

BUSINESS MODELS FOR DIGITAL MOBILE NEWS
ePAPER AND THE TRANSFORMATION OF ACTORS AND ROLES IN THE
NEWSPAPER VALUE NETWORK

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ABSTRACT

The proposed paper analyses the changes in business models employed by the stakeholders in the newspaper value network, in the context of a new type of electronic reading device –the ePaper. This PDA-like device uses a new high-contrast, low-power screen technology (eInk), developed by a consortium of leading industrial actors including Sony and Philips, which holds the promise of a digital and mobile reading experience close to that of ‘real’ paper. The potential impact of massive digitally distributed reading content –newspapers, but also magazines, books, documents, advertisements and all other material previously printed on paper– on the traditional publishing value chain and its different constituent actors (journalists, publishers/aggregators, print houses, advertising agencies, distribution channels as well as the reader) could be significant. For example, content aggregation roles already greatly dispersed by the internet could move further away from the traditional newspaper publishers and instead center around ISPs, other publishers, advertisers or new, (dedicated) intermediaries; using logging data and RSS feeds on the device, newspaper advertising could become personalised and interactive, offering new possibilities for advertisers in a market increasingly moving its focus from opportunity-to-see (OTS) to the impact of publicity; for newspaper publishers, production and distribution costs could go down and updated content could be sent to the device whenever needed etcetera.

The evaluation in this paper of the changes in business models, actors and roles provoked by ePaper-based newspaper publishing, is based on a large scale government funded research project in Flanders (Belgium), which has brought together a device manufacturer, a financial newspaper publisher, a telecoms incumbent and several technological and social science research groups from Flemish universities. To complement technological development and an extensive field trial with near-market devices, including user research and usability testing, the authors have analysed how this new technology might transform the traditional publishing value chain, what are the strategic options of the different actors, and what scenarios are possible and likely to occur in the development of ePaper publishing.

To do this, they make use of the theoretical framework for business model analysis developed by TNO and SMIT consisting of four distinct, interdependent components: value proposition, financial model, functional architecture and value network. Using literature study as well as empirical data (i.e. face to face interviews with important stakeholders inside the project as well as from the Flemish newspaper and book publishing sectors at large), these components are applied to the ePaper context, a new value chain established for ePaper publishing, bottlenecks are identified and, finally, a number of scenarios for the re-definition of roles are outlined and discussed. The authors come to the conclusion that the choice for an open versus a closed architecture, along with the technological roadmap of the device, will be crucial in establishing a valid business model for ePaper, and that the main challenging transformation for the sector, rather than distribution issues, will be in the converged content aggregation role. Although the findings of this research are exploratory in nature, they seem to be valid beyond the region of Flanders.

I. Introduction

The rise of personal computers from the 1970s and the Internet and mobile communication from the 1990s have lured many self-proclaimed gurus in predicting that we are moving towards a paperless society. However, so far this idea has not materialised. If anything, the use of ICTs and the Internet seem to increase the use of paper, and the publishing industry is performing quite well despite all electronic information available. People simply seem to prefer reading on paper. The main reasons why people still print electronic content on paper and prefer printed content over e-content are 1) the portability of paper and 2) the high quality of the printed material. Visual displays still cause physical stress on its readers and the quality of the image is far lower than on paper (Shaver & Shaver, 2003).

Different companies are searching for electronic alternatives for the traditional paper. One of the most recent additions is called eInk, a new screen technology developed by the eponymous consortium consisting, among others, of Philips Components, Toppan Printing Co, Gruppo Espresso, The Hearst Corporation, Motorola and Vivendi Universal Publishing. The company's *electronic ink* –ink that carries a charge enabling it to be updated through electronics– allows for the production of so-called *Electronic Paper Displays (EPD)* possessing a paper-like high contrast appearance¹, ultra-low power consumption, and a relatively thin and light form factor. Theoretically, these devices could therefore be able to give the viewer the experience of reading from paper, while having the power of updatable information.

This paper analyses how the introduction of an Electronic Paper Display might provoke changes in business models, actors and roles in the (newspaper) publishing sector. It is based on the business modelling Work Package within a large scale government funded

¹ This means it requires no front or backlight and is viewable under a wide range of lighting conditions including direct sunlight.

research project in Flanders (Belgium), called ePaper, which has brought together a device manufacturer (Philips/iRex Technologies), a financial newspaper publisher (De Tijd), a telecoms incumbent (Belgacom), advertisers (Hypervision–Agency.com)/iMerge and several technological and social science research groups from Flemish universities. To complement technological development of an ePaper device based on eInk technology, and an extensive field trial with near–market devices, including user research and usability testing, the authors have analysed within this project how this new technology might transform the traditional publishing value chain, what are the strategic options of the different actors, and what scenarios are possible and likely to occur in the development of ePaper publishing. The potential impact of massive digitally distributed reading content² on the traditional publishing value chain and its different constituent actors³ could be significant. For example, content aggregation roles already greatly dispersed by the internet could move further away from the traditional newspaper publishers and instead centre around ISPs, other publishers, advertisers or new, (dedicated) intermediaries; using logging data and RSS feeds on the device, newspaper advertising could become personalised and interactive, offering new possibilities for advertisers in a market increasingly moving its focus from opportunity–to–see (OTS) to the impact of publicity; for newspaper publishers, production and distribution costs could go down and updated content could be sent to the device whenever needed etcetera.

In this paper, the results of our analysis will be briefly outlined. In view of the limited space available, the methodological framework for business model analysis which was developed by TNO and SMIT⁴ and used here, can only be described concisely, and the literature study on the digitisation of printed media in different sectors, which was added to the final ePaper report, had to be omitted. Instead, the focus in this paper is on the analysis of

² Newspapers, but also magazines, books, documents, advertisements and all other material previously printed on paper

³ Journalists, publishers/aggregators, print houses, advertising agencies, distribution channels as well as the reader

⁴ <http://www.tno.nl>, <http://smit/vub.ac.be>

the ePaper value chain, and on the empirical elaboration and evaluation of business model scenarios for an ePaper device. In particular, four main potential scenarios will be outlined and discussed on the basis of two crucial variables.

II. Approach and methodology

Despite growing interest in business modelling in recent years, no clear definition of the term exists today. Different definitions emphasize diverging aspects such as the architecture of a product or service, a description of the roles of and the relations between companies, the ways in which business can be conducted, the way in which value is created etc. (see, among others, Weill & Vitale, 2001; Ovans, 2000; Timmers, 1998; Slykotsky,1996). In this report, we use a definition which tries to synthesize the most crucial elements in the mentioned literature and definitions.⁵ We define a business model as:

“A description of how a company or a set of companies intends to create and capture value with a product or service. A business model defines the architecture of the product or service, the roles and relations of the company, its customers, partners and suppliers, and the physical, virtual and financial flows between them”

This definition relates to three levels of the business model: a *functional* level (dealing with the architecture of a product or a service), a *strategic/organisational* level (dealing with the roles and relations between actors and the physical and virtual flows between these actors) and a *financial* level (dealing with the sources of revenue of and the financial flows between the actors involved). In our analysis, we add to this a fourth level, i.e. the *value proposition*. This fourth level, which is the way value is created in the market, can be

⁵ For an elaborate account of this methodology, we refer to Ballon, 2005.

considered as a logical outcome of the strategic choices made on the other three levels when designing business models.

