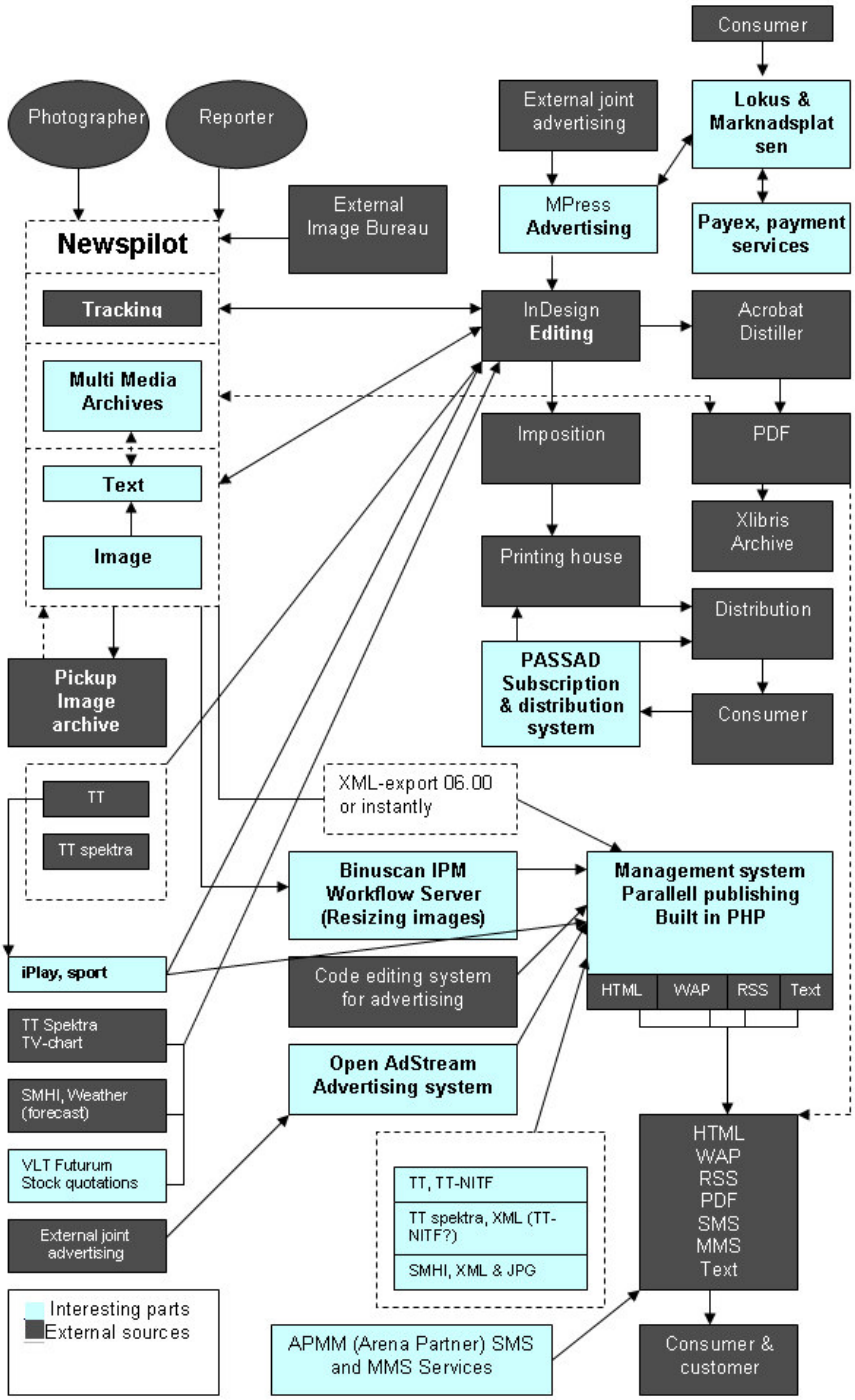


Figure 5, Systems that could be part of a future e-paper workflow.

As far as I am concerned, Figure 5 describes what systems and external sources that is enough to create a content flow intended to create an e-paper product. As far as I have understood the wishes from Sundsvalls Tidning and other participants, a future e-paper product should be a stand-alone product and not an extension of any other already existing product. According to

my findings the product should mix the good features from the newspapers paper edition and those of the newspapers webpage. The newspapers paper edition should contribute with its excellent typography and design, the newspapers webpage should contribute with its high degree of interactivity and the mobility of state-of-the-art in handheld terminals.

5.2 Proposal for an e-paper production flow

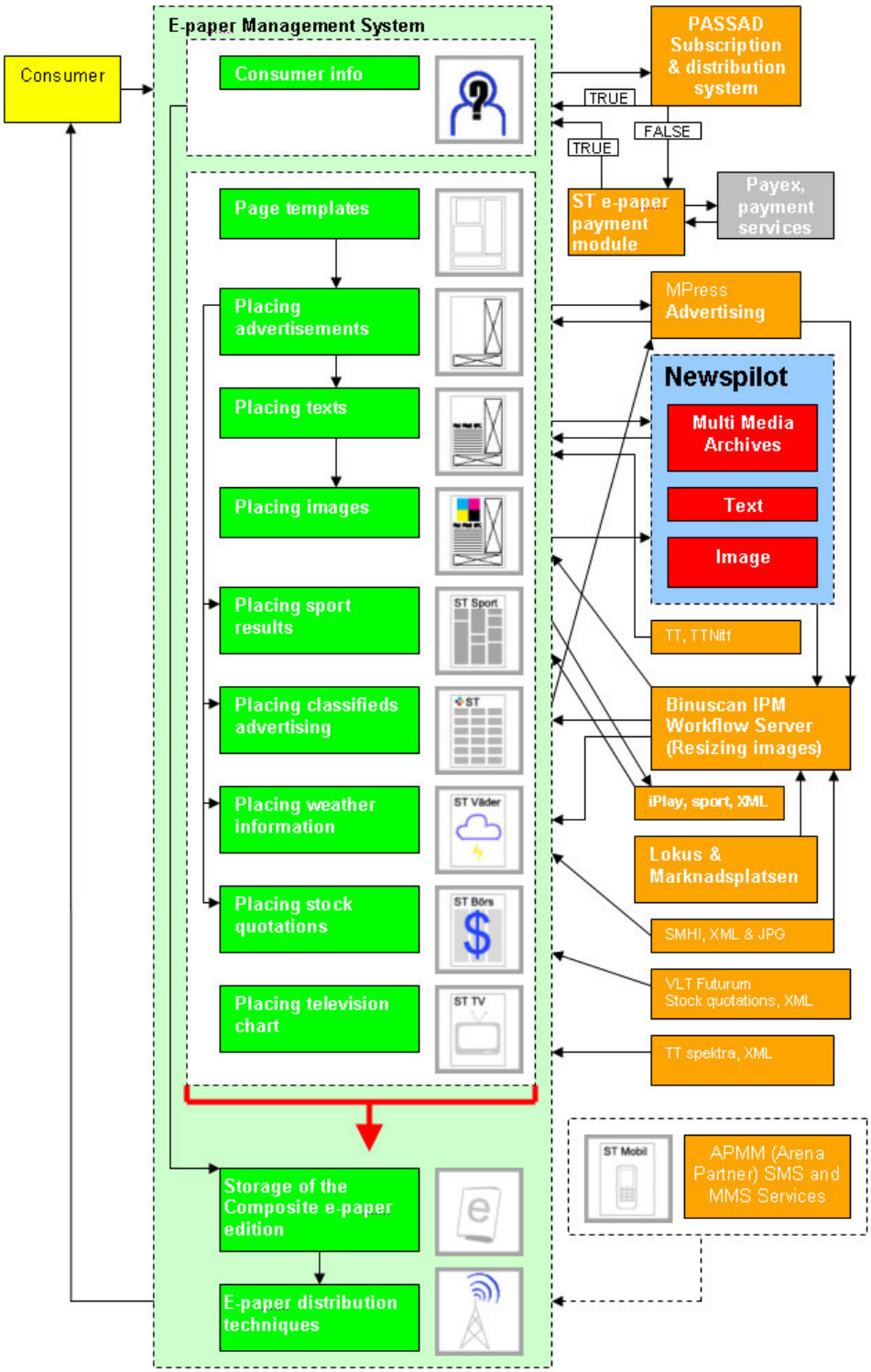


Figure 6, Flowchart of a proposed e-paper production flow.

5.2.1 Handling subscribers and single copies

When a consumer using an e-paper terminal, requests to download a copy of the today's e-paper edition, the system must be able to decide on what type of consumer the request concerns. Is the consumer a subscriber or is he or she buying single copies off a virtual newsstand?

When the e-paper Management System receives the request from a consumer's e-paper terminal, the Management System sends a request to the subscription system PASSAD. In the PASSAD systems database, all the e-paper edition subscribers are listed. If the consumer is listed in the PASSAD system, the system sends a TRUE answer back to the e-paper Management System. If the answer is FALSE this means that the consumer is not a listed subscriber and he or she is redirected to a payment module intended for e-paper single copies. The payment module should use the Payex payment services to complete the transactions. To not confuse the consumers, the payment module should have a design that reminds you of that it is still part of Sundsvalls Tidning. Therefore the Payex payment service should be embedded or similar in the payment module if possible. Sundsvalls Tidning already uses the Payex payment services to their classified booking service and therefore it is appropriate to use this payment model.

5.2.2 Templates

To make the production flow of an e-paper edition as automated as possible it is my opinion that it is important to use templates to create the pages. Sundsvalls Tidning should create several different templates so that the e-paper edition won't be experienced as too monotonous. Some parts of the e-paper edition could be static and always look the same, for example the pages with the classified advertisements, weather pages or the sport result pages.

