D4.2: Pilot 1 cycling report

This deliverable consists of two parts. The first part describes the steps taken in order to prepare pilot 1. The second part describes the pilot execution and end-user evaluation.

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Work package	WP4
Task	T4.4
Due date	31/10/21018
Submission date	11/12/21018
Deliverable lead	imec
Version	1.0
Authors	Zoe De Ruyck (imec)
	Paulien Coppens (imec)
	Iris Jennes (imec)
	Wendy Van den Broeck (imec)
Reviewers	Olga Kisselmann (DW)
Keywords	Pilot 1, Pilot execution, end-user evaluation

Document Revision History

Version	Date	Description of change	List of contributor(s)
V0.1	30/11/2018	1st version of the deliverable for comments	Zoe De Ruyck (imec)
			Paulien Coppens (imec)
			Iris Jennes (imec)
V0.2	4/12/2018	Revision of the document	Wendy Van den Broeck (imec)
V0.3	5/12/2018	2rd version of the deliverable for comments	Zoe De Ruck (imec)
			Paulien Coppens (imec)
V0.4	10/12/2018	Revision of the document	Olga Kisselmann (DW)
V1.0	11/12/2018	3d version of the deliverable for comments	Zoe De Ruyck (imec)
			Paulien Coppens (imec)

DISCLAIMER

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 761488.

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Project co-funded by the European Commission in the H2020 Programme		
Nature of the deliverable: PU		**to specify R, DEM, DEC, OTHER***
Dissemination Level		
PU	Public, fully open, e.g. web	
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EXECUTIVE SUMMARY

This deliverable provides an overview of the different steps taken towards and during pilot 1. In the first part of the deliverable, we discuss the different steps leading towards pilot 1. First there was an internal evaluation of all the requirements and the consortium partners decided which requirements should be implemented in pilot 1. After this, wireframes were developed for the mobile application and a first web-based version of the recommender system was created to be tested in pilot 1. The developed wireframes were evaluated with users in pilot 1 and will be further developed and implemented into an actual functioning application in pilot 2 (see D1.2 for an overview of the pilot planning).

In the second part of the deliverable, we explain the pilot 1 execution. Pilot 1 focused on the web-recommender system and consisted of 4 specific user research actions: 1) a zero measurement survey, 2) the testing of the recommender system, 3) a post measurement survey and 4) focus groups and interviews to gather in-depth end-user feedback on the recommender. All research actions were executed in the three pilot countries: Belgium, Germany and Cyprus. The results for the three pilot countries are described in this deliverable.

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ABBREVIATIONS

VRT   Vlaamse Radio- en Televisieomroeporganisatie

DW   Deutsche Welle

CPN   Content Personalisation Network

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1 PILOT DESCRIPTION

As described in the proposal, one of the objectives of CPN is "*to iteratively test and validate the solution in (near-to) operational real-life environments in different countries, namely Belgium, Germany, Cyprus and Italy; by implementing large-scale pilots*" (CPN proposal, p. 5).

The aim of the CPN project is "*the deployment of several large-scale piloting activities in several target regions. For this purpose, content will be collected from the different content holders and sufficiently large user panels will be assembled to test and validate the pilot demonstrators. The CPN piloting activities will be organised in at least 3 locations, namely Belgium (coordinated by VRT), Germany (coordinated by Deutsche Welle), Cyprus (coordinated by DIAS). Furthermore, additional piloting activities will take place in Italy (sponsored by RCS media group)*" (CPN proposal, p. 5).