An important aspect of this definition is that it does not limit the focus of analysis to one specific firm, but instead takes into account a network of actors involved with the production, distribution and consumption of products and services. This reflects the growing complexity of innovation processes in what is called the network economy and society. From a financial perspective, the emphasis is on structuring the revenue streams and on creating models for revenue sharing.

In terms of the value chain, a concept coined by Porter (1985) to describe the primary value-adding activities of a firm or of a set of firms, this means looking at the whole chain. In fact, most scholars agree that the increasing complexity and flexibility of business design means that the representation of business processes by a linear value chain has to be replaced by more fluid value networks, in which roles and functions can be combined in different ways by different actors. Business design is therefore increasingly about defining firms' boundaries and the level of horizontal and vertical integration (Methlie, 2001).

Taking into account the three basic levels of business modelling and the value proposition that is the outcome of these, a successful business model will emerge when a so-called *strategic fit* occurs between the different firms involved in the production of a product or a service, and on the different levels discussed, as well as between a firm's business model and the consumer. (Bouwman, 2003). This fit is represented in the diagram below (Faber et al, 2003):

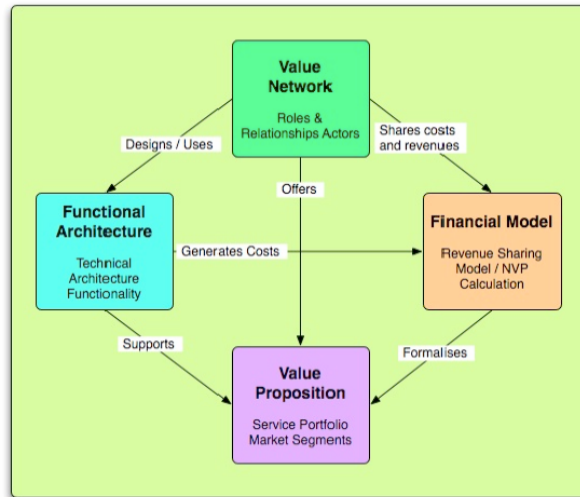


Figure 1: business modelling domains

III. The ePaper value chain

Value chain and network

We have started our business scenario analysis by analysing the ePaper value chain. This value chain contains the roles that are essential for the production and distribution of content on the ePaper device. It is important to point out that these roles may be taken up by diverging actors. In the ePaper value chain, we discern the roles of *Content Provision*, *Content Aggregation*, *Platform Content Aggregation*, *Platform Provision*, *Network Operation* as well as *Service Provision*, *Advertising*, *Device Supply* and *Device Manufacturing*. The latter four roles are basically related to the strategies of other actors and to the business scenarios chosen, and are therefore not included in the value chain as such (cf. sub).



Figure 2: the ePaper value chain

Roles and actors in the value network

Below, we succinctly define the different roles in the ePaper value network. Furthermore we indicate which actors are potentially interested in taking up any of the roles in the network. This implies that, besides looking at the newspaper sector, we also include the news production and publishing sectors in this value network; looking at the present functionalities of the ePaper device, content published on it will –at least initially– be of a written nature.

- *Content Provision.* In the news and newspaper sector many actors take up this role (e.g. independent journalists, national and international news agencies, newspapers delivering syndicated content etc.) The newspaper itself acts as a producer for a lot of content; besides this, ePaper also provides a platform for other written content such as literature, magazines, trade journals, corporate publications etc. coming from a host of different providers.
- *Content Aggregation.* In the news production sector, the newspaper is a typical example of such an aggregator of diverging content on a paper medium. Newspapers and magazines make a profession out of bringing content, services and advertising together in a coherent editorial concept. These actors strongly believe that this aggregation function will remain an important task in the digital age and therefore increasingly wish to develop their brands digitally. However, the digitisation of content and the subsequent creation of new communication platforms such as the Web, i-mode, iDTV etc. have spurred the development of alternative content aggregators.
- *Platform Content Aggregation.* It is important to make a distinction between *Content Aggregation* and *Platform Content Aggregation*: while the former relates to the filtering, editing and branding of content in a specific editorial concept, the latter

points to the assembling of already aggregated content (e.g. newspapers, books and magazines but theoretically also CDs) of different *Content Providers* and *Aggregators* onto an electronic platform. For example, *Newsstand.com* offers a broad selection of digitised international newspapers and magazines on the Internet Platform, while *audible.com* does the same for audiobooks provided by different publishers. A crucial point of discussion surrounding ePaper is the degree to which content from newspapers and other providers will be offered in an aggregated or a disaggregated manner. In constructing business scenarios for the ePaper platform, a central variable will be who takes up the role of *Content Platform Aggregation*.

- *Platform Provision*, i.e. the provision of a technical platform that links content and technology. This role is significant because it determines, to a large extent, the control of who publishes on the device and what is possible on it. This role can be divided into a server-side and a software/DRM function. The server-side function assures communication between the content provision and the ePaper device and therefore constitutes a potential bottleneck; this, and the uncertainty on which actor will take up this function, renders the function into a possible source of conflict within the value network.
- *Network operation*. This is the domain of telecommunications operators⁶, whose services might be considered as substitutable commodities. In such case, *Network Operation* is reduced to the provision of a *pipeline* for the content; however, network operators worldwide are trying to broaden the scope of their operations from pure transmission to the offering of content-related services. Within ePaper, these actors might have the ambition to take up the roles of *Platform Content Aggregation* and *Content Aggregation*. Also, they might make the transmission of the content –in this

⁶ Including, in a converged sector, cable operators, wireless networks etcetera.

project via WiFi— part of the service offered by concluding an agreement with the *Platform Content Aggregator*.