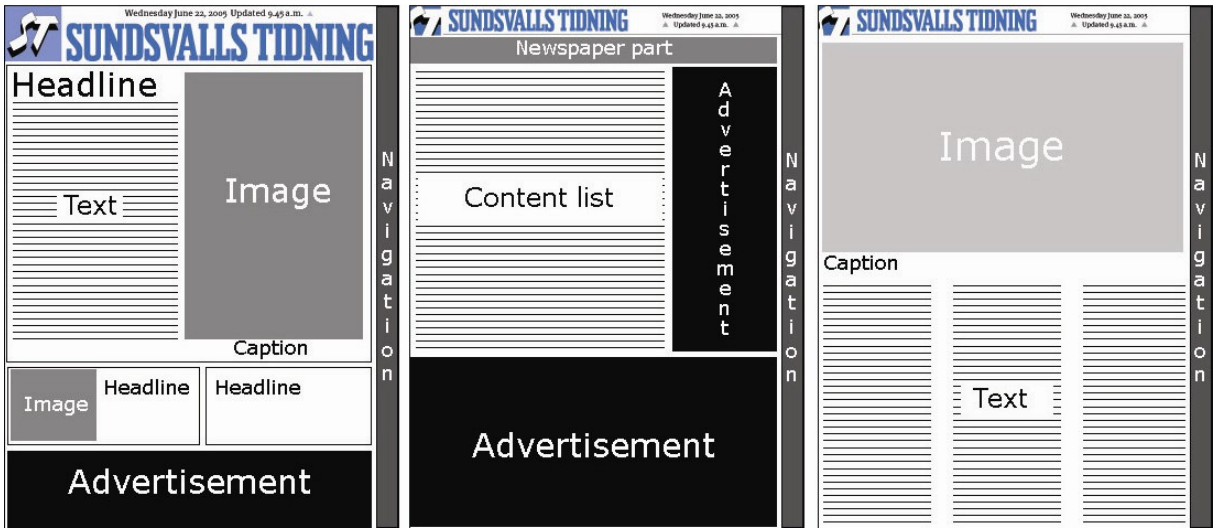


Figure 7, Examples of e-paper template design, Component positions taken from Svenåke Boströms e-paper design proposal, version 12.

The examples above describe three conceivable template designs for a first page, content list page and an article page. The template designs are made on the basis of the e-paper design proposals made by Svenåke Boström at Sundsvalls Tidning (appendix, p. 64). Just looking at the proposals, you understand that there are several issues to solve to make it work.

Image space
Unlike the e-paper design proposition it is my recommendation to decide on a number of fixed image sizes for usage in an e-paper edition. It could be suitable to use four different image sizes in the templates intended for the articles and a thumbnail size intended for the headlines at the first page. It is better to work with a few image sizes in the beginning if Sundsvalls Tidning decides on producing an e-paper edition. When creating the templates it is important to consider that the images could be oriented as landscape or portrait. Therefore the templates should be designed with two different sized landscape images and two different portrait sized images.

Advertising space
As in the case with the images I recommend to decide on a few different advertisement sizes as most newspapers do on their websites. If the template is based on three columns the conceivable advertisement sizes could be:

Name	Size
Full page	1/1 template
Half page	½ template lying
Big banner	1/3 template lying
Banner	1/5 template lying
Full column	1/1 column and 1/3 template standing
Half column	½ column and 1/6 template standing
Small board	1/3 column and 1/9 template standing

Table 5, Conceivable advertisement sizes.

5.2.3 Advertising

The advertising in an e-paper edition should be handled by the same system that handles the advertising in the regular paper edition. As it is today the MPress advertising system handles only the advertising intended for the paper based edition. The advertising on the web is handled by Open AdStream and this system is only intended for the web and not printed media according to Fredrik Welander at Sundsvalls Tidning. The MPress advertising system is able to handle new advertising formats. To make this work, new advertising information must be created in MPress.

My recommendation is that the advertisement graphics should be stored in a folder structure the same way as the traditional advertisements are today. The advertisement information containing information regarding the advertiser, placement codes, publishing dates et cetera, should also be stored the same way as it is today. According to Jan Alriksson at Tieto Enator there should not be any problem adding the possibility of stating information that could be used to make the advertisements interactive. This type of information should be stored the same way as any other advertisement information, regardless of channel.

To create an as automated system as possible it requires that advertisement information is created so that the advertisements could be placed using a high degree of automation. Such information is placement codes and page information. Each page should contain metadata that tells us which page it is and what placement codes could be approved for advertisment placement on the page. My recommendation is that the advertising space in the templates should be fixed, but there should be several different templates obtainable to suit the advertisement and the image belonging to the article. I therefore recommend Sundsvalls Tidning to decide on a few fixed advertisement sizes intended for an e-paper edition as most

newspapers do with their banners on the web today. Working with a few advertisement sizes, makes the selling process easier for the advertisement sales staff to begin with.

The placement codes must be created in the same fashion as in any other edition, after deciding on the design of the page templates. When creating the page templates you must take in consideration that some of the pages will contain only advertisement such as the classified advertisements. As it is today the classified pages often only contains classified advertisement in several columns without involving any display advertisement.

5.2.4 Editorial content

The editorial content intended for the e-paper edition should according to me be stored by date to make the structure of folders logical. Each date folder would have subfolders containing the different editorial content that is required for the e-paper edition.

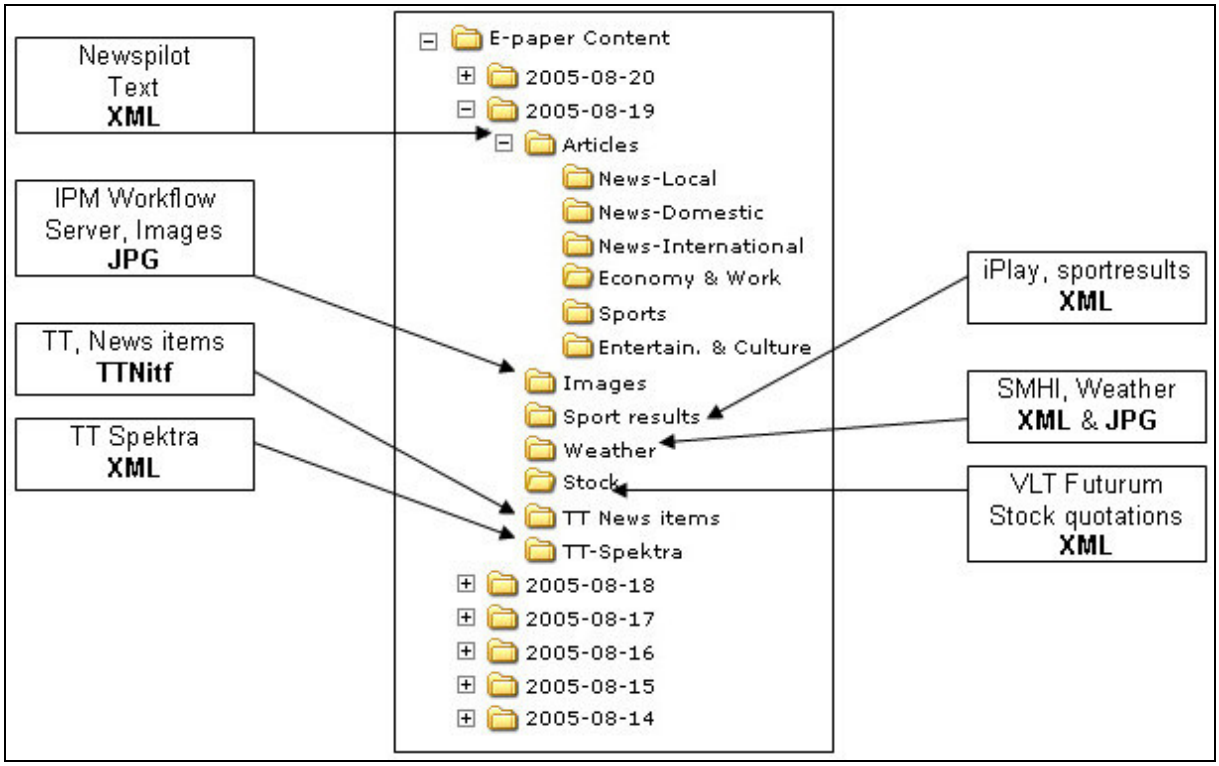


Figure 8, Editorial content storage and file types

According to Sundsvalls Tidning and the suppliers of both editorial content and content systems, the necessary systems and suppliers are able to deliver suitable open file types to make the e-paper production easier. The text content can all be delivered as XML or standards based on XML such as TTNITF. As it is today SMHI and IPM Workflow Server delivers the images in JPG format.

The content system Newspilot sends the articles in XML format and the images at 6 AM each morning. It should be the same for a future article flow to the e-paper management system besides the articles the reporters wants to publish at once. The reporters at Sundsvalls Tidning can decide to publish the articles at once during daytime so when this occurs even an XML file should be sent to the e-paper management system so it will have access to the most updated news. Regarding the other content sources, it would be desirable if the systems could deliver XML files and images as soon as something new is created or delivered to Sundsvalls Tidning. This is especially important when it comes to weather reports and news items.

The XML files generated by Newspilot intended for the e-paper edition should contain the same information as the XML files intended for the web but with the additional data of priority of each article. The <pub_start> and <section> tag in the XML-file indicates where to place the article in the folder structure. In the extension this helps us to place the article under the right section of the e-paper edition.

5.2.5 Image workflow

The image workflow consists of images from the editorial content system Newspilot, SMHI and perhaps Lokus. At the same time as you book your advertisement on Lokus for the traditional newspaper, an advertisement is produced intended for the web. To your advertisements you can ad up to five images that shows the item you want to sell or buy. One of these images is used for the advertisement intended for the traditional newspaper. The traditional classified advertisement from the booking is stored in MPress as a PDF. If the Binuscan IPM Workflow Server could convert the PDF into JPG or another suitable format these images could form the classified pages.

The IPM Workflow Server can resize and convert the images from Newspilot and SMHI to the desired sizes and formats. Regarding the images belonging to the articles from Newspilot these images should be resized to the different image sizes available in the page templates. Here is a good reason not to have too many different image sizes in the templates when this would cause storage of a large amount of images. The main image intended for the paper edition should keep its name that is the same as the article ID but with an additional suffix that tells us what size the image is. The images from SMHI belonging to the weather forecasts should be resized to a suitable size that would fit in the weather page template.

5.2.6 External content

All the external content suppliers that an e-paper edition would depend on already do or can deliver content in suitable open XML formats. Tidningarnas Telegrambyrå (TT) uses their own XML based format TTNITF to define the content and structure in their articles and news items. SMHI uses XML to define the weather forecasts, and JPG images for the maps. The XML files are usually intended for Sundsvalls Tidnings webpage but should be able to serve as source to the e-paper edition as well.

