Stories Behind the News. Designing an Advanced App for Journalistic Background Information

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Introduction

Meanwhile, there is a consensus in the media industry: online will become the prime content delivery platform. Major contributions have already been made at the level of breaking news, but the digital configuration of more complex, contextual information is still lagging behind. With this given in mind, the R&D outlet Medialynx developed a concept for the management of complex background information in a visually attractive way, specifically for display on tablet computers. Together with design agency Essense and the leading Dutch news magazine Elsevier, Medialynx was one of the winners of the 2012 IPI/Google News Innovation Contest, and could on the basis of this grant proceed with the realisation and testing of the concept, initially coined as the Reading Radar.

In this research brief, the team presents an inventory of the efforts to further develop the Reading Radar formula into a fully operational prototype and ultimately a launch-ready media service. The R&D effort knew three distinct research stages. First we made an inventory of requirements for the application. On the basis of these requirements we created a range of design options and finally decided on a format for the prototype, which was built, loaded with content and field tested with a consumer panel, all readers of partner Elsevier Magazine.

While producing the prototypes and thematic applications of the Reading Radar, it became apparent that the key issue is not just the redesign and repackaging of the news or the development of a novel graphical interface, but also implies a thorough rethinking of existing journalistic routines. For that reason, we also developed notions about the information collection process, the editing of entries and the basic requirements for starting up a media service based on the Radar concept.

In this article we just describe the highlights of our findings; an online project repository has been created with a detailed account of the various research stages, original data, working documents, the final report and relevant links.¹

The next frontier: online context

The very basis for the Reading Radar-concept originates from an earlier research project which explored how net-based news is consumed². In conclusion: online readers tend to take in digital news in short pieces and in a rather casual manner, mostly focusing on the hard, breaking news. Presented in digital format, in-depth background attracts less, and is difficult and ineffective to receive via newly created digital channels. At the same time, consumers also indicate that they feel a need for better organized and presented in-depth information via the net, because it helps them to establish an overview in an increasingly fragmented news scene, to gain better insight into current affairs topics and to look at news stories from different perspectives.

This complex expectation pattern is a challenge for the media industry. Google, together with the New York Times experimented with the ‘[Living stories](#)’-concept³ and recently launched Google Tools. Associated Press developed its ‘Atomic model’ for news contextualization⁴, and an application like [Gapminder](#)⁵ synthesizes major trends with key statistics. Also in The Netherlands, similar attempts to visualize the essence of news, for instance a ‘debate chart’ service called [Mattermap](#)⁶, are being undertaken. But there is no breakthrough or even the beginning of standardization yet. One could say that, after bringing the news online, mastering complex background information packages is the next frontier in the quest for IP-driven media.

¹ The Reading Radar online repository URL: <http://www.readingradar.eu>

² Kruitwagen, S., Bierhoff, J., *Achtergronden naar de voorgrond; de ontwikkelingen van een LeesRadar voor digitale informatie*, Lulu Publishers, 2011.

³ <http://livingstories.googlelabs.com/>

⁴ <http://www.slideshare.net/victori98pt/a-new-model-for-news-from-associated-press>

⁵ <http://www.gapminder.org/>

⁶ <https://www.mattermap.nl/>

This state of play led to the ambition to explore radically new ways of digitally producing and consuming in-depth information. In an iterative design process, with input from both consumers and journalists, a concept was developed for an application that easily overviews and navigates through large, complex packages of background information. This resulted in the Reading Radar prototype.

In the development process, we continuously have been monitoring and analysing existing (and emerging) tools, products and services that are of interest for the development of the Reading Radar. These findings have been updated onto an online weblog, called [eMedia Showcase](http://showcase.essense.eu)⁷, which lists and evaluates all kinds of innovative media tools, concepts and prototypes. This assessment of the current collection of online website and applications has led to the observation of several dominant trends:

Data mining: tools to discover new meaning within large and complex sets of data by using algorithms that analyse the data and cluster interesting findings. An example is the [Euro 2012 visualiser](http://showcase.essense.eu/2012/06/euro-2012-visualizer.html)⁸ that analyses Tweets to discover people's attitudes towards soccer.