- *Service Provision*. This is a crucial role in the ePaper value network, relating to who maintains the customer relationship and effectively markets the service. For the time being, this role cannot be identified in the value chain, since its positioning within this value chain depends from which actor takes up this role. The newspaper or its overarching publisher seems to be well-placed to do this, because —especially in subscription models— it has a unique relationship with its customers. However, when looking at the technological functionalities of ePaper, other actors —for example *Platform Content Aggregators*— could also take up this role.
- *Device Supply*. The question here is by whom and in which way the device is marketed. Again, this role cannot be identified in the value chain for the moment because it is dependent upon the business scenario chosen. Taking into account the cost of the device, we expect that this role will often coincide with the offering of content and services, and that the device will be offered in some sort of subscription model. However, other options, among which the eventual launch of an ePaper reader as a consumer device without any direct connection to content and/or services, remain possible.
- *Device manufacturing*. In the current ePaper context this role is taken up by Philips and iRex technologies, with the former being responsible for the development and the latter with the marketing of the device. iRex currently does not consider the ePaper reader as device for the consumer market, but wishes to introduce the product in different segments using Business-to-Business strategies.
- *Advertising*. This role is already fully part of the traditional newspapers' value chain, with newspaper publishers in the role of *Content Aggregators* integrating

advertisements coming from other parties into their products. However, ePaper offers new opportunities for advertising, e.g. interactive and personalised ads, on the level of the electronic newspaper (*Content Aggregation*) as well as on the level of the device itself (*Platform Content Aggregation*). The *Advertising* role will therefore also be dependent upon the business scenario chosen. Initially however it is not foreseen that the advertisers will play a central role in the ePaper value network: our interviews with the newspaper and magazine sector in Flanders have shown that these sectors are rather sceptical about highly personalised content and advertising.⁷

IV. About the potential scenarios for ePaper

The above discussion of the ePaper value network has made clear that this network contains several roles which can be taken up by different actors. Question is how these roles are complementary with the interests and strategies of existing actors. The digitisation of content implies that the role of *Content Aggregation* –which, in the offline world, is a clear prerogative of the newspaper editors– could shift towards the platform itself by means of *Platform Content Aggregation*. The roles of *Service Provision* and *Device Supply*, for their part, are closely linked to the business scenario chosen. Below, we will analyse the constellations within which actors may cooperate to foster a successful adoption of ePaper.

In order to gain insight into potential and probable business models, we use the scenario method, in which two or more uncertain variables are defined, along which differing potential futures can be outlined. In the present context, many of these uncertainties are surrounding the ePaper device and possible business scenarios; based on the interviews and on our literature review, we were able to define two uncertainties which can be considered as crucial:

⁷ Which can partly be explained by their dependence upon a fairly large *reach* in terms of advertising, even for specialised newspapers (such as financial newspapers) and magazines.

- *Aggregation vs. Desaggregation*, i.e. the degree to which content is offered on the platform in an aggregated or disaggregated manner, defined from the perspective of the newspaper. *Aggregated* signifies that the newspaper can offer its content *as such* on the platform –taking into account a certain adaptation to that platform’s capabilities), whereas *disaggregated* means that the content on the device originates from different content providers and is more *fragmented*, i.e. less edited, packaged and branded.
- *Open vs. Closed*, i.e. the degree to which the device is accessible for content originating from different content providers. A crucial question for determining this variable is whether –and if yes, to what degree– an exclusive link exists between the offering of content and the display of that content on the ePaper device.

It is striking that the different actors interviewed and studied have pronounced and often conflicting opinions about the necessity of an open or a closed model and about the inevitability of the evolution of media towards a disaggregated model. Either way, both variables may be used to create a co–ordinate system comprising four quadrants, with each quadrant representing a potential business scenario. We discern these scenarios: (1) *Newspaper model (Aggregated–Closed)*; (2) *Kiosk model (Aggregated–Open)*; (3) *iTunes model (Desaggregated–Closed)*; (4) *Web model (Desaggregated–Open)*. Below, we shall describe four generic scenarios and analyse their potential.

V. Scenario 1 – The newspaper model on ePaper

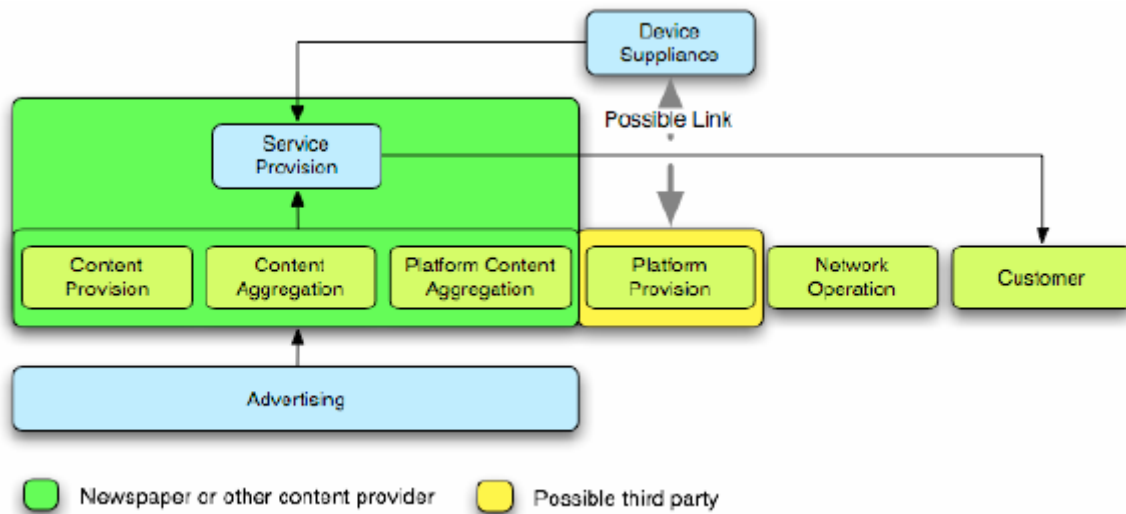


Figure 3: Newspaper model value network

Business scenario outline

In this scenario one party, the *Content Aggregator*, offers a particular service on the ePaper device. This scenario is largely similar to the experimental IBBT ePaper project, in which *De Tijd* publishes an electronic version of its newspaper onto the device. In principle this can be done in two ways: (1) the newspaper can be uploaded to the device *as is*, without any major adaptations to the structure; (2) the newspaper may, as *Content Provider* and *Content Aggregator*, make use of the new capabilities of this medium. In the latter case it can alter its service by (1) publishing up-to-date content multiple times per day, (2) offering specific information aimed at particular audience segments, (3) personalising content, (4) integrate personalised advertisements into the content etc. Whatever option is picked, the newspaper remains the primordial provider of content on the device.

Value network and functional architecture

In the above figure we have displayed the value network of this scenario in a generic fashion. Besides the newspaper's role of *Content Provider* and *Content Aggregator*, the

ePaper device offers new opportunities to put content on the device originating from third party providers. In this scenario, we make the assumption that the newspaper itself might play a potential role; in other words, the newspaper could take up the role of *Platform Content Aggregation* –or part of that role (see figure). Two options exist for doing this:

- The newspaper could complement its own content with content from its own publisher, thereby enhancing the attractiveness of its own service and possibly also increasing revenues of its entire group. An important condition for this is the availability of a sufficiently large and complementary offer within this publishing house that can appeal to the targeted audience;
- In case the newspaper wishes to offer content originating from third parties outside their own publisher, then this content can be expected to be mainly complementary; other newspapers will have little inclination to publish their product on a competing platform. This hypothesis is confirmed by the *Content Aggregators* interviewed for this study, who clearly indicate that they are only prepared to provide content for a device which is administered by a *neutral* party.