From this autumn onwards TT Spektra will be able to deliver their television charts in XML format which in turn would be easier to handle than ordinary EPS files. The television chart page template would be pretty much the same each day so this should not cause any problem when fitting the information in the text fields. According to Ecovision AB, the company that supplies VLT Futurum with stock information, it would be possible to deliver the stock quotations in XML format. Today VLT Futurum delivers the stock quotations by finalised pages in EPS format which would not be as good as getting them in XML format. There will be a significant size difference between the traditional newspaper pages and the e-paper edition pages. If scaling a EPS in tabloid size to the intended e-paper edition size (at the moment A5) the content would probably be hard or impossible to read.

5.3 E-paper production engine

When all the material is available in the suitable file formats, the next step would be to put everything together in one publishing unit with all the required functionality. Before a full-fledged management system can be constructed, DigiNews (europe) together with the involved newspapers and universities should decide on what file format the final product would be.

5.3.1 Production and storage

The production of the finished e-paper edition should take place on the server side at Sundsvalls Tidning, rather than on the client using client-side transformations. It would of course be possible to let the consumers e-paper terminal download all the content and put it together locally, but would require more computer power on the consumer end, processor speed and battery capacity which ads up to a terminal that not as many consumers can afford. Further, this probably would be possible to perform it is better that Sundsvalls Tidning has full control of the production process and because of the legal matter of the Editor in Chief who has full responsibility of all material published in the name of Sundsvalls Tidning.

5.3.2 E-paper generator

When creating a system for generating an e-paper edition, there are several issues to solve in order to get the system to run with as little human intervention as possible. The first issue to solve is in what file types the e-paper edition should be presented. Even when this is decided and agreed upon by Tidningsutgivarna and DigiNews, there are still several questions on how it should be presented in the best way.

If Sundsvalls Tidning for instance decides on working with the idea of using different templates, each with fixed standard sizes on images and advertisements there are some parameters that can cause problems. When a text article is placed into a fixed, finite space it is not certain that the space would be big enough. One way to solve the problem without changing the amount of text would be by using some kind of automatic kerning, altering font size, font spacing and/or line spacing. The risk with doing this is that if it is a long article the text could get very compressed and the text would be difficult to read. My recommendation to solve the problem with long articles is to let the text overflow be stored in hidden pages that are hidden in the background and are not shown in the content index. On the page where the article is placed there would then be a special icon indicating that there is more to read. When clicking this icon the rest of the article would be shown.

In the XML code of each article, the article's ID tag tells us the corresponding ID of the images that relate to the articles text. Each image should have been duplicated by the IPM workflow server to all the used image sizes. The system grabs the intended image with the right size and places it at the intended image space in the template. The image used in the paper edition tells us which image is the main image. The orientation of the main image, landscape or portrait tells us what template to use. It would be possible to place an icon belonging to the article indicating that there are more images to be seen.

Advertisements should be placed on the basis of their placement code, as dictated by the advertisement sales staff. Each advertisement space should have its unique placement code and thereby only one advertisement can be placed in that spot. When all the content have been placed and it shows that there are white spots with no content, these spots should be filled with Sundsvalls Tidnings own advertisement, for example an advertisement intended to recruit new consumers to one of their products. These types of advertisements are often called plugs.

The process of producing an e-paper edition should be repeated, at least one time per hour in order to keep the content fresh with the latest news. As I see it, an hourly interval is the minimum update frequency for the e-.paper edition, but it could be a good starting point in the beginning of the e-paper editions life. With an hourly update Sundsvalls Tidning would have a greater control of what external content that are being published.

6 Discussion

This chapter handle questions that that are not of importance in the near future or questions that are of importance for the survival of a new media channel as such, like in the case of an e-paper edition.

6.1 On demand or fixed editions?

When a consumer chooses to fetch or otherwise buy a newspapers e-paper edition, should the edition be produced on demand or should the e-paper production system produce an updated edition at a fixed number of times per day? As I see it, the newspapers should in the beginning of an e-paper project use a solution where the production system would not function as an on demand system. This could just complicate things.

As of today, when all the newspaper subscribers get their newspaper every morning, the news is literally yesterday news. With an e-paper production system that updates the edition once every hour it would be a great progress compared as it is today. The consumers are getting more and more fastidious, so in the future it is probably important that the downloaded edition contain the most recent news. But compared to today's substrate-based editions, I think that it is more than enough with an e-paper edition containing news not older than one hour.

6.2 Personalized editions and geographical editions

With the current technology in use at the Swedish newspapers, it should be possible in the near future for the consumers to subscribe only to the newspaper sections of their interest. In the subscription system PASSAD, that Sundsvalls Tidning uses, it is prepared to handle CRM information. It should not be any problem for the supplier to add similar information that could handle different types of subscriptions. This could also solve the issue of targeted editions depending on a consumer's geographical location. The larger newspapers of Sweden have one or more local editions and one national edition. When addressing problems related to editioning and zoning, it is important that you narrow down the number of choices. Too many choices could get the reversed effect if the subscription process appears too complicated. I believe in personalized editions as such, I like the idea of having the opportunity to subscribe on the sports section from a newspaper. But it is important to introduce such products when the market is mature. I do not think that that is the case in the beginning of a new newspaper media era.

6.3 Importance of a unique newspaper edition

To make an e-paper edition successful it is important that the new product can offer something new to the readers. This is one reason why I think that the e-paper edition should be fed with news around the clock. That would make the e-paper edition contain more recent news compared to a traditional paper edition. When comparing with the newspapers webpage, the e-paper terminal will be more mobile, flexible and with a resolution twice as good as that of an ordinary screen. Because of the higher resolution, the images and text will look better and it will be more reader friendly for the eyes. This would also make it possible to keep the typography from the paper edition allowing the consumer to more easily recognize the newspaper's trademark. If you can exploit the good features from the newspaper publishing company's products of today and combine those with the advantages given by an e-paper edition this would be a good start of creating an appealing product. The downside is that you can not light a fire in the tile stove with an e-paper edition.

Today, the subscribers get yesterdays news in their mailboxes every morning. Yet the subscribers hang in with their newspaper subscriptions. Nevertheless, with the development on the web and in mobile media, this will slowly but surely change to alarming rates for the Swedish newspapers. In Sweden, the provincial newspapers above all have a strong position in the local society, compared to the newspapers in the major cities. This is a fact that the newspapers must utilize before they start losing big numbers of readers to other media channels outside the control of the newspapers.

7 Conclusions

This chapter will summarize what results have emerged in this survey, regarding a future e-paper production system.

7.1 Internal systems

The systems used by Sundsvalls Tidning today are all quite new and have only been in production from a couple of months to a few years. Because the systems are quite new they are well adapted to other publishing channels than the traditional paper-based newspaper edition. All the systems are able to deliver their content in XML files, maybe not at the moment but after some adjustments and development. Today the editorial system Newspilot generates XML files intended for their webpage. Therefore, it can not be any problem to create a similar XML file intended for a future e-paper edition.

The systems handling the images should be easy to incorporate in an e-paper production flow; i.e. to produce images of the right size and file type through the newly started IPM workflow Server.

Regarding the advertising system, there are several issues to solve before this could function well to the new publishing channel. The following points are needed to be solved before the MPress advertising system could be part of the e-paper production flow.

- Advertisement information must be created before the MPress system can handle new advertisement formats and file types.
- Sundsvalls Tidning must create placement codes that tell the system where to place the different advertisements.
- Sundsvalls Tidning should decide together with the Swedish newspaper industry on advertisement formats and file types.

7.2 External content and external suppliers

Today, the external content suppliers deliver their content in several different file types. All the external content suppliers that I have been in contact with tells that they are able or will be able in the nearby future to deliver their content in XML or formats based on XML. This would make it easier to develop an e-paper production system where you don't have to adapt to several different file types.

7.3 Newspaper organisation

A new newspaper product is difficult to bring to life (to market) without affecting the existing organization at the newspaper. Because of the legal responsibility of the Editor in Chief, the various publishing channels must be controlled. The Editor in Chief does not personally approve of control every piece of news published by the newspaper, he rather delegates the responsibility to the managers of the different publishing channels.

If Sundsvalls Tidning decides on creating a production flow, it is necessary to appoint an Editor in-Chief with the responsibility of controlling the new e-paper edition. Likewise, it is important to appoint a person with the responsibility for the advertising. The person

responsible for the advertising must have great knowledge of the product, so he or she is able to educate the sales staff at the newspaper.

7.4 Blocking parameters

There are some parameters that oppose to the usage of a fully automated production flow. One of these parameters is as I see it impossible to ignore and difficult to solve: the demand of controlling the outgoing media. The blocking parameters are:

- The legal responsibility of the Editor in Chief is preventing the last step of the production flow. It is not wise to publish an e-paper edition without controlling the content.
- It could be difficult to perform an automated function that places all the advertisements at the right places. When the advertisements are placed at their location the finished result should be controlled by the responsible at Sundsvalls Tidning.
- If Sundsvalls Tidning chooses to incorporate an e-paper production flow where the articles should fit in their intended space by use of varying the kerning settings for each article, it will cause problems in the form of unreadable texts. If a long article is forced to fit a small space through the use of excessive kerning, the characters will flow into each other and the text will be unreadable.

8 Recommended continued work

This chapter will describe what developments I think are important for making it possible to deploy an e-paper workflow in the near future.

8.1 Internal systems and organization

To render a system as automated as possible, there are several issues for Sundsvalls Tidning to solve. Regarding the editorial content system Newspilot it is well adapted in order to be able to launch new publishing channels. The Newspilot system already generates XML files for Sundsvalls Tidnings webpage. For a future e-paper production flow, the Newspilot system should generate XML files intended for an e-paper edition. This should not be any problem as there are small differences between the two different XML file formats. There are some parameters that are needed to be added, for example the priority index.

The priority index is already available in the Newspilot content system, but is not currently in use. The problem is that the priority index can not be set without human intervention. This could cause a problem when the reporters are supposed to set the priority. It is not strange if a person thinks his work is more important than it really is in comparison to the actual news value. Here Sundsvalls Tidning faces a difficult task solving this evaluation process when they are forced to state rules for the priority index. The rules must be stated so there can not be any questions of the importance of an article. It must obvious how the article should be marked regarding the priority index.