Information visualisation: tools to make it easier to browse and consume information by presenting it in visual (rather than textual) and interactive ways. Examples are [Twheel](http://showcase.essense.eu/2012/08/twheel.html)⁹ and [WikiWeb](http://showcase.essense.eu/2012/08/wikiweb.html)¹⁰.

Aggregating plus bundling: tools that focus on aggregating information from multiple sources (either directly assigned by the user or indirectly selected by the tool) and presenting it to the user in a single package. Examples are [Flipboard](http://showcase.essense.eu/2010/08/flipboard.html)¹¹, [NewsMix](http://showcase.essense.eu/2011/02/newsmix.html)¹², etc.

Personalisation: using algorithms that (either directly or indirectly) measure personal preferences. For example, [Google News](http://showcase.essense.eu/2012/06/google-news.html)¹³ offers ways to customise the sources and topics of the news presented.

In the final Reading Radar-concept, we built on these trends but went a lot further. Content is categorized and organized on the basis of four dimensions: (1) its character (ranging from fact-based to opinion-driven), (2) the time-perspective (including both historic aspects and future implications), (3) the meaning of news (ranging from contexts to perspectives) and (4) ambiguity (dealing with both scenarios and ideologies). Together, these dimensions intersect in a field which features the look-and-feel of a radar screen, hence the name for the application. For a rudimentary presentation of these dimensions, see the graph below.

⁷ <http://showcase.essense.eu>

⁸ <http://showcase.essense.eu/2012/06/euro-2012-visualizer.html>

⁹ <http://showcase.essense.eu/2012/08/twheel.html>

¹⁰ <http://showcase.essense.eu/2012/08/wikiweb.html>

¹¹ <http://showcase.essense.eu/2010/08/flipboard.html>

¹² <http://showcase.essense.eu/2011/02/newsmix.html>

¹³ <http://showcase.essense.eu/2012/06/google-news.html>

The Reading Radar, dimensions

Features the breadth $\longleftrightarrow$, depth $\updownarrow$, meaning $\swarrow\searrow$ and ambiguity $\nearrow\nwarrow$ of the news

Figure 1: overview of the app dimensions and frames.

In a typical ‘Reading Radar’, roughly 15-20 content elements (items) are presented for a certain theme or topic (e.g. ‘the Middle East Revolt’). The content parts can vary from each other in format (articles, data, video, picture slide shows, infographics, etc.), source, focus and style.

This type of clustering a variety of entries around a certain theme enables users to explore the different dimensions of a news story from more than one perspective and in different levels of intensity. A user can for example focus on articles which present related facts, look into the historical context on the basis of archive materials, check a number of contrasting opinions about the issue or review the future implications of a certain event. It is equally possible to scan the various summaries, thus quickly grasping the leading narrative, or alternatively work through the various in-depth contributions for a comprehensive understanding.

Waking the dead: media archives in a new role

The main reason for people to use tools like the Reading Radar is its sense-making capacity: it provides a deeper insight into a certain topic. This paragraph describes the decisions that have been made during the development of the content model, with regard to the 'design' of the content within a given Reading Radar.

A first step in the composition of any new Reading Radar will be the selection of a leading theme. The topic needs to be of interest to the general public, for example because events have recently taken place or are about to happen in the near future. Also, the topic needs to be broad enough to be covered by a collection of items from different angles. This said, it should not be too broad, in the sense that it would require more than the available 16 - 20 items to cover every angle. In the case of a rather general theme (e.g. 'renewable energy'), a specific sub-topic (such as 'solar energy') is more suitable.

For our research, four topics have been chosen to be worked out:

1. Joint Strike Fighter (the Dutch government has to take a (much criticised) decision on the imminent replacement of the present F-16 fighter aircraft)
2. Desi Bouterse (controversial president of Suriname, the former Dutch colony, who is convicted for drug trafficking)
3. Solar energy (an important policy issue in The Netherlands (and beyond) is the need for and possibilities of the transition to more sustainable forms of energy)
4. European Union: yes or no? (the Dutch September 2012 elections for a new national parliament were dominated by this issue)

On purpose, we have picked topics that vary in different ways (national or international, political theme, person figure, scientific topic, etc.), to prevent the prototype from being designed too narrow, and also to interest as many different people as possible during the user evaluation.