For the pilot activities, the living-lab method is used. The main focus in this approach is developing a user-centered design solution, involving all the relevant stakeholders, including the end-user (news consumers in the case of CPN), but also news companies, journalists and other media professionals. A co-creation process will be applied to iteratively test and develop the CPN solution. This will be done in different stages, including a larger number of users as the maturity of the developed proof of concept increases. The first phase is the controlled lab phase, involving approximately 50 end-users in Belgium and 20 friendly users in Germany and Cyprus. In the second phase, the live alpha phase, closed group testing will take place with 200 participants in Belgium and 150 in Germany and Cyprus. In the last research cycle, an open living lab phase will take place, meaning that everyone can participate in this pilot phase. The aim for this live beta phase is to have 300 participants involved in Belgium and Germany and 200 in Cyprus.
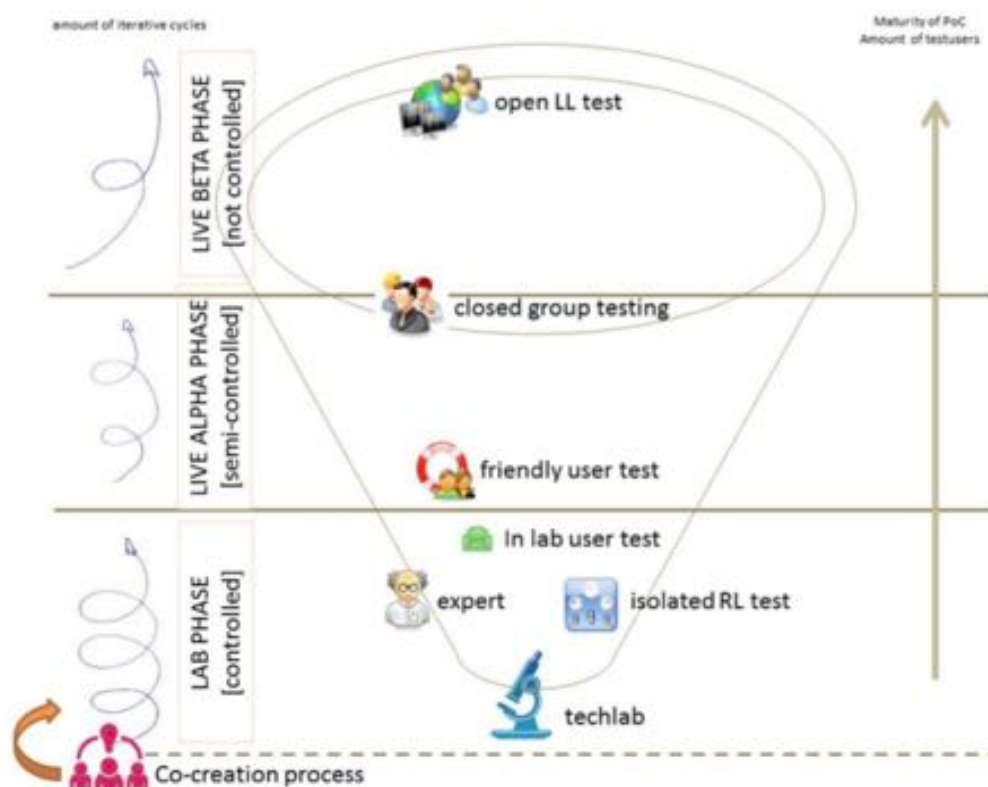
Figure 1: Living lab research cycle (Lievens & Kilip, 2013)

	Belgium	**Germany**	**Cyprus**
Pilot 1	50 end-users	20 friendly user testing	20 friendly user testing
Pilot 2	200	150	150
Pilot 3	Minimum 300	300	200-250

Table 1: Involvement end-users in pilots

The following scheme gives an overview of what will be tested during the three different pilots, what the aim is and what the expected results would be (see also D1.2).

Figure 2: Overview pilots (see D1.2)

As described in deliverable 1.2, the first prototype will be tested in pilot 1. This prototype consists of a web interface, which is the recommender version 1, and wireframes for a mobile application, which is the news app version 1. Through the recommender, users will test the algorithm and evaluate the coordination of technical components. The mobile application set up consists of wireframes, whereof the look and feel will be evaluated through user tests. When the recommender will be tested, additional questions (which is the Analysis stream) will be included in the user research.

In the following two sections, a detailed description is provided of the different steps taken towards the first pilot. Section 2 gives an overview of the different steps taken at user side, whereas section 3 gives an overview of the steps taken at the technical side. Section 4 gives then an overview of how pilot 1 took place. In the last section, the results of the first pilot are discussed.

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2 REQUIREMENT EVALUATION (USER SIDE)

In the following steps, an explanation is provided about the different steps taken to evaluate the different requirements for pilot 1. These steps are more detailed described than in D1.2.

2.1 RANKING MAIN REQUIREMENTS

The first step was to rank the different main requirements into the three different pilots. These requirements were collected in the first phase of the project and are reported on in D1.1. The main requirements (see D1.1) contain 9 user profile requirements, 9 app features requirements, and 2 production side requirements, namely:

- 9 user profile requirements:
  - o UP1: interest
  - o UP2: network
  - o UP3: time & length
  - o UP4: prefered media
  - o UP5: location & surroundings
  - o UP6: knowledge
  - o UP7: devices
  - o UP8: importance
  - o UP9: profile
- 9 app feature requirements
  - o AF1: filter bubble
  - o AF2: FOMO
  - o AF3: content/format
  - o AF4: sources
  - o AF5: transparency
  - o AF6: archive
  - o AF7: user feedback
  - o AF8: temporary categories
  - o AF9: muting topics
- 2 production side requirements
  - o PS1: detailed analytics
  - o PS2: integration

Each of these requirements also contained different sub-requirements.

In a first step of the process, all the project partners had to rank the main requirements through D-pac. By involving all partners (technical and user partners) in the evaluation of the requirements, the living lab approach -which takes into account every stakeholder- is applied because not only technical partners but also user partners ranked the requirements. The D-pac tool is developed by imec in association with the University of Gent and the University of Antwerpen. Within this online tool, the user can choose between two different options. After evaluating all these options, a ranking is obtained with a statistic higher reliability than when other evaluation methods would be used. The outcome of the D-pac ranking can be found below:

	Ranking UR-UP
1 (highest)	UR-UP1
2	UR-UP9
3	UR-UP3, UR-UP5
4	UR-UP2
5	UR-UP6
6	UR-UP8
7	UR-UP4
8	UR-UP7
9 (lowest)	/

RANGORDE VAN DE REPRESENTATIES VOOR 'MAIN REQS. USER PROFILE '