In a future e-paper management system, it is necessary to incorporate a system that manages the subscribers. As I see it, Sundsvalls Tidning already has an excellent system to work with and develop in close cooperation with the system's supplier PRESSsystem. There are sections like the CRM section in the system, that in my mind inspires to the creation of similar sections that could handle different types of subscription and personalized editions, depending on each user's personal profile.

When I made the interviews at Sundsvalls Tidning, I got the impression that the work with defining advertising formats for an e-paper edition was not yet initiated. This is an important part of the product, besides the revenue from the subscribers and single copies sales, advertising is the only major source of income. Sundsvalls Tidning must together with the other newspapers in Sweden, decide and agree on standards regarding future e-paper advertising. It would be wise to agree on common file formats and sizes as soon as possible, so that the newspapers could avoid the situation that occurs today regarding advertising on the web with an extensive number of possible advertisement sizes and file formats.

8.2 Desired new formats of external content

It turned out that the suppliers of external content have the ability to deliver file types that would be suitable for an e-paper production system. The file types that the external content suppliers can deliver today, or in the near future is based on XML for the text content. Today, Sundsvalls Tidning gets their content in several different file types and some of them are not as suitable as an open XML based file type. If Sundsvalls Tidning wants to follow my recommendation they are advised to negotiate with their external content suppliers so that their demands are met, regarding the desired format.

8.3 Customer examination and focus groups

The possibilities of an e-paper management system are great. If Sundsvalls Tidning considers that the idea of different subscription variants, for example to just subscribe on the sport pages, is interesting, they ought to discuss with the supplier of the subscription and distribution system PASSAD of a conceivable solution. Before reaching such solution, it is important to have knowledge of what the wishes of the consumers are. An excellent way of finding out the wishes of the consumers is to engage a number of focus groups. When performing the focus group sessions, it is important to ensure that the participants belong to all of the target groups that the newspaper intend to reach. It is also important to get participants from the entire circulation area, so that any possible divergence will be exposed.

8.4 Format and file type

The European DigiNews project and in Sweden, Tidningsutgivarna (TU) together with all the involved newspapers must decide on which formats and file types that are suitable for a future e-paper product. I think it is important that all involved in DigiNews can agree in this matter so that this could in the future be regarded as a standard. I think the Swedish and European newspaper industry would gain in the long run, if an agreement could be set regarding formats and file types.

9 References

Bury, S. (2001) *Cross-media publishing opportunities,* Electronic Publishing, Available at: http://ep.pennnet.com/Articles/Article_Display.cfm?Section=Articles&Subsection=Display&ARTICLE_ID=118341 [Online] (2005-04-01)

Bell, J. (2000) *Introduktion till forskningsmetodik*, third edition, Studentlitteratur: Lund

Peat, J., Elliot, E. and Baur, L. (2002) *Scientific Writing: Easy When You Know How*, BMJ Publishing Group: London, ISBN: 0-7279-1625-4, [e-book available at ebrary] (2005-04-05) An English description of procedure in writing a scientific report

Lotsson, A. (2001) *Beställning fel uttryck för on demand*, Computer Sweden, Available at: http://nyheter.idg.se/display.pl?ID=010126-CSD4 [Online] (2005-04-06)

Appelgren, E., Sabelström Möller, K. and Nordqvist, S. (2004*) E-paper Production Workflow – Adapting Production Workflow Processes for Digital Newsprint*, Conference paper presented at the TAGA Conference, April 2004, San Antonio: USA, Available at: http://www.DigiNews.se/files/paper_appelgren_TAGA_2004.pdf [Online] (2005-04-06)

Rehn, J. et Al. (2004) *Nordiska tidningsregistret 2004*, Ifra Nordic: Stockholm, ISSN: 1104-7828 (2005-09-29)-A directory of Nordic newspapers and their technical data.

Ritter, H. (2003) *E-Paper – a whim of convergence or a new business field? E-Paper offers publishers, readers unique opportunities*, Ifra Newspaper Techniques, June 2003, Darmstadt: Germany, pages 40-45 (2005-05-17)

Ritter, H. (2005) *Fokus on the reader,* Ifra Newspaper Techniques, February 2005, Darmstadt: Germany, pages 33-35 (2005-05-17)

E-ink Key Benefits (2002) *Electronic Ink Key Performance Benefits,* E Ink Corporation, Cambridge: USA (Ma) Available at: http://www.eink.com/downloads/index.html [Online] (2005-05-17)

Trost, J. (2005) *Kvalitativa intervjuer,* Studentliteratur: Lund, third edition, ISBN: 91-44-03802-X

Sabelström Möller, K. (2001), *Information Categories and editorial processes in multiple channel publishing*, Dissertation at the Royal Institute of Technology, Department of NADA: Stockholm, ISBN: 91-7283-077-8, pages 27-34, (2005-05-31)

Hadenius, S. Weibull, L. (1999) *MASSMEDIER - Press, Radio & TV I förvandling,* Albert Bonniers Förlag: Stockholm, 7:th edition, ISBN: 91-0-057954-8, p. 329-331

Karlstron, M. (2005) *Kartläggning av distributionstekniker för spridning av en elektronisk tidningsedition*, Master's Thesis at Royal Institute of Technology, Stockholm: Sweden (2005-03-09)

Online

DigiNews (2004), *Om DigiNews,* [online] Available at: http://www.DigiNews.se/om_DigiNews.php (2005-04-29)

Fahlström, G. (2004) *Naven som måste klara full rulle*, Pressens Tidning [Online article], Available at: http://www.pressenstidning.nu/Article.jsp?article=5507 (2005-05-02)

Tidningsutgivarna (2005), *Tryck och yttrandefrihet*, [Online] Available at: http://www.tu.se/article.do?category=119&parentid=55 (2005-05-16)

E-ink (2002),*Technology,*[Online] Available at: http://www.eink.com/technology/index.html (2005-05-17)

Pilgrim, M. (2002), *What is RSS?*, O'REILLY xml.com. xml from the inside out [Online article], Available at: http://www.xml.com/pub/a/2002/12/18/dive-into-xml.html (2005-06-21)
NITF (2004) *NITF: A Solution for Sharing News*, International Press Telecommunications Council, [Online] Available at: http://www.nitf.org/ (2005-06-23)

PRESSsystem (2005) *PRESSsystem – Produkter*, [Online] Available at: http://www.presssystem.se (2005-06-29)

Newspilot (2003) *Marknadens vassaste system för redaktionellt arbete*, [Online article] Available at: http://www.infomaker.se (2005-07-07)

Newspilot (2001) *Newspilot - ett modernt redaktionellt system*, [Online article] Available at: http://www.infomaker.se (2005-07-07)

iPlay (2002) *LOKALA SPORTTABELLER FÖR BÅDE TIDNINGEN OCH WEBBEN,* [Online article] Available at: http://www.infomaker.se (2005-07-07)

IfraTrack (2005) *IfraTrack News – About IfraTrack Recommendation,* [Online article] Avaiable at: http://www.ifra.com/WebSite/news.nsf/IFRATRACKWEB/C225F627EC22A965C1256B10004FCEEE?OpenDocument (2005-07-08)

Stenberg, J., Fjällström, F., Enlund, N. (1998), *WORKFLOW MANAGEMENT AND DECISION SUPPORT IN A DIGITAL ENVIROMENT – AN IFRATRACK-BASED PROTOTYPE IN REAL PRODUCTION,* [Online article] Available at: http://de.sitestat.com/ifra/ifra/s?news.nsf.download.wrkflman.pdf&ns_type=clickout&ns_url=http://www.ifra.com/website/news.nsf/All/C225F627EC22A965C1256B10004FCEEE/$FILE/wrkflman.pdf (2005-07-08)

SMHI (2005) *Kort om SMHI,* [Online] Available at: http://www.smhi.se/sgmain/om_smhi/kort_smhi.htm (2005-07-15)

InDesign (2005) *A new standard in professional layout and design,* [Online] Available at: http://www.adobe.com/products/indesign/main.html (2005-07-15)

Pickup (2004) *ETT SYSTEM FÖR ARKIVBILDER, PRODUKTIONSBILDER, ANNONSER OCH ANNONSMOTTAGNING,* [Online] Available at: http://www.infomaker.se (2005-07-15)

VLT (2005) *Moduler gör det enklare,* [Online] Available at: http://www.vlt.se/artikelmall.asp?c1=228&c2=229&c3=323 (2005-08-03)

ST[1] (2005) *Prisberäkning för annonsmoduler*, [Online] Available at: http://www.sundsvall.nu/snu/servlet/com.dot.servlet.DOTServlet?Action=VisaSida&SidNamn=st_fm_prisrakning (2005-08-03)

ST[2] (2005) *SMS,*[Online] Available at: http://www.st.nu/mobilt/index.php (2005-08-23)

ST[3] (2005) *Handdator*, [Online] Available at: http://www.st.nu/mobilt/handdator.php (2005-08-24)

Lokus (2005) *Om Lokus*, [Online] Available at: http://www.lokus.se/ (2005-08-12)

Distiller (2005) *Central produktion av stora volymer Adobe PDF från Adobe PostScript,* [Online] Available at: http://www.adobe.se/products/acrdis/main.html (2005-08-18)

APMM (2005) *Om APMM*, [Online] Available at: http://www.leanback.se/apmm/index.asp (2005-08-23)

Dapspress (2005) *Tidningsdata,* [Online] Available at: http://www.dagspress.se/tidningsdata/tidningsdata_search_fs.jsp (2005-09-02)

Tidningsnätet (2005) *Tidningsnätet lokalt – I hela Sverige*, [Online] Available at: http://www.tidningsnatet.se/index1.asp (2005-09-02)

Durkin, K (2003) *Open AdStream Overview*, [Online] Available at: http://www.se.247realmedia.com/products/oas.html (2005-09-02)

Binuscan (2005) *IPM Workflow Server is an image processing server using hot folders and specification files created by client applications,* [Online] Available at: http://www.binuscan.com/ipm_multilangues/us/infos_ipm.html (2005-09-21)

TT[1] (2005) *Nyhetsservice för Tidningar,* [Online] Available at: http://www.tt.se/utbud/rtnnyhtj.asp (2005-09-29)