If a newspaper integrates the roles of *Content Provision*, *Content Aggregation* and *Platform Content Aggregation*, then it is clear that this actor will market the service. It has considerable advantages over other parties in doing this: (1) an existing customer relationship, (2) content for which customers are prepared to pay and (3) a certain market intelligence.

The role of *Platform Provisioning* may be taken up by the newspaper itself or by a third party. Newspapers might well be interested in doing this, since a number of parties indicate that newspapers are, in a digital environment, prone to handle distribution themselves. Other potential actors are the *Device Manufacturer*, the *Device Supplier* or the *Network Operator*. The *Device Supplier* has a certain control over the device configuration,

the standards used, the capabilities and limitations imposed by DRM etc. In the Flemish case, iRex is taking up this role by having developed a client as well as a server component, and is able to simultaneously offer tailored services to different parties; the functionalities of the architecture are to be negotiated with the newspaper in its different roles.

Financial model

For marketing the device, two main options exist: (1) the customer may individually purchase an ePaper device and subsequently take a digital subscription to a newspaper; (2) the newspaper may offer the ePaper device as part of a subscription to the digital paper. In this project, it is clear that iRex, as a *Device Supplier*, has chosen the second model. The argument for this is that the ePaper device, unlike the iPod for example, does not have an unambiguous, easily recognisable functionality for the consumer, and furthermore, that it is rather expensive at the moment. The device therefore seems easier to integrate into the market when being part of a subscription model. However, this also implies that the newspaper will need to carry the financial burden of pre-ordering the devices. As for the *Device Supplier*, this actor could create an additional revenue stream by also taking up the role of *Platform Provider*. In its turn, the *Platform Provider* could be inclined to shift towards the role of *Platform Content Aggregator* and publish services on the device itself. However, as it is the newspaper who markets the devices itself, this scenario seems rather implausible, unless both parties reach an agreement for sharing revenues from additional services. It can be expected that rather strict Service Level Agreements will need to be negotiated, particularly if the device is marketed under the newspaper's brand name.

In case the actors choose to make use of *personalised* or more directed advertising, an exchange of information will need to take place between the *Platform Provider*, the *Platform*

Content Provider (being the newspaper in this scenario) and the *Advertiser*.⁸ Firstly, the *Advertiser* will be interested in obtaining information about (1) the use of the platform and the characteristics of the user, and (2) which user has seen/clicked on which advertisement. An important question to ask here is which actor will compensate which other actor(s) for this information. Secondly, this information is also important for the newspaper itself since clicking through on advertisements usually generates higher revenue (Battelle, 2005).

Evaluation

In this scenario the newspaper plays a dominant role. It has a number of important advantages: a large reader base, a good customer relationship and content that customers are willing to pay for. The newspaper may address this reader base in order to try to make a large group of readers use ePaper as quickly as possible. In making this effort, marketing the ePaper device as part of a subscription offers a number of additional advantages. Firstly, readers will be more easily persuaded to switch to the technology; secondly, in the longer term this strategy might have a cost-reducing effect for the newspaper; and finally, the newspaper would be able to monitor the reading behaviour of its customers in order to better tune the content to reader preferences.

However, the functionality of ePaper as a digital reading platform for content originating from a large array of producers is threatened, particularly if the platform is too strictly protected by DRM and proprietary standards. In this case, this scenario might become alienated from the actual wishes and demands of the targeted audience (in this case, business professionals). In this sense, the use of ePaper as a mere digital substitute for the newspaper could be considered as a rather conservative reflex by newspapers in order to maintain

⁸ Alternatively, the *Platform Provider* could be made responsible for placing the ads. The *Content Provider* and the *Advertiser* could conclude an agreement, after which the *Platform Provider* only needs to guarantee that the right content is delivered to the right consumer. However, this solution seems less plausible within this model, taking into account the central role of the *Content Provider*.

readership in the digital era, and ignore the changes in the news market as well as in this readership itself that digitisation have provoked. Moreover, an initiative launched by only one newspaper or publishing house, might be boycotted by other players in the market.

VI. Scenario 2 – The kiosk model on ePaper

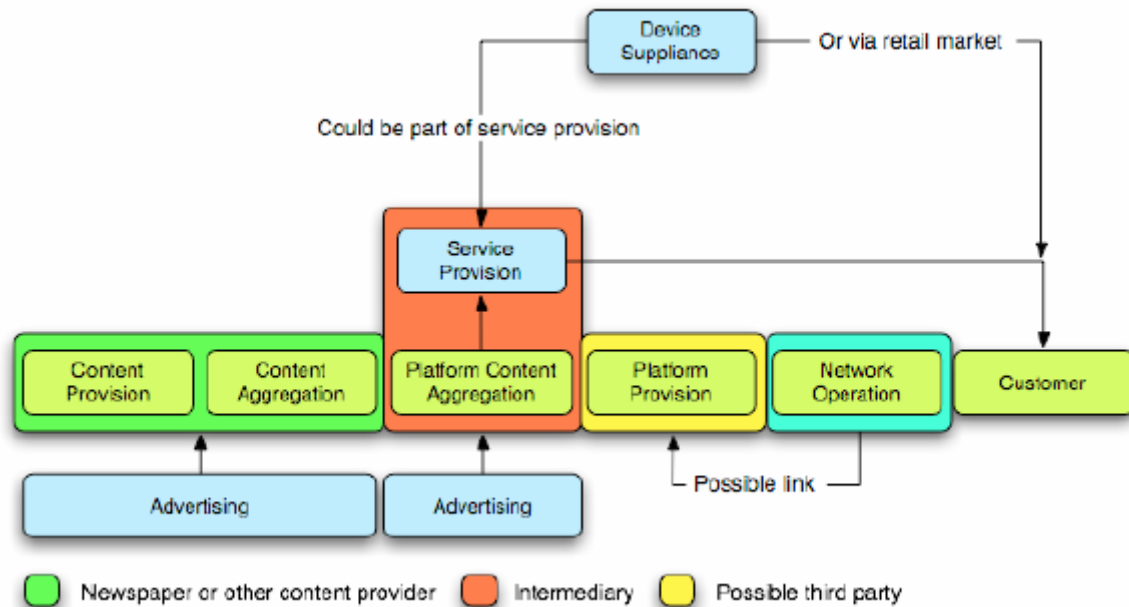


Figure 4: kiosk model value network

We call this the kiosk model by analogy with the newspaper kiosk. Currently, newsstands offer –besides a selection of national and foreign newspapers– a wide array of magazines, comics, books etc. Transposed to the ePaper device, the user of this device has, in this scenario, access to a wide choice of textual media originating from different publishers. However, these publishers mainly continue to provide content in aggregated format. For the user, this scenario provides added value because he or she can use the ePaper reader as a mobile platform for a larger selection of content.