Project partner Elsevier has been the prime provider of content, via its archives and through other media contacts. For all four prototypes however, the team has also tapped into other sources, especially for the addition of written texts with audio-visual materials. This indicates that in the future, medium-specific companies like magazines, newspapers and TV-stations, will have to collaborate to achieve a full, complete coverage.

The storyline of a current affairs topics forms the starting point for the collection (or creation) of items that will be shown in the Reading Radar. For every new Radar, the challenge was to assemble a collection of items that highlights the central topic from different perspectives, without providing items that overlap in content, and also to keep a diverse mix of media types.

While items are being collected / produced for a Reading Radar, the editor can make draft versions to spot positions that are not yet covered. He/she can then choose to gather or commission more material to make the Radar ‘complete’. For certain topics the creator can also decide to intentionally leave some perspectives (e.g. positions in the Radar) uncovered, to illustrate the – telling – lack of material for that area.

In the process of putting together the four prototype Radars, we noticed that this is not just a matter of collating existing pieces. Virtually all items had to be heavily edited in one way or another: shortened, rewritten, reduced to one particular aspect, completed with recent developments, brought in line with other entries etc.. This turned out to be a new type of journalistic effort, requiring a combination of existing and rather atypical media skills. Selection, shortening and combination are trusted editing routines, but the thematic choice of dimensions, the definition of the scope of the entire Radar, the search for suitable external views and even the commissioning of needed new, original copy, are far from the average journalistic task.

Form meets content: the building of a prototype

The actual implementation process started with a translation of the functional requirements into wireframes, to communicate the structure, navigation principles and overall functioning of the concept. The wireframes consist of a series of ‘screenshots’ of the intended interface. These screenshots lack detail for visual look-and-feel, but do clearly indicate all assets and functions that need to be present in every state of the app.

The functional specifications were laid down in a list of all functions that the app needs to contain, specified for each state. These include all things that users can do with the app, as well as things that the app will do automatically (build-in functionality). For every function a description was given of the inducing trigger(s) and the target events.

We decided to implement the Radar concept in the widely used HTML5 programming language, rather than build a project-specific app. We believe this approach saved us effort and provided the advantage that the tool can also be used on other platforms (such as Android and Windows tablets, and even PC’s), even though it was optimized for Apple iPad with regard to screen size and interaction. Also, the choice for HTML5 made it easier to distribute the prototype to (remote) participants of the final user evaluation.

In order to have a visual introduction for our proofreaders and also to offer a first impression of the functioning app to interested parties, we created a few demo videos. These YouTube videos can be viewed via the links in the online project repository.¹

Figure 2: Impression of the Reading Radar prototype on an iPad.

Out of the lab: field testing of the prototype

The user evaluation consisted of a two-week trial of the prototype app on participants' own iPads, in their own time and place. We have used three different research methods:

1. A group of eight participants performing an 'intense' evaluation with cultural probes and interviews after the test
2. A group of 40 participants being invited to participate in an online survey study
3. The use of remote analytics for all participants

Eventually, 23 persons of the 'Survey' group filled in the online survey; of the remaining 19 'Survey' invitees we suspect some of them might have checked out the prototype, but did not take the time to fill in the survey. Others might not have participated at all.

Figure 3: Age distribution of the participants, both male and female.

For this contribution, we have selected the most interesting results that came out of the evaluation. In the online repository¹, all results can be found.

One striking observation was that participants took time to use the app; the average duration of a visit was more than five minutes. Figure 4 shows how most of the users, who stayed within the app for more than 10 seconds, used the app for a period of 3 to 10 minutes. This notion is also reflected in the observation that the app was mostly used in the evenings (see Figure 5).

Figure 4: The duration of app visits for both prototype versions A and B.

Figure 5: The total number of app visits for each hour of the day (AM + PM).

Results from both the online survey and the interviews indicated to us that most participants understood the concept of the Reading Radar.

Figure 6: Answers from survey-participants on the question to what extent they agreed that the Reading Radar concept was immediately clear to them. (n=22)

On top of that, more than 60% of the participants found the concept useful, indicating that especially the factual dimension was a very relevant way of classifying items.

Figure 7: Distributions of whether or not survey participants found the four radar dimensions relevant as ways of classifying items. (n=22)

In the end, most participants responded positively to the question whether they would like to use the Reading Radar in the future.