TT[2] (2005) *Fördelar med TT:s moderna textformat,* [Online] Available at: http://www.tt.se/teknik/omTTNITF.asp (2005-09-29)

Interviews:

Nordqvist, S. and Sabelström Möller, K. (2005), *Interview taken place at The Swedish Newspaper Publisher's Association* (2005-03-17)

Törnblom, L. (2005), *Interview taken place at Sundsvalls Tidning,* Sundsvall: Sweden (2005-04-20)

Westin, H. (2005), *Interview taken place at Sundsvalls Tidning,* Sundsvall: Sweden (2005-04-20)

Carnbro, K. (2005), *Interview taken place at Sundsvalls Tidning,* Sundsvall: Sweden (2005-04-20)
Eklund, R. (2005), *Interview taken place at Sundsvalls Tidning,* Sundsvall: Sweden (2005-04-19)
Bodström, S. (2005), *Interview taken place at Sundsvalls Tidning,* Sundsvall: Sweden (2005-04-19)

Lindström, T. (2005), *Interview taken place at Sundsvalls Tidning,* Sundsvall: Sweden (2005-04-20)

Kjellin, H. (2005), *Interview taken place at Sundsvalls Tidning,* Sundsvall: Sweden (2005-06-07)

Söderlund, H. (2005), *Interview taken place at Sundsvalls Tidning,* Sundsvall: Sweden (2005-06-07)

Teir, T. (2005), *Interview taken place at Sundsvalls Tidning,* Sundsvall: Sweden (2005-06-07)

Jonsson, A. (2005), *Interview at the Royal Institute of Technology,* Stockholm: Sweden (2005-05-04)

Möller, J. (2005), *Interview at Svenska Dagbladet*, Stockholm: Sweden (2005-06-17)

Alriksson, J. (2005), *Interview at Tieto Enator*, Stockholm: Sweden (2005-06-20)

Pilhage, K., Andersson, E-B., Henriksen, I. (2005), *Interview made by e-mail with Tidningarnas Telegrambyrå (TT)*, Stockholm: Sweden (2005-07-15)

Nordqvist, H. (2005) *Interview made by e-mail with Svenska Meteorologisk och Hydrologiska Institutet (SMHI),* Norrköping: Sweden (2005-07-21)

Welander, F. (2005) *Interview made by e-mail with Fredrik Welander, Webmaster at Sundsvalls Tidning,* Sundsvall: Sweden (2005-08-18)

Lidin, M. (2005) *Interview made by e-mail with Majbritt Lidin, Head of administration and system, Advertisment Department at Sundsvalls Tidning,* Sundsvall: Sweden (2005-09-06)

Lind, H. (2005) *Interview made by e-mail with Håkan Lind, Head of sales at PRESSYSTEM,* Helsingborg: Sweden (2005-09-13)

Johnsen, G. (2005) *Interview made by e-mail with Gide Johnsen, Newspapers/Production at Ecovision AB* (interview made through Susanne Tapper at VLT Futurum) Uppsala: Sweden (2005-09-19)

Molin, N. (2005) *Interview made by telephone with Nicklas Molin, Sales Manager at Wallit AB,* Stockholm: Sweden (2005-09-16)

Bjarby, A. (2005) *Interview made by telephone with Anders Bjarby, system and web development at Infomaker Scandinavia AB,* Kalmar: Sweden (2005-09-20)

Gustavsson, L. (2005) *Interview made by telephone with Lars Gustavsson, System Developer at Stadsporten Citygate AB*, Stockholm: Sweden (2005-09-28)

10 Dictionary

CM	Content Management
CRM	Customer Relationship Management
EPS	Encapsulated PostScript
FTP	File Transfer Protocol
GIF	Graphics Interchange Format
IFRA	An international association for media publishing
MMS	Multimedia Messaging Service
MSSQL	Microsoft Structured Query Language
NITF	News Industry Text Format
PDA	Personal Digital Assistant
PDF	Portable Document Format
PHP	Hypertext Preprocessor
RSS	Rich Site Summary
SMS	Short Message Service
SVG	Scalable Vector Graphics
TTNITF	TT News Industry Text Format
UMTS	Universal Mobile Telecommunications System
WAP	Wireless Application Protocol
WLAN	Wireless Local Area Network
XML	eXstensible Markup Language

Appendix

Table of content

[*] *The transcripts are summaries and notes of the interviews and not the entire interviews.*

[**] *I have chosen not to write any transcripts of the shorter interviews made by telephone or by e-mail. The shorter interviews consisted of up to three questions.*

Interview with Jan Alriksson

Product Manager, Tieto Enator (2005-06-20)
(Translated from Swedish to English)

How can you use the advertising system towards new publishing channels such as e-paper?
After this question Jan Alriksson held a presentation of their vision how the parallel publishing could work at a newspaper.

Is it possible to ad new parameters to the databases handling the advertisement information, e.g. information about interactivity?
Yes, that is no problem. We are at the moment working on a solution on how to integrate the advertising system into the e-paper production flow. It is no problem to ad columns to a table in a database.

Is it possible to ad CRM information to an advertisement or customer?
It is no problem to ad columns to a table in a database.

Have Tieto Enator developed a solution for an e-paper production flow towards the different systems?
See the first question. Tieto Enator had a full developed solution running on a couple of newspapers web pages.

What is the total size of the files used, when creating one day's e-paper?
The e-paper edition is created from text files and jpg images. Images create the design of the newspaper. Each article is clickable, when clicking the article appears in text with the images belonging to it.

Interview with Johan Möller

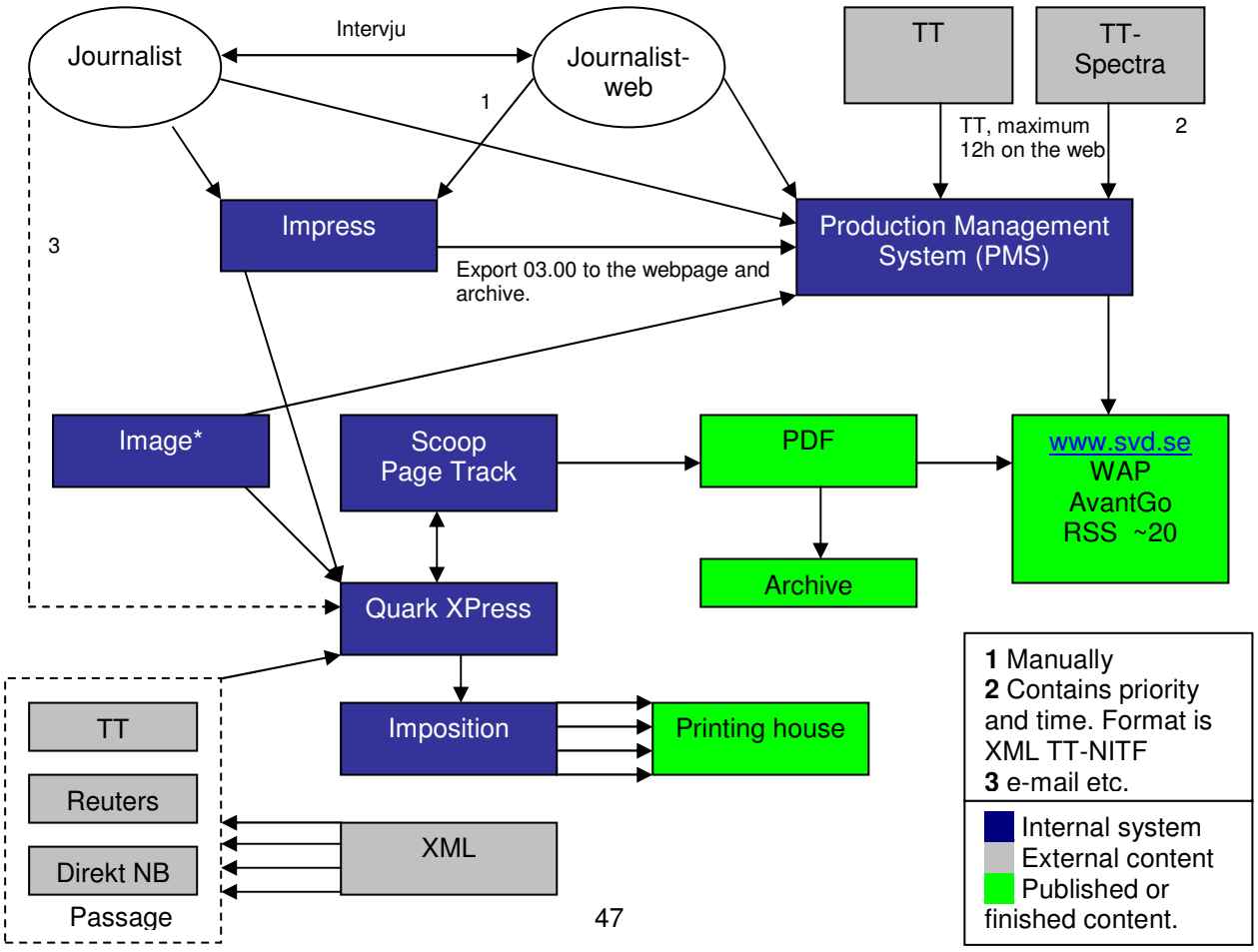
Development Manager, Svenska Dagbladet (2005-06-17)
(Translated from Swedish to English)

How many publishing channels are SvD using today to publish their content?
The publishing channels that we use today are the traditional newspaper, the webpage, wap, AvantGo and approximately 20 RSS. The RSS's are used to deliver news to partners who publish news on their website without having a news desk of their own.

Pilgrim (2002) describes RSS as a XML format for syndicating news.
AvantGo is a software intended for publishing on hand held computers.

Which systems does Svenska Dagbladet use in their production flow?
Impress - an old Editorial system nowadays owned by Adnode.
Scoop Page Track – Controls the newspaper content in the traditional newspaper production and is the same system as the imposition.
Quark XPress – Editing tool
Picture database
Production Management System – Gets content from Impress, turns the information into webbased formats, WAP, RSS, AvantGo.
Mactives AdBase – advertising system, DTI system since 1,5 years.

We are in the middle of a purchase of a new Editorial system or CMS for the printed edition but it is a lengthy process. The candidates that we are looking at have their upsides and downsides and it is hard to decide on which system is the most suitable for our needs.