In the realm of the *audiobooks*, a platform similar to this one exists which is called *audible.com*. Audible is a platform for audiobooks in digital format which has a library of

over 27,000 titles originating from 318 *Content Providers/Aggregators*, including audiobook publishers, broadcasters, entertainment companies, newspapers, magazines, firms specialising in corporate communication etc. After installing a piece of software –either *iTunes* or *Audible Software*– files may be purchased and downloaded to a computer and subsequently to an mp3 player. Audible makes use of DRM to prevent files from being copied, but does not link its software to one particular device for using these files. According to the company, more than 200 devices (including mp3 players, GPS systems, smartphones and PDAs) are able to deal with the format used. Audible has concluded agreements with more than 40 technology companies such as Apple, Creative Labs, Dell, Hewlett–Packard, Motorola, Palm, Philips and Samsung.

Value network and functional architecture

In this scenario, an *intermediary* is a central actor in the value network. This intermediary takes up the role of *Platform Content Aggregation* and brings together content from diverging *Content Providers* en *Content Aggregators*. The main advantage for an intermediary is that it unites two markets, namely that of information providers and that of information users. If the intermediary succeeds in bringing a large segment of both markets to its platforms, significant network externalities occur on both these markets: the *Content Providers* gain access to a potentially larger customer base, while users have a much larger selection of content.⁹ Following this strategy, Audible for example has succeeded to use the internet to create a *one–stop shop* for English language, digital audiobooks and has been able to further diversify into spoken newspapers, magazines, radio programmes and talk shows, which were distributed to 278,000 paying customers in spring 2006.¹⁰ The success of Audible has incited publishers such as *Naxos* to develop their own platforms. However, a problem for

⁹ For an analysis of two–sided markets see, a.o., Cortrade, 2006.

¹⁰ Of which some 78,500 subscribers were new in Q1 2006.

these publishers is that they do not have access to the AudibleReady format and thus have to use other file formats which are more difficult to protect (Mackenzie, 2006).

In this scenario, it seems logical that the *Platform Content Aggregator* maintains the customer relationship or, put differently, that it takes up the role of *Service Provision*. The *Content Provider* or *Aggregator*, be it a newspaper, a publisher or audiobook producer, uses the *Platform Content Aggregator* as an alternative distribution channel. In that case the newspaper could lose part of its customer relationship (namely that with the subscribed readers) to the *Platform Content Aggregator*. In an online environment the latter actor could create a relationship with its customers, even if they don't take a newspaper subscription. A potential alternative to this model is that the newspaper, as a *Content Aggregator*, retains the role of *Service Provision* for its own product, but uses the platform to grant users access to a larger array of content.

It remains an open question who takes up the role of *Platform Provision* within this scenario. This role can be exerted by the *Platform Content Aggregator* itself, by the *Network Operator* or by a third party. In case the roles of *Platform Content Aggregation* and *Device Supply* are not combined, the *Platform Content Aggregator* –in this case the intermediary– faces two crucial challenges. On the one hand, this actor wishes –partly under pressure from the *Content Providers*– to prevent the copying of content, among other things by including DRM; on the other hand he wishes to offer his content on as much devices as possible. On the level of functional architecture, this party will therefore strive towards (1) the use of open standards that allow publication on multiple devices, or (2) the development of a proper solution that is subsequently supported by multiple producers. The latter strategy can only work if the intermediary has a sufficiently strong market position. Within the Flemish project, the degree to which this scenario is feasible largely depends on the position of iRex and of possible other manufacturers of ePaper devices: do they wish to sell their device as a piece of

hardware with a number of technical service components, or do they also wish to take up other roles in the value chain, namely that of *Platform Content Aggregator*? (cf. next scenario). When transposing the scenario to the newspaper sector, the question is which party will take up the intermediary function. The establishment of a region- or nationwide intermediary could be a possibility that different actors seem to prefer –as was shown by the interviews.

In this scenario, advertisement might in principle play a role on two levels, namely that of the *Content Aggregation* (by a.o. newspapers and magazines) and that of the *Platform Content Aggregation*. As for the first level, an important issue here again is whether agreements can be made and information exchanged between the *Platform Content Aggregator* and the *Content Aggregator* to allow personalised advertising on the level of the newspaper. After all, in the proposed scenario it will particularly be the *Platform Content Aggregator* which has disposal of a large amount of data concerning the user and his/her preferences and content consumption behaviour; this information can be of high value for *Content Aggregators* and *Advertisers* alike (see for example Seybold, 2001). As for the second level (*Content Platform Aggregator*), advertisements might be possible here as well, for example short messages during the device start-up, during the process of choosing titles etc. However, experience has shown that this only occurs in a limited way; the main reason for this is that the *Platform Content Aggregator* is deemed to remain a neutral party, which makes advertisements for products by one of the participating partners difficult to justify. Both *iTunes Music Store* and *Audible* –two intermediaries on the internet– do not allow publicity on their platforms, and have strict editorial guidelines as regards the presentation and appraisal of products by *Content Providers* and *Content Aggregators*. Our interviews have clearly shown that advertisements on the level of the *Content Platform Aggregator*

would not be readily accepted by Flemish *Content Aggregators*, although the advertisers themselves are of course more positive than other parties about this functionality.

Financial model

In this scenario the two options for marketing the device remain open, and lot depends on the payment options used. In our example Audible offers several of these payment options: (1) a one-off payment per title, (2) a subscription granting a year long reduction on all titles, (3) a subscription giving access to one title per month for a one year period or (4) a similar subscription allowing access to two monthly titles. Additionally, new customers may combine option 3 or 4 with a simple mp3 player or with a EUR 100 reduction on an iPod Nano device.¹¹ In this case, the device is therefore part of the *Service Provision*; however an ePaper device could also be marketed simply as a consumer device. The examples of payment methods for products and services mentioned above could also be implemented for the newspaper and (book) publishing sectors. In this scenario, it will rather likely be the *Platform Content Aggregator* which bundles services and device, although this is not a necessity: one of the interviewed *Content Aggregators* indicated that it too was prepared to subsidise the device as part of a subscription *and* to grant access to it to third party content.

In this scenario, price-fixing and revenue sharing between *Platform Content Providers* on the one hand and *Content Providers* and *Content Aggregators* on the other hand, will be a difficult exercise and a possible source of conflict. The *iTunes* case in the music sector (cf. sub) constitutes a nice example of this: while a price of USD 0.99 per downloaded song is generally assumed to be too high, this price has to a large extent been imposed by the music industry (Kusek & Leonhard, 2005).¹² A possible solution for avoiding

¹¹ On the German website.