Figure 8: Results for whether participants would use the Reading Radar concept in the future. (n=29)

However, as one participant also noted, the concept does require a different mind-set in comparison to the traditional way of reading news and background information.

What defines a good app: key insights

The user evaluation of the prototype led to a better and more detailed understanding of the use context of information-loaded applications. These insights are visualised on the following pages in two infographics; one focusing on strong points of the app structure and the other looking at added value of the overall concept.

The first infographic highlights the added value of the structure of the Reading Radar app. From the user evaluation, we have gathered the following conclusions related to these values:

The value of plotting items on four dimensions

Most participants were able to understand the concept of plotting items on a Radar-like interface, although some persons needed some time to get used to it and/or required further instructions to fully understand it.

The dimensions of the Radar (fact vs. opinion, history vs. prospect etc.) were found to be relevant ways of positioning items. About two-thirds of the participants saw value in this concept of plotting items on a Radar-like screen.

Manageable collection of items

A collection of roughly 20 items seems to be a right amount for a single Reading Radar topic. Participants valued the variety of the items, looking at both the multitude of sources and the different types of media. Especially infographic items were very popular.

Layered interface supports reading process

The structure of the interface was found to support the reading process: A user can make an initial selection for interesting items, based on the items' position in the Radar and the media type of the item. The preview pane that slides in from the right, presents the user extra information about any selected item, such as the length of the item, the author, source and description. This information helps the user to decide whether or not to open (and read/view) the full contents of an item, for which the side pane extends further to the left.

Reading Radar - App values

The second infographic looks at the added values of the Reading Radar concept from a broader perspective. Based on the data from the user evaluation, we have yielded the following results:

Reading Radar removes effort on the user side

Many participants praised the concept for making it quicker and easier to find relevant information concerning a specific topic: items are selected by an expert, ensuring good quality and preventing overlap between items. Also, the amount of information is good; sufficient for more depth, but not overwhelming. And the presentation of items in a Radar leaves room for personal choice with regard to desired perspectives and viewpoints.

A change of reading behaviour

Participants reported a change in the way they consumed information, due to the design of the Reading Radar concept. It almost forces people to sit down in a

relaxed manner and take time to explore and consume the information. People are willing to do this, as long as they can trust the quality and relevance of the supplied items.

A regular dose of background to the news

We have observed that participants typically used the Reading Radar at quiet moments, such as in the evenings and during weekends. People experienced the concept as a valuable new addition to their existing daily news consumption, enabling them to achieve more depth into the news topics that interest them most.

Reading Radar is valuable, but not (yet) at a price

A majority of the participants sees added value in the Reading Radar-concept and indicates they would probably use it, if it were to come on the market. Most of them would also recommend the concept to others, but only a few would also pay for it after this short test period. Many might do so as well in the future, but only after they have been able to use a final version of the concept for a longer period of time.

All hands on deck: the production context

The Reading Radar-concept will not only prove to be useful for media consumers, but also for journalists. In essence, by working systematically through the definition of a storyline, the foci of the four dimensions and the process of item selection and editing, journalists are forced to make very distinct production choices. On the one hand, they will have to be selective, because of an overdose of available material (related facts, for instance), on the other hand they will have to become proactive, because of a lack of suitable items to fill all Radar dimensions (for future implications for instance).

Selection work on the basis of a chosen theme will predominantly happen in the 'context'-part of the Reading Radar, the aspects 'facts' and 'history' taken together. Here we are zooming in on the re-use of existing copy and footage. It will have to be updated, combined, shortened etc., so a form of editorial intervention is absolutely necessary. That should be clearly understood, because many of the present efforts to become 'digitally multimedia' assume one can easily copy from one platform onto another, even automatically (produce once, publish many). For a Reading Radar, that will certainly not do.

Creative, original production will come into play for the 'perspectives'-part of the Radar, mostly the combination of the aspects 'opinion' and 'future'. This is a domain where media normally do not dwell for too long. They are focused on the present, the current affairs dimension. However, for a full, comprehensive understanding of the background of today's events, the Radar research team is convinced one should be able to have a grasp of the wider implications of the crude facts. For instance, by producing Radars, editors will be encouraged to broaden their range of commentators, to include as many possible views on the issue to 'fill' the opinion part of the Radar. We talk about 'opinion rainbows', indicating the presence of the whole spectrum of (political, editorial, societal) viewpoints.