* The system uses both internal picture databases and external as Scanpix.

How does TT and TT-Spektra deliver their content?
The delivery to the Newspapers "paper edition" and the web edition is handled as two different things. The delivery to the paper edition is handled through the system Passage. Passage handles content and information from several news agencies, such as TT and Reuters. Passage gets the content from the news agencies in XML documents.

TT and TT-spectra delivers news items to the newspapers webpage. The news items are delivered in the modified XML standard TT-NITF. In the XML files there are a lot of useful content beside the article content. In the XML file you can find information about priority, placement, date and time. The priority is used by SVD to place the news item with the highest priority more visible than the other news items. The maximum time that a news item can be placed on svd.se is 12 hours, this concerns the page one. The ordinary news items are oublished for a longer time. Then buying the service from TT you decide how much content you want, maybe you only are interested of summary of the news items. Then you only are allowed to publish the summary even though you get all the content. The XML files are delivered to a inbox where the newspaper picks them up and places them on the intended webpage. During night time this is handled automatically.

NITF stands for News Industry Text Format. NITF uses XML (eXtensible Markup Language) to define content and structure of news articles (NITF, 2004).

What is the difference between the content from TT and TT-Spectra at svd.se?
TT-Spektra delivers culture, TV charts and entertainment news and TT delivers domestic and international news, sports et cetera.

Interview with Lars Törnblom

Head of market and business department at Sundsvalls Tidning(2005-04-20)
(Translated from Swedish to English)

How do you think the form of advertisement will look in a future e-paper?
I think the advertising in a future e-paper can take any form. I do not think that Sundsvalls Tidning should have any restrictions regarding how the advertiser wants to present their advertisement. All depends on which commercial level the advertiser seeks for.

Do you think there will be a market for personalized advertising?
I think that there is a market for personalized advertising but there are a lot of issues to solve before Sundsvalls Tidning is ready for this kind of advertising. How do you fix the price on a personalized advertisement? Today the advertiser pay with the knowledge that the newspaper have 100.000 readers, but only 10 % is from the right target group. Could Sundsvalls Tidning justify that the advertiser pays ten times the amount if the e-paper displays the advertisement to 10.000 people from the right target group? Today Sundsvalls Tidning fix the price of the advertisement on the basis of how big the advertisement is could you do this in an e-paper version? Sundsvalls Tidning got to listen to their customers what their intentions are regarding the advertising.

I don not think we are ready to develop a market model before the e-paper product is ready to be displayed to the audience. Today there are a lot of local customers that are advertising in the newspaper that do not have need to advertise on the web. How will we attract theses customers to the e-paper product?

Are there any services from Sundsvalls Tidnings webpage, that you think have a place in the future e-paper?
Today Sundsvalls Tidning have the Marknadsplatsen (Market place), in a future e-paper product this service should be in another form. May be there is an idea to connect different category's to positions in the e-paper. If we in the future decide to use pictures to the classifieds this should also be the case in the e-paper. You should also have the possibility to search among the classifieds as it is on the web today.

Interview with Hans Söderlund

Advertising system specialist, Sundsvalls Tidning (2005-06-07, 14.00-15.00)
(Translated from Swedish to English)

Which advertising system is Sundsvalls Tidning using?
Sundsvalls Tidning uses the advertising system of Tieto Enator, MPress.

How is the advertising system saving the advertisement information?
The information is saved into different tables in different databases in the advertising system. Then a PDF and a EPS I saved into a structure of folders. The structure of folders is shared depending on what order ID the advertisement has. The biggest customers have their own folders. The total sum of different tables in the different databases is probably bigger than a hundred. There is a manual that describes all the different tables and databases but I do not know if this is confidential information. The best is if you contact Tieto Enator your self and ask if you can get hold of this information.

Does the system handle both display and classified advertisement?
Yes, the classifieds are treated the same way as the display advertisements and has an order id.

Is the advertising system able to handle new types of advertising formats as SVG?
Yes it is. New advertisement information must be created in that case.

One idea is that the advertising in an e-paper edition should be able to be interactive. If you choose to look closer on an advertisement in the e-paper, maybe the terminal could download an product catalogue from the company at matter. Is it possible to ad URL:s or similar to the advertisement information?
I do not know at the moment but it should not be any problem to ad fields that could contain such information in the advertising system.

Other information that where arisen at the interview:
Some of the information regarding the technique in the advertising system could be confidential. There by I will take contact with Tieto Enator and hopefully get an interview to get answers to some questions. The advertisements in the system today use placing codes to tell where an advertisement is supposed to turn up in the paper. The same should be used for the advertisement in an e-paper edition in the future.

Interview with Hans Westin

Managing Director at Sundsvalls Tidning (2005-04-20)
(Translated from Swedish to English)

E-paper as a product, what can it do for Sundsvalls Tidning in a period of three years?
Within three years I think we can attract the early adopters. This is he group how is not shy to try on new products and technologies. I do not think this will change the everyday life on the newspaper. In terms of number of subscribers of an e-paper I think that we maybe will have 500 subscribers of an e-paper edition within three years. At first the e-paper will function as a complement to the existing newspaper. To make the e-paper a success there are several issues to solve, for example the update when changing pages or images must be faster so that the e-paper in the future will be able to show moving images. When these issues are solved we can start building a business model.

What is your vision regarding e-paper?
My vision is that the e-paper will take care of the opportunities of the newspaper. The product must be easy to grasp to find the content that attracts the consumer. In the extension the e-paper will cut on expensive costs such as delivering to countryside, printing costs, investment in printing equipment. Today a lot of money are spent on printing and delivery of the newspaper, if these cost where minimized maybe Sundsvalls Tidning would be able to keep half of the Subscription income. Besides this it is important to secure if possible the income from the advertisers.

Which are the main target groups as you see it?
The main target group as I see it is the subscribers on the countryside. The problem today is that this target group has a high average age. Sundsvalls Tidning must retain the relationship with the readers of the web edition. Maybe Sundsvalls Tidning can offer the e-paper to the frequent web readers. Then we have the business men that often are travelling and the people living abroad.

How will Sundsvalls Tidning present the product to the public?
It is important that Sundsvalls Tidning present the e-paper as a unique product. But how do you present a unique product that is new on the market? When the television was introduced to the audience it was described as if you blindfold your eyes it is as listening to the radio. It is important the product is easily described to the audience. Maybe it could be described as a product that makes life a little simpler.

Interview with Håkan Kjellin

Head of information technology department, Sundsvalls Tidning (2005-06-07, 10.00-12.00)
(Translated from Swedish to English)

What parts of your present data flow contains "content information"?
The parts that contain content information is Newspilot (Content Management system), Teito Enator (the Advertising system), Pickup (handles older pictures), Multi media archive (Not installed but will be in the nearby future) and external information. The multi media archive is part of the Newspilot system and is running today at Borås Tidning and Norra Västerbotten.

Are there any systems that will be replaced in the nearby future (2-3 years)?
No, every system that contains content information is replaced and updated. The version 2.0 of Newspilot has been running for a month.

How is the external information delivered to Sundsvalls Tidning, and what types of external information are there?
The weather forecast – Delivered as EPS-pages
Sport results – Delivered by iPlay, could be delivered as XML. iPlay is a system made by Infomaker. TT?
Television and radio charts – Delivered as open Quark pages by XXX?.
Domestic and international news – Delivered by TT-spectra. I think that they have worked with XML for a long time. They can probably deliver the content as we want it. TT-spectra is a subsidiary to Tidningarnas Telegrambyrå. Check with Lasse Hallberg, he has the knowledge of the different external information.
Stock exchange quotation – Delphi?

Is there any flowchart of the databases and different systems?
Not at the moment. Because of that all the systems is relative new we do not yet have any flowchart of the existing databases and systems. Next week we are supposed to have a meeting to solve this (week 24). Hopefully after this meeting we can give you a proper flowchart.

How are he XML-files saved in the Newspilot system?
The articles are saved I a table in a database, from this table we can generate a question that creates an XML-file. The files you have received from us is the XML-files that are generated with a purpose to create the articles on the web. According to Infomaker it is possible to generate an XML-file with the desired information. The information in the present XML-files are not all the information that is available.

How is an image connected to an article?
The information of which image is connected to an article is available in the database. As it is now it is possible to connect nine images to one article.

Is there a description of which parameters that is possible to adc to an XML-file?
There is a PDF that describes this.

Several questions concerning tables and technical information on the editorial system Newspilot was referred to the supplier Infomaker.

Complementary questions via telephone interview 2005-08-18

Which is the system handling the resizing of images to the webpage?
From this morning we use a brand new system to resizing the images. The systems name is IPM Workflow Server from the supplier Binuscan.

I have read in the folder Nordiska Tidningsregistret that Sundsvalls Tidning uses the IFRAtrack tracking standard, is this right?
No, we had it up to discussion if we should use IFRAtrack but decided not to. Today we use our editorial system Newspilot's tracking device. This tracking device prevents the possibility for more than one person to work with a specific page.

What system generates the PDF and where are the files stored?
We use Adobes software Acrobat Distiller to generate PDF's and today we store the PDF's in our archive Xlibris. In the nearby future we aim on using our new Multi Media Archive which is closely related to Newspilot.

Complementary questions by e-mail interview 2005-08-31

When you decide to activate the Multi Media Archive, will you transfer all the data and images from Pickup to the Multi Media Archive? If this is right, will you close down the Pickup archive?
Yes, all of the above is true.

Interview with Kjell Carnbro

Editor in Chief at Sundsvalls Tidning (2005-04-20)
(Translated from Swedish to English)

E-paper as a product, what can it do for Sundsvalls Tidning?
Kjell Carnbro is not involved in the e-paper project at Sundsvalls Tidning but he is positive to all new forms of distribution of a future e-paper product. As he sees it, Sundsvalls Tidning are looking at too ways of forming the e-paper product. The first way is to duplicate the existing paper product, in this case the risk of failure is high because of lack of adding value to the existing formats. The other way is to see the e-paper product as a complementary to the paper product. Today the newspapers webpage is seen as a complement to the paper product.