¹² This statement however needs to be put into perspective. iTunes Music Store is under strong pressure from the music industry to use a unit price of USD 0.99 and to adapt this price for older/newer songs etc.

conflict is the establishment of a *Platform Content Provider* within the sector in which the different actors participate.

Evaluation

This scenario offers interesting opportunities to stimulate the ePaper device as a mobile platform for different types of content originating from different parties while, from the publishers' perspective, the products offered importantly retain their editorial function. It is less clear whether this scenario also contributes to the innovative use of the interactive capabilities of the device; this will require clear agreements between the *Platform Content Aggregator* and the *Content Providers* and *Aggregators*.

The introduction of an intermediary party as *Platform Content Provider* offers major advantages in terms of network externalities related to two-sided markets. However it also holds some threats: taking into account the enormous economies of scale and network advantages created by internet and ICT-based platforms, this party could in little time become a very powerful actor, in particular if it maintains the customer relationship and if it has data on use and user preferences at its disposal. An additional threat is that the intermediary, besides its *Platform Content Aggregator* role, would shift toward *Content Aggregation* and *Content Provision*. In our example, Audible increasingly offers audiobooks that it has produced itself. Besides this, the launch of a new intermediary also implies larger necessary investments and limited brand awareness.

VII. Scenario 3 – iTunes for ePaper

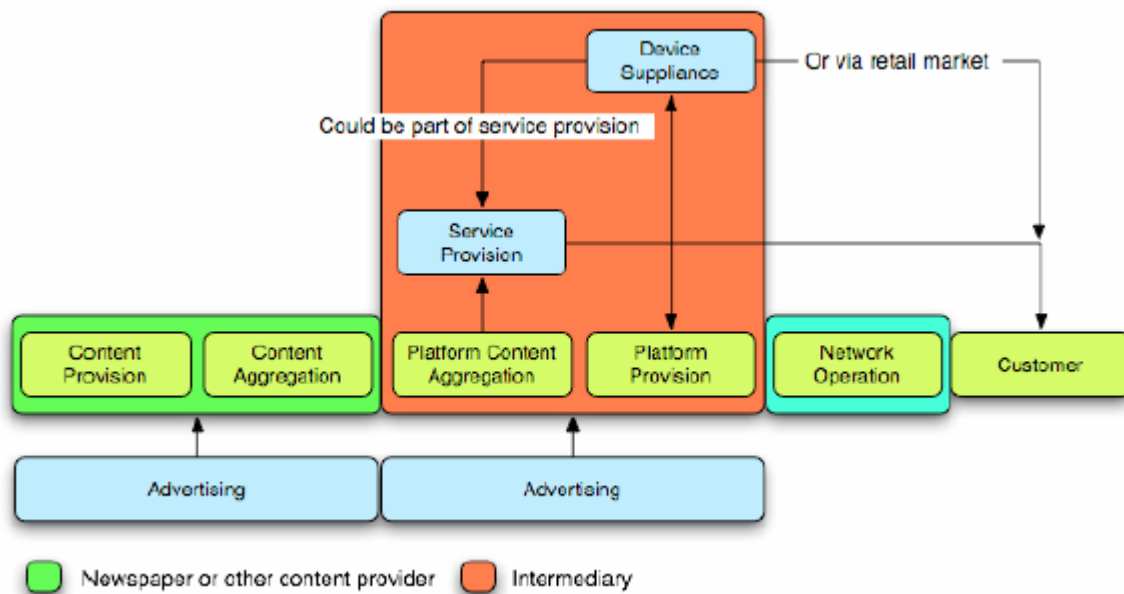


Figure 5: iTunes model value network

Business scenario outline

At first sight, the iTunes model seems to largely resemble the preceding model: here too, a new intermediary partner takes up the role of *Platform Content Aggregator*, bringing together content from *Content Providers* and *Aggregators*. However, the scenario differs in two crucial points. Firstly, there is a certain degree of disaggregation. On the *iTunes Music Store*, users are able to download one song instead of a complete album. Transposed to the newspaper and publishing sector, this implies that separate articles and contributions could be purchased. We immediately need to add to this, however, that disaggregation of newspaper will be trickier because the advertisements inserted in between articles are an important source of revenue for the publisher. Secondly –and fundamentally differing– the same party (i.e. Apple) takes up the role of *Platform Provision* and of *Device Supply*, for Apple controls, via its software, the interaction between the *iTunes Music Store* and its device –the iPod– and songs downloaded via iTunes can only be played on the iPod.

A similar scenario can also be elaborated for the newspaper and publishing sector. Sony is currently aiming to do this for eBooks by using its new *Sony eReader*. This device can only access content from Sony's own content site *Sony Connect*. For this content, the Japanese firm has concluded agreements with a number of big publishing houses in the United States. In this scenario, the user still has access to a large offer originating from a number of *Content Providers* and *Aggregators*, but he or she is forced to watch this content via a specific device, i.e. an ePaper reader. By analogy with the iTunes software, it would however be possible to print a selection.

Value network and functional architecture

As in the preceding scenario, the intermediary fulfils a crucial role in terms of uniting offer and demand. However, in this scenario the intermediary integrates even more roles, i.e. that of *Platform Content Aggregation*, *Platform Provision*, *Service Provision* and *Device Supply* (as well as *Device Manufacturing*). Especially in the iTunes case, where Apple has reached a US market share of more than 70 percent of mp3 players with its iPod, the combination of *Platform Provision* and *Device Supply* results in a fairly dominant position (Van Audenhove, 2004). In this scenario too, there is a certain danger that the *Platform Content Aggregator* gradually shifts towards *Content Aggregation* and even *Content Provision*; through the desaggregation of content coming from *Content Providers* and *Aggregators*, the *Platform Content Aggregator* is able to personalise and contextualise its service to users even better.

In the iTunes case, a link exists between the *iTunes Music Store*, *iTunes software* and the *iPod*. The iTunes software on the PC gives access to the iTunes Music Store and also takes care of file transfers to the iPod. The files on the iTunes Music Store are protected by DRM and Apple also uses a proprietary encoding standard for its files, i.e. AAC. This way,

files can only be transferred to four different iPods; however the software does allow content from third parties to be loaded onto the device in mp3 or AAC, and it is up to the user to decide what content is and is not transferred to the iPod. For ePaper a similar scenario could be chosen, or in principle even a stricter one could be adopted in which the device itself (and not the PC) acts as the interface between the store and the platform. Moreover, the publishing sector could use a strong push-model, in which up-to-date content is pushed towards a device after the user has indicated which content is of interest to him or her.