This applies even more for the 'future'-aspect of any Radar. The future is by definition a fact-adverse dimension. Yet, media users are interested in the implications of the present. It will require an additional editorial effort to fill this part and produce a number of suitable items. One can imagine close cooperation with expert groups, advisory bodies and/or knowledge institutions to overcome the editorial void in this respect.

Hence, seen from the editorial, journalistic side, the Reading Radar also functions as 'writing radar'. It is not all about repackaging, but also about attracting other sources and third party contributions, and creating new, original content. To do so smoothly and as time-efficient as possible, a Radar-specific production routine has to be developed.

Additionally, a third type of use of the Radar concept can be envisaged. Because of its systematic production conditions, Radars also can be used to assess the richness and completeness (or the lack of that, bias) of a given media coverage. In other words, it can even function as an analytical tool for journalistic

training purposes, academic scholars and other media trend watchers. This is a development path we didn't follow in the current project.

Unravelling the DNA of the full background story

For the average Reading Radar user, it suffices if he/she gets a proper indication of the nature of an item: factual, historic, exploratory etc., indicated by the relative position in the Radar screen. But for the journalistic production process, a much more thorough search routine and deeper understanding of the structure of Reading Radars is required. In practice, such a thorough approach of the 'on the ground' media production process is rather unusual. Journalists by and large go by instinct while covering a complex subject and just combine what they can lay their hands on in the given (often limited) period of time. The Radar method though, forces them to operationalise their editorial decisions, to make well-reflected choices and become proactive once there are unwanted knowledge gaps.

The graph above presents a general overview of all the elements that come into play once you start putting together a full account of a particular news event. We will briefly describe what they mean and how they fit together.

The news event or cluster of events is the very heart of a Reading Radar; literally everything revolves around this *central theme*. With the app, relevant issues are literally put 'on the radar', so brought in the focus of public attention.

At a level below the thematic core, we distinguish four *dimensions*, representing the breadth, depth, meaning and ambiguity of the news. Two of them are primary, and constitute the basis structure of the Radar: the breadth and depth. The other two are complementary dimensions, because they combine various aspects of the basic structure.

Like all dimensions, also the ones in the Reading Radar should be understood as continuums, with two extremes at the end and more central or average positions towards the middle. For our purpose, we divide each dimension in two halves, which we call *frames*. It sounds perhaps a bit complicated, but when you read their titles you all the sudden are back in the world of trusted journalistic categories. They now only have been related to one another and are organised in the Radar logic.

The *breadth* of news is built by combining facts with opinions (viewpoints). Nicely kept apart in traditional journalism, but here defined as a scale with all sorts of grey tones between the factual, dictionary type of information on the one side and the very personal, emotional outcry on the other. In the Radar design, it constitutes the horizontal axis.

A similar structure applies for the *depth* of the news, with the frames ‘history’ and ‘future’. A historic background is almost always present, for obvious reasons; the future implications however are often not easily traceable. We found a production solution for that, as you will read a bit later on. In design terms, it is the vertical axis, crossing the horizontal one, thus together creating the rudimentary spatial structure of the Radar.

With these two dimensions and four frames, you come a long way in the effort to properly organise relevant information. But most stories are more complicated (or less one-dimensional) and require a deeper level of analysis, hence the two additional, secondary dimensions ‘meaning’ and ‘ambiguity’.

The ‘*meaning* of news’ is a routinely used but seldom defined journalistic category. This is understandable, because it refers to a wide and varying range of story aspects. To keep things manageable, we built the meaning dimension with these two frames: the context of and the perspectives to the news. Contextual information, in our definition of the term, is a combination of relevant recent facts and historical backgrounds, all related to the core theme. The perspectives of a given news theme are put together by combining subjective viewpoints (opinions) with definitions of the (possible) future implications, at the opposite end of the dimension. In the Reading Radar, the meaning of news is one of the two diagonal co-ordinates.