When the product is ready to launch which are the target groups Sundsvalls Tidning should head for?
The first target group Kjell Carnbro can think of is the travelling business man/woman. The optimal would be that the people out on the country side would adapt the new technology because of the high costs for distribution to those areas. The problem with this target group is that the average age is quit high and reluctance to adapt new technologies, they like having their paper product in their hands.

Will services you offer on your webpage have a place in the e-paper product?
As the development have been with e.g. the classifieds, more of this market has moved from the newspapers to different marketplaces on the web. One of these places are blocket.se. If the e-paper product will have built in interactivity the classifieds will be a important part of the e-paper because of the added value to the reader.

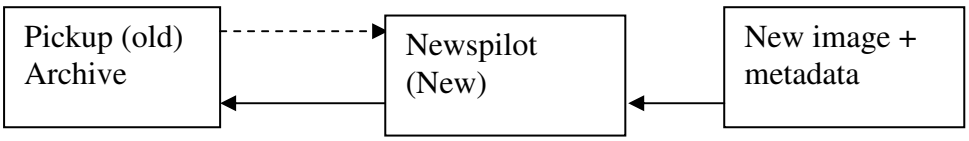
Should subscribers have more choices of subscription types, or should the subscribers have the same choices as today?
As it is today the readers can not choose which parts of the newspaper they will get in their mailboxes, they get it all. To make the e-paper a more interesting product the subscribers should have the ability to choose what to subscribe for. It would be great if you subscribe to Sundsvalls Tidning and are interested in the pages with politics, you also could receive the political response from Dagbladet. When building this new product it is important to listen to the readers for what the wishes are. The multitude idea is part of the democratic commission.

Interview with Rolf Eklund

Responsible of the editorial system at Sundsvalls Tidning (2005-04-19)
(Translated from Swedish to English)

What kind of systems do Sundsvalls Tidning (ST) use for images?
At the moment ST is working with two systems. The first is Pickup which is an old system that we use as a archive. The second system is Newspilot (NP), which is an editorial system. In the nearby future we will close down Pickup and only use NP. But at the moment the link between NP and Pickup does not work properly. You can not at the moment pick a picture from Pickup in NP.

How does the link between the images and the editorial texts work?
When a photographer and a reporter get back from a job they receive a template where they are supposed to write their texts and put in the pictures. The photographer drag and drop the picture he wants to use to the article in the template. The reporter writes the headline, text, and the caption of the picture. The caption of the picture is saved and added to the pictures metadata if it is different to the existing description. When the photographer put in new pictures, he or she must state several different parameters to the metadata. Then the template is ready the Newspilot system create a XML-file of the article.



At the moment Newspilot can not pick up pictures from the archive in Pickup, this must be solved before Sundsvalls Tidning can put down Pickup. If a article will use an old picture then the template or job must be created in Pickup.

What picture formats do Sundsvalls Tidning use?
At the moment Sundsvalls Tidning use JPG and EPS. Because the usage of JPG, Sundsvalls Tidning nowadays only use high resolution pictures. When a new picture is put down in Newspilot transmits a copy to Pickup. When the picture is received by Pickup a scaled down copy of the picture with lower resolution (72 dpi) is created for usage for the newspapers webpage.

Complementary questions handled by e-mail 2005-08-19 (Through Svenåke Boström)

Regarding the external sources of information, who delivers what and in what format?

Type of content	Supplier	File format
Stock quotations	VLT Futurum	PDF
Weather casts	SMHI	EPS
Sport results	iPlay, internal and in collaboration with other newspapers	Information stored in data base
Television charts	TT Spektra	PDF
International & domestic news	Produced by our selves	-

Interview with Svenåke Boström

Quality Development Manager at Sundsvalls Tidning (2005-04-19) (Translated from Swedish to English)

When did Sundsvalls Tidning join the DigiNews project?
Sundsvalls Tidning joined the project about two and a half years ago, approximately the same time the whole project started. The origin to Sundsvalls Tidning joining the project was a presentation held by Stig Nordqvist at Dagsvara. Focus for the Swedish DigiNews project is one of two ways called the “Fast track”. The goal for “Fast track” is for Sundsvalls Tidning to produce a complete e-paper product by the fall of 2005.

What size of the e-paper display are you looking at right now?
The first prototype we looked at had a diagonal length of 6 inches but now the manufacturers can show us a display with the diagonal length of 8 inches. 8 inches is approximately 154 mm x 205 mm.

When Sundsvalls Tiding created the design proposal for the e-paper, did you use any focus groups?
Sundsvalls Tidning was involved in the focus groups made by the University of Halmstad regarding design and user friendliness. Sundsvalls Tidning also had focus groups involving their advertisers and their own staff. The very first idea regarding something like a e-paper Svenåke Boström showed in a presentation in 1994. This was the time when Swedish newspapers did not have their own webpage or was just in the beginning of building a webpage. In the beginning of the DigiNews project the manufacturers worked with an idea of a spread e-paper terminal. The conclusion of a spread e-paper terminal was that it would be hard to make a understandable torrent for the consumer if it would not look exactly like the original paper product.

During the focus groups with the advertisers, how did they react to the e-paper product?
Several of the faithful advertisers acted a bit conservative and wondered what will happen with their page three advertisement. Because of the presumed differentiated design to the paper product the focus group among with the people at Sundsvalls Tidning decided that the possible headline pages will be a attractive place for the advertisers because these page will be well visited by the consumers. The advertising department at Sundsvalls Tidning are working with construction of new formats for the advertisement in an e-paper. Not only size of the advertisement but also with built in interactivity. Perhaps a advertisement could be clickable to see more information about the company behind the advertisement.

Should the article in the e-paper be of the same length as in the paper product?
The article in the e-paper will be the same as in the paper product or on the webpage. If it possibly will be an empty spot after an article you could put a newspaper related advertisement at the empty spot.

The articles in the editorial system, are there any priority index of the articles?
It is prepared in the editorial system for the journalist to ad an index to the article. At the moment this is not in use. The normal index for an article is three. The index is added in the template (job).

How many columns are Sundsvalls Tidning aiming for in the e-paper?

In the latest version of Sundsvalls Tidnings vision there where three columns.

Do Sundsvalls Tidning want to use templates for the articles?
Sundsvalls Tidning wants to use several templates for the e-paper. Perhaps each part of the e-paper should have a unique template. If you use different templates to each part of the e-paper, it will not be monotonous. In the e-paper there will be the possibility to ad more than one picture to an article. Normally the journalist and photographer have several photographs to choose from to an article for the paper product but to the e-paper it will be possible to ad more pictures.

Will the e-paper be "On demand", one edition per day or many editions per day?
As Sundsvalls Tidning sees it, the e-paper will be a mixture of the paper product and the webpage. The e-paper will be the latest updated edition. The consumers should also have the possibility to personalize their subscription. If an consumer only wants to subscribe only on sports and culture this will be possible. Nowadays the average consumer only read 10-12 % of the whole paper, therefore the challenge for the design team is to create a product that makes it easy to find what you want in the paper.

Which are the constraining parameters, for a fully automated production flow?
- The design. If it is possible you should avoid empty spaces in the e-paper. You could fill these gaps with newspaper related advertisements.
- Each article must be reviewed before it is released for publication.
- Get rid of single lines of text on single pages. To get rid of this the system must be able to handle justification, kerning et cetera.
- We want to have a as automated production flow as possible to avoid a demand of personnel.

Should the e-paper contain classifieds?
Classifieds will be a part of the e-paper. In difference to the paper product the advertisement in the e-paper should be searchable to ad value to the product.

Interview with Tommy Teir

Subscription system specialist, Sundsvalls Tidning (2005-06-07, 13.00-14.00)
(Translated from Swedish to English)

Which subscription system is Sundsvalls Tidning using?
Today Sundsvalls Tidning uses PASSAD from the supplier PRESSsystem. Earlier we used Tieto Enator's system MPress. PASSAD is used by a few other newspapers, e.g. Ystads Allehanda and Östersunds-Posten.

How old is the system?
The system was taken into use in October 2004.

How does the system work?
After this question I got an lecture how the system works, from information about the subscriber to distribution of the newspaper.

Is it possible to add new parameters to the database concerning information about the subscriber? This could be necessary if the newspaper decides that it should be possible to subscribe on a personalized e-paper edition.
Today the only information that could resemble to this is CRM (Customer Relationship Management) information that is included but not used in the subscriber information. Here you can ad information of what interests the subscriber has. The options are similar to the different sections in the newspaper, e.g. sports, news and culture. This CRM information is not intended to be used to a personalized e-paper purpose. But because of this it should be possible to ad such parameters to create personalized e-paper editions. Tommy Teir was not completely sure of the possibility to ad such parameters but he shall contact the supplier and find out if this is possible.

Questions regarding techniques were referred to the Supplier PRESSsystem.

Responses from the supplier PRESSYSTEM through Tommy Teir:

Is it possible to add new parameters intended to make PASSAD able to handle different types of subscription? The different types of subscriptions are intended for a future e-paper edition.
Quote: *"What is needed to order/deliver an e-paper product and furthermore be able to prize the different types of subscriptions is a special table (to make the product flexible so it can contain optional number of subjects).*

In the customers picture the e-paper product is booked as a STE, but instead of state a specific edition (for example) you state what subjects you want in your e-paper edition in a particular window or sheet. In the prize list for this "title" you state what each subject will cost the customer and how much the discount will be when the subscription exceed a certain time period, number of subjects or a certain amount."

Interview with Torbjörn Lindström

Web Department Manager at Sundsvalls Tidning (2005-04-20)
(Translated from Swedish to English)

E-paper as a product, what can it do for Sundsvalls Tidning?
The e-paper can not look and act as a ordinary newspaper, it has to bee a new unique product to attract the consumers. In the future I think it can cut cost for Sundsvalls Tidning but there are a lot of questions to be answered, how should this be wrapped and presented to the consumers? Will the e-paper offer journalistic material that you can't find in the ordinary newspaper or on the web?

Are there any services from Sundsvalls Tidnings webpage that you think have a place in the future e-paper?
I think that it is important that you can offer the interactivity that you have on the webpage, moving pictures, interaction and the ability to comment articles and other material. The advertisement services that Sundsvalls Tidning have on the web should if possible have a place in the e-paper. Examples of these services are Markandsplatsen and the Classifieds. What the Sundsvalls Tidning must decide on is whether to show the present days classifieds or to have the classified searchable several days back.(*Today Sundsvalls Tidning are publishing their classifieds at the web via Lokus. The classifieds are published for 14 days). Today the obituary notice and the adverts regarding families don't get published on the web, only in the newspaper. The weather we present on the webpage today is received via a XML file from SMHI (Sveriges meteorologiska och hydrologiska institut). This XML file should be applicable to present the weather on e-paper.