Taking into account this integration, it seems obvious that the *Platform Content Aggregator* is also responsible for *Service Provision* and thus maintains the relationship with the customers. Here too one can wonder about the plausibility of a scenario in which the newspaper, as *Content Provider* and *Aggregator*, takes up its own part of *Service Provision*. Finally, the *Advertising* role can be exerted on the same two levels as in the previous scenario, so the same issue apply.

Financial model

In this scenario, different payment methods are equally possible; in that sense, it largely resembles the previous scenario. As it is assumed here that content can be accessed in a desaggregated format, separate articles from different *Content Providers* may be purchased. This necessitates new ways for paying this content, among which micro-payments. In case the *Network Operator* takes up the role of *Platform Provisioning* –or part of that role–, it may be well placed to take care of billing in this model.

A particularity in this scenario is that a larger number of roles are combined, among which *Platform Content Aggregation*, *Platform Provision*, *Service Provision* and *Device Supply*. This gives the opportunity, for the actor taking up these roles, to generate revenues on different levels: as a percentage on sold content or subscriptions, (2) on the basis of devices

sold or (3) on the basis of a service component aimed at *Content Providers* and *Aggregators*. Option (1) and (3) may be eventually be combined as one percentage on content sold, including service provision. The price that can be asked by an intermediary for selling content depends on the negotiations with the *Content Providers* and *Aggregators* and what the bargaining power of these latter actors is. The intermediary could also strategically opt to position itself between these two revenue streams. Although little is officially known about this, it is generally assumed that Apple only generates limited profit out of its iTunes Music Store and instead focuses mainly on iPod sales. Therefore, although the intermediary's position seems very comfortable at first sight, it will have to make a trade-off between generating content revenues on the one hand, and creating a broad platform that stimulates device sales on the other hand.

Within this scenario, it is again possible to insert advertising on two levels, i.e. on the newspaper level (or even within a separate article), and on the level of the platform. Because access to disaggregated content is possible, it seems more logical within this scenario to administer at least part of the advertising on the platform level. Besides this, it is also the intermediary which possesses the knowledge about device and platform use as well as user preferences, which it could exploit as a third revenue stream. However, it seems unlikely that newspapers and publishing houses would hand over an important portion of *their* advertising revenues to the intermediary without any compensation.

Evaluation

In this scenario, the user has access to disaggregated content, i.e. individual articles from newspapers, magazines etc. This type of service clearly fits closer to the changes in reading behaviour of modern newspaper readers, as well as to changes in users' experiences with other ICT devices.

The intermediary party which integrates the roles of *Platform Content Aggregation*, *Service Provision* and *Device Supply*, threatens to become dominant within this scenario, which might render the publishing sector reluctant towards participating in it. Moreover, this sector traditionally attributes high value to the editorial concept with which it links its brand names, and possibly fears that excessive disaggregation will turn their content into an easily substitutable commodity. Finally, if the intermediary party protects content and devices by using DRM and proprietary standards, the user will in turn be rather reluctant to purchase such a device.

VIII. Scenario 4 – The web on ePaper

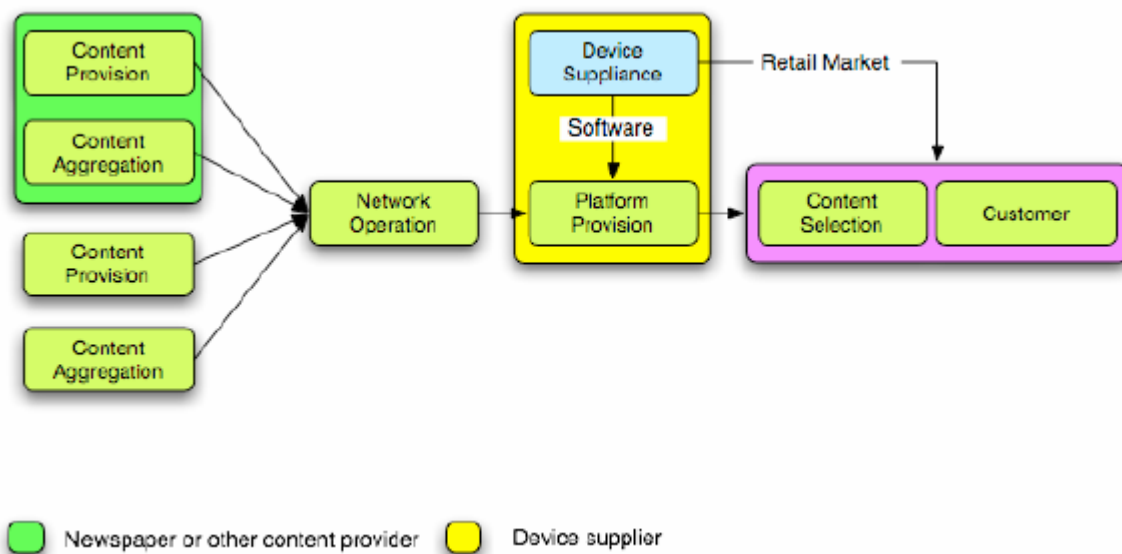


Figure 6: web model value network

Business scenario outline

In this scenario the ePaper device may be considered as a new gateway to the Web. The device has little or no protection by DRM or proprietary standards, so the user can upload any content –coming from the Web or produced by him/herself– onto the device. In a

sense, the role of *Content Aggregation* shifts to the user by becoming that of *Content Selection*: the user actively searches for information from newspapers, weblogs, government websites, discussion forums, newsgroups, entertainment companies etc. This *prosumer* can also create information himself and make that information available to others.

All this does not necessarily mean that the user is not prepared to pay for content. He/she can still purchase certain types of content, albeit directly from the *Content Providers/Aggregators* and *Platform Content Aggregators*. Thus, while these latter roles continue to exist, the user has access to a large number of actors which individually make content available; the user is not necessarily tied to one actor.

Value network and functional architecture

The value network of the web model strongly differs from the other scenarios. Firstly, in this model *Content Provision*, *Content Aggregation* and *Platform Content Aggregation* are vertically aligned. The consumer has individual access to the content of one or more of these actors and newspapers, as *Content Aggregators*, directly compete with other *Content Aggregators* such as Google News, Newsstand etc. as well as with individual *Content Providers*. Secondly, the role of *Platform Content Aggregation* (at least at the device level) no longer exists; on the one hand, this role largely taken over by the user, while on the other hand one could argue that *search engines* also take up part of it. Thirdly, *Platform Provision* can still occur in the shape of software making up the interface between the internet and the device. Although this software could protect part of the content using DRM, the *Device Supplier* will not be inclined to consider this option. To the extent that *Content Providers* are only willing to publish their content on devices that protect this information, it is possible that pressure is exerted in order to include DRM solutions on these devices. The same goes for

standards: as device sales are crucial for the *Device Supplier* in this scenario, he will be prone to support multiple and open standards.