The last and fourth dimension, *ambiguity*, is the odd one out. It plays a minor role in standard media coverage, yet should be included as a check point in every thorough news analysis because there are always uncertainties you have to work around. It also is a diagonal co-ordinate, with the midfield between opinions and historical backgrounds on the one side of the spectrum, and a combination of recent facts and definitions of the future on the other. At first sight, with these combinations, we try the impossible. One irritating aspect of the future is that it

yet has to happen, so how can it be amalgamated with facts of the present? The same question applies for the bringing together of historical facts, things that actually took place, with personal views of the past. Still, both explanatory acts happen all the time in mainstream journalism, and we use the frames ‘scenarios’ and ‘ideologies’ for it.

To sum up, a story that claims to be truly complete must have references to these four news dimensions and, more importantly, the resulting eight news frames. In the final report, which can be found in the project repository, we give more detail about the frames that constitute a Reading Radar and drive the selection of items filling the prototype.

Four dimensions, eight news frames, this richness of approaches could easily lead to an endless stream of items. That would not be in the interest of the average Radar user, who first of all seeks overview and perspective. In the prototype presented here, we choose to restrict ourselves to *18 – 20 entries*, together building a comprehensive representation of the chosen Radar theme. Of course, the cluster of entries is fully multimedia. We worked with five media formats: print, video, audio, pictures and infographics. All items were reviewed for relevance, often down-edited to a digestible size and enriched with key data about origin, author and reading time.

An effective way for the Radar user to maintain control and overview is first scanning the eight frame-descriptions. These short texts reflect the essence and direction of all the entries belonging to a particular frame. What you get, if you combine these brief, crisp descriptions, resembling the traditional lead of a story, is the integrating *narrative* of the Radar theme, the story in a nutshell.

Figure 9: overview of Reading Radar components

Lessons learned

This R&D project presents an alternative for the traditional way of contextualising current affairs. The Reading Radar app is based on novel insights concerning the visually attractive organisation of complex data, emerging user behaviour trends and changing interface preferences. In summary, the development of the app yielded the following key insights:

1. Designing from a user perspective and the choice for elaborate pre-testing do work. Due to this approach the Reading Radar evaluation panel felt involved in the development process, came with relevant feedback and indicated serious interest in a future information service built around this tool. Although the tool is ideal for people who proactively seek background and context to the news, it doesn't replace, rather complements the existing digital media focussing on breaking news.
2. The Reading Radar proposes a compelling new concept and consequently uses a yet unknown news vocabulary and a novel navigation structure. Both producers and consumers will have to become accustomed to its logic. Especially media users are open to new formats, but sometimes held back / restrained by traditional news consumption patterns. Once these new conventions are gradually mastered, they are perceived as a major step forward. True innovations deserve such a period of incubation and familiarisation.
3. More consumers have a need for pre-selected though trustable information, which makes it easier for them to achieve oversight. According to the test group, the Radar does what it promises in this respect: achieving in-depth understanding of important news themes. Key factors for this success are: (a) spacial and layered navigation, the routines of the games generation instead of the linear presentation modes of the print and audio-visual media outlets; (b) a manageable amount of information, offering overview and avoiding overlaps; (c) guaranteed content quality, put together by a trusted information source; and (d) ease of use and item selection according to personal preferences and available time.
4. The natural use habitat of the Reading Radar is the lean backward condition. The tablet app urges to look for relaxed reading moments, in practice often during evenings and weekends. The average use time turned out to be considerably longer than for existing media sites. In this respect, the Radar functions as a welcome antidote for the daily tweet stress. On top of that, consumers expect a multimodal coverage of

current affairs, allowing them to easily switch between text, image, video, audio and graphics, depending on available time, context and personal preferences.

5. Project partner Elsevier Magazine explored the introduction of the Reading Radar but decided that, in spite of its positive evaluation, it would be too complicated for the editorial team to work with it on a permanent basis. This shows that vested media companies have trouble integrating a service based on principles which do not match their existing production routines. It also explains the current preference for one-to-one web environments of most newspapers and broadcasters – and equally their limited relevance in terms of audience reach. Application of the Reading Radar tool will most likely be taken up by new market entrants, companies or initiatives which have the relative freedom to take the tool on face value and directly exploit its added value. We now negotiate uptake with a consortium of Dutch universities which has the plan to launch an academic self-publishing service offering journalistic yet solid backgrounds and perspectives to the news.