Should the e-paper be a "On demand" product or should it be one edition per day?
If you look at the editorial system today the journalist can choose two ways to publish an article. Either the journalist can choose to publish the article the same day as the article is published in the newspaper or he/her can choose to publish it instantly on the web.

Do Sundsvalls Tidning today use any priority index on the articles that are published online?
It is prepared in the editorial system that you can set a priority index on the article, but it is not in use. The problem as I see it is that if we decide to use the priority index it is important that we decide on functioning regulations how to use the priority index. From the XML files we get from the system today regarding the articles to translate this into web articles we would like to get some more information on what type of article it is. All we know today is if it is a sports article but not what kind of sport.

What kind of external material do you use today on the web and in the newspaper?
Today the external material is the weather, the stock exchange quotations and the sport results.

Today many Swedish newspapers use external companies to manage advertising on the webpage, how does it work?
Sundsvalls Tidning uses the company Internetsäljarna to run some of the advertisement spots on the webpage. Internetsäljarna own these spots.

Interview with Tidningarnas Telegrambyrå (TT) and TT Spektra

E-mail based interview (Translated from Swedish to English)

Participants:

Kerstin Pilhage, Editorial, Market and Quality Manager , TT
Eva-Britt Andersson, Feature Department Manager, TT Spektra
Inger Henriksen, Customer Support, TT

What does TT supply?

The news agency TT supply an exhaustive domestic and international news service round the clock. The services contain among other things articles, Info boxes, background articles, sport results et cetera. in text format. Seven days a week TT produce a news to the web, mobile telephones and the make news recordings to radio broadcasts. TT Also supplies a online news services for the web and sport results for the newspapers web pages (both tables and goals for such services).

TT Spektra produces finished newspaper pages, television charts and feature material.

What type of content does TT deliver, both for the traditional newspaper and the newspapers webpage?

TT covers all the different news categories such as domestic, international, sports, economy, and scientific articles. We produce moving pictures in the form of finished program parts (video clips) and text services intended for different new media types.

TT Spektra supplies an entertainment and culture services, they are also the biggest supplier of feature material to the Swedish newspapers. Furthermore TT Spektra have a extensive production of finished newspaper pages and supplements to the daily press.

TT Spektra: Entertainment/Culture, feature, television charts, television articles, sports and gambling, trotting and polls, weather. TT Spektra produces finished newspaper pages concerning television, feature, sports and gambling, domestic and international news. TT-Spektra also produces finished supplements at the time of big events , e.g. sports and feature supplements. TT Spektra have created an online service with entertainment news with belonging images in both short and long text formats intended for the web. For the genre culture/entertainment TT Spektra produces vide clips.

Do TT supply images?

TT Spektra: Yes, ordinary images and video clips.

How do TT deliver their content?(FTP, NewsML et cetera.)

TT: Distribution of the news services to the newspapers are handled via satellite TTNITF or via a client webpage. After the turn of the year TT will be able to deliver via ftp.
To the web: TT delivers via ftp or e-mail with a desired format.

What kind of formats do TT deliver their content? (NITF, TTNITF, XML, Quark Xpress, InDesign et cetera.)

TT: All formats independent of service.
TT Spektra: Texts are delivered suited for windows or Macintosh. The texts are delivered either as ordinary texts or with tag information. Later this autumn the texts can be delivered in xml format if desired.

Do TT and TT Spektra produce finalised newspaper pages? If so, are they customized to suit the typography of the customer (newspaper)?
TT Spektra: Finished pages are delivered in the genres television, feature, sports and gambling, weather, domestic and international news. The pages can be standard solutions or customized depending of the wishes of the newspaper. The pages can be delivered as Quark Express, eps, or pdf. It is also to create customized solutions in InDesign. The finished and edited supplements are delivered with a standard typeface.

Do the customer buy your services for a specific publishing channel, e.g. web, newspaper or wap? If a customer wants to open a new publishing channel where they want to use your content, can they use the existing services or is it necessary to buy a complement to the existing contract?
The contract between TT and the customer comprise the publishing cannels where the content are intended to be used. If publishing in new channels are added the customer must make an agreement

Interview with Sveriges meteorologiska och hydrologiska institut (SMHI)

E-mail based interview, 2005-07-21 (Translated from Swedish to English)
Participants: Håkan Nordqvist, SMHI Företag & Media

How do you deliver the weather forecasts to the newspapers?
It depends on how the client wishes to receive the forecast. The most common is that the newspapers want the forecast delivered to the via ftp or e-mail.

In what formats do you deliver the weather forecast?
It depends on what formats the client wishes but the most common is that the newspapers want the forecast in eps or pdf formats.

Is it the same files that the newspapers use both for the traditional newspaper and the web based edition?
To the web based editions there are other formats that the newspapers use, e.g. xml and java-script.

If and when SMHI delivers files in xml format, does the xml follow an accepted standard?
When it comes to xml and standard, it depends on the competence of our customers.

If a newspaper decides on launching a new channel of publishing, is it correct to use the existing weather files or is the contract they have connected to a specific publishing cannel/channels?
When it comes to rights of publishing this is regulated in the contract.

Interview with Fredrik Welander

Webmaster, e-mail based interview (2005-08-19)
(Translated from Swedish to English)

What type of management system do Sundsvalls Tidning use to publish content on the web? And from which supplier?
We have built thee system by our selves in PHP and feeds the data into a MSSQL database.

Do Sundsvalls Tidning use any system intended for the advertising on the webpage? Is it the same as the traditional newspaper MPress?
We use two different systems, on system where we can manually edit the code direct into the webpages. The main system we use is Open AdStream but it is not connected or related to MPress. Open AdStream is supplied by 24-7 Real Media.

What type of publishing channels do you use besides the traditional newspaper, web publishing, WAP and Radio?
We only publish in a small scale on WAP, we do have some small RSS's, some PDF's and a few SMS and MMS services. We also broadcast news via the radio channel Radio Guld in the afternoons.

Is it the same management system that handles all the digital publishing channels?
No it is a beautiful mixture. The automated parts is the RSS's WAP and text version, this system is built in PHP in the same system as above. To the SMS and MMS services we use APMM (Arena Partner).

How do Sundsvalls Tidning handle the sport results, is it though iPlay (same system that the editorial department uses)?
Yes it is handled through iPlay.

Complementary questions by e-mail 2005-08-29

From what suppliers do you receive external content and in what format (to be used at st.nu)?

Supplier/Type of content	Format	Comment
TT	XML	Two separate content flows, one directed to feed Newspilot and the other intended to st.nu. The one intended for st.nu is published at once. These two content flows are not the same, TT makes an selection of what content to deliver to st.nu.
SMHI, weather	XML and jpg	Right as you said
Morningstar, Stock quotations	-	The Morningstar content is framed or linked on st.nu.
Mobile	Image	Once in a while we get images sent to us from our readers. These images are stored via Newspilot.
Text	Text	Our reporters et cetera. can put down text into Newspilot via e-mail.

Information from e-mail 2005-04-25:

SMHI delivers weather forecast in XML format.

Information from e-mail 2005-09-01:

If you look at a XML file generated by Newspilot, which tag refers to what image goes with the article?
The tag that tells you what image to use is <article_id>. The article has the same ID as the image.

Information from e-mail 2005-09-03:

For how long does the news items from TT remain on your website?
I think that if nobody erases them they intend to be published for one week.

Do Open AdStream work towards other publishing channels besides web publishing.
As far as I know the system only works towards the web.

As I understand it you only uses JPG images on your webpage, is this right?
Yes, but it is possible to ad GIF images manually via our administration tool. It happens that we publish PDF's and flashes through a software intended for those type of file types.

Interview with Majbritt Lidin

Head of Administration and System, Advertisement Department, Sundsvalls Tidning
e-mail based interview (2005-09-06)
(Translated from Swedish to English)

How does the Advertising System MPress know where to place an advertisement?
In the system there is a calendar and several different prognosis formats (the number of pages adapted to a specific day of the week). In the calendar it is registered what format you use in the prognosis for each day of publication. E.g. the format A56 could state that it is a Monday with 56 pages in the newspaper. The name of the format is chosen by the newspaper. On each page in these formats it is registered what values applies for the page, what placement codes that are approved, how big of the page that is available for advertising and so on. The data underlies for the booking and tells the advertisement seller when the total value of advertisement is closing up on a specific page.

How are the placement codes constructed?
The placement codes consist of five or ten characters, numbers or letters. The newspaper chooses by them selves how these should be constructed. Each newspaper probably have their own design of their placement codes. As an example it is simple if you state that SISTA means the last page in the newspaper (SISTA = LAST in Swedish). In the placement code it is built in width values of the material, booking times, how long material should be saved, prices et cetera.

How does Sundsvalls Tidning receive external joint advertising material, such as Industrikusten and FLT Media?
Up till today we send the booking by fax and state it as an ordinary booking. FLT has tried on a network variant. I think it was called AdBook. The system was filled with problems so we went back to sending the bookings by fax. MPress uses joint booking but we have not tried this because of not being registered in the same data base. Earlier this have been a demand.

E-paper design proposal by Svenåke Boström

Sundsvalls Tidning, Version 12. This is one of several e-paper design proposals produced by Sundsvalls Tidning.


SUNDSVALLS TIDNING
med marknaden?
DinDel


SUNDSVALLS TIDNING
Ljungberg möter sin idol igen


SUNDSVALLS TIDNING
Nu ska Fredrik ge Stoitjkov en smäll


SUNDSVALLS TIDNING
J-O har nya guld i tankarna


SUNDSVALLS TIDNING
DRAGONS PLAY OFF. GOING FOR GOLD.


SUNDSVALLS TIDNING
Svagt engagemang


SUNDSVALLS TIDNING
Maxburgare
19:-


SUNDSVALLS TIDNING
Svängigt med Timbuktu


SUNDSVALLS TIDNING
Den 4/3 öppnar Village i Sundsvall
VILLAGE