In this scenario, it is more difficult to monitor the use of the device. Every *Content Provider* is able to track which of its content is downloaded, but the possibilities to gather information on what the user does with this content, are rather limited. These functionalities could be incorporated into the interfacing software of the device (as *adware* or *spyware*); however, these types of monitoring are usually strongly disapproved of by the user.

Financial model

In this model, it seems fairly implausible that one party would market the device as part of a subscription; the consumer will rather buy such a device by itself. Although iRex has indicated that it would primarily focus on the B2B market, it is not inconceivable that another manufacturer would brand a similar device as a consumer product. This scenario becomes more plausible if multiple *Device Manufacturers* compete with each other on a device level. On the *Content Provision* and *Aggregation* levels, the revenues are generated by the individual actors.

Evaluation

This scenario probably fits in best with the desires and expectations of the user; he or she potentially gets access to a very broad range of content. However, it remains to be seen whether the different parties are willing to realise this scenario. Newspapers are primarily interested in finding new distribution channels for their product, and not in a device that offers disaggregated content and on which they have to face full competition from free internet services. The device manufacturers for their part possibly face a *chicken-and-egg*

dilemma if they cannot link the sale of devices (with the inherent distribution and marketing costs) to the guaranteed availability of content for the user.

IX. Conclusion

In this study we have elaborated scenarios that describe *possible* roads towards a business model for ePaper. For doing this, we have used two fundamental uncertainties, being (1) the degree of aggregation versus disaggregation from the perspective of the newspaper, and (2) the degree to which the device is open for content originating from different providers. The combination of these variables has resulted in four scenarios: the newspaper model, the kiosk model, the iTunes model and the web model. To contextualise the scenarios we have conducted interviews with actors within the Flemish newspaper, publishing and telecommunications sector.

The described models are generic and represent only one type of business model. Besides the crucial uncertainties used in this study, too many variables exist –hence our choice for the scenario methodology. The eventual model depends on the strategic choices made by the different actors; in this regard, our interviews have already shown major differences in opinion between the actors involved. We have generically integrated these insights into the scenarios. The combination of the interviews, the literature review and the scenarios drawn up, has lead to a number of strategic considerations:

- Both newspapers and publishers in general will continue to believe in the importance of editorial concepts and guidelines. They will therefore have little inclination to give this up in favour of a completely disaggregated system. The fact that a large number of customers is still prepared to pay for this service (be it in paper or for the online version of newspapers), certainly proves its relevance. In each of the scenarios, the newspaper's customer database offers a major advantage for marketing ePaper.

- The newspaper has –much more than other media– a relationship with its customers. This is particularly the case for subscription readers –which form a large part of the audience in Flanders. Therefore, newspapers will mainly consider new distribution channels as a way to diversify their services, but will not be willing to give up this customer relationship, especially since the possibilities for monitoring news consumption offered by ePaper allow these newspapers to further deepen their knowledge about their customers.
- Taking into account these arguments, scenario 1 seems to be an important plausible option. Nevertheless, platforms such as iTunes, Audible, Rhapsody, Amazon etc. show that intermediaries in two-sided markets –aggregating *Content Providers/Aggregators* on the one hand and users of content on the other hand– can become a big success. Two-sided markets have significant network externalities that may be of particular benefit to users by creating a much broader offer of information.
- In the present context, the position of the *Device Manufacturer* and the roles it will take up, constitute important and uncertain variables. For the moment, the actors involved seem to opt primarily for a B2B strategy. In the short term, this renders scenario 4 less plausible.

As mentioned, the question which scenario –or which derivative of such as scenario– will eventually become reality, largely depends on the strategies of and the negotiations between actors. Two final important remarks need to be made in this regard. Firstly, the scenarios *are not mutually exclusive*: it is perfectly possible for a newspaper and a *Device Manufacturer* to strive, in the short term, towards a newspaper model (scenario 1) while leaving room for elaborating other scenarios, such as a kiosk model (scenario 2). Secondly, it is not inconceivable that, as time passes, a shift occurs from scenario 1 to scenario 4. Particularly if eInk of similar technologies become more broadly adopted and multiple

devices are launched, the pressure for creating open systems might increase. It is important for newspapers to take this into account *a priori* and to avoid investing in systems and technology that create too much path dependency or that are not adaptable.

X. References

- Ballon, P. (ed.) (2005). *Report no. 33561 – Best Practice in Business Modelling for ICT Services*. Delft: TNO.
- Battelle, J. (2006) *The search. How google and its rivals rewrote the rules of business and transformed our culture*. New York, Penguin/Portfolio
- Bouwman, H. (2002). *Business Models for Innovative Telematics Applications: State of the Art on Business Models*, Enschede: Telematica Instituut
- Cortade, T. (2006). A Strategic Guide on Two-Sided Markets Applied to the ISP Market. *Communications and Strategies*, No. 61, 1st Quarter, 17–37.
- Faber, E., Ballon, P., Bouwman, H., Haaker, T., Rietkerk, O., Steen, M., *Designing business models for mobile ICT services*, Paper presented at E-commerce workshop, Bled, June 9–11, 2003.
- Kusek, D., & Leonhard, G. (2005). *The Future of Music. Manifesto for the digital music revolution*. Berklee: Berklee College of Music.
- Mackenzie, K. (2006). Audio books open a new chapter in digital age. *FT.COM Financial Times*, May 26.
- Methlie, L. & Pedersen, P., *Understanding business models in mobile commerce*, Paper presented at WWRF 3, Stockholm, September 2001.
- Porter, M. (1985), *Competitive Advantage: Creating and Sustaining Superior Performance*, New York: Free Press
- Ovans, A. (2000). E-Procurement at Schlumberger. *Harvard Business Review*, 78(3): 21–23.
- Seybold, P. (2001). *The Customer Revolution*. New York, Crown Business.
- Slywotzky, A. J. (1996). *Value Migration – How to Think Several Moves Ahead of the Competition*. Harvard Business School Press, Boston, MA.
- Shaver, D., & Shaver, M. A. (2003). Books and Digital Technology. A new industry model. *Journal of Media Economics*, 16(2), 71–86.
- Sony (2006) Sony and Borders to sell digital reading device, *Sony Electronic News and Information*, from: news.sel.sony.com (Accessed 5/16/2006)
- Timmers, P. (1998). Business Models for Electronic Markets. *EM– Electronic Markets*, vol. 8, no 2
- Van Audenhove, L. (2004) *The business scenario behind the iTunes Music Stores and the iPod*. B@Home Working Paper, Delft: TNO–STB
- Weill, P. & Vitale, M. (2001). *Place to Space: Migrating to eBusiness Models*, Boston: Harvard Business School Press

XI. Conducted interviews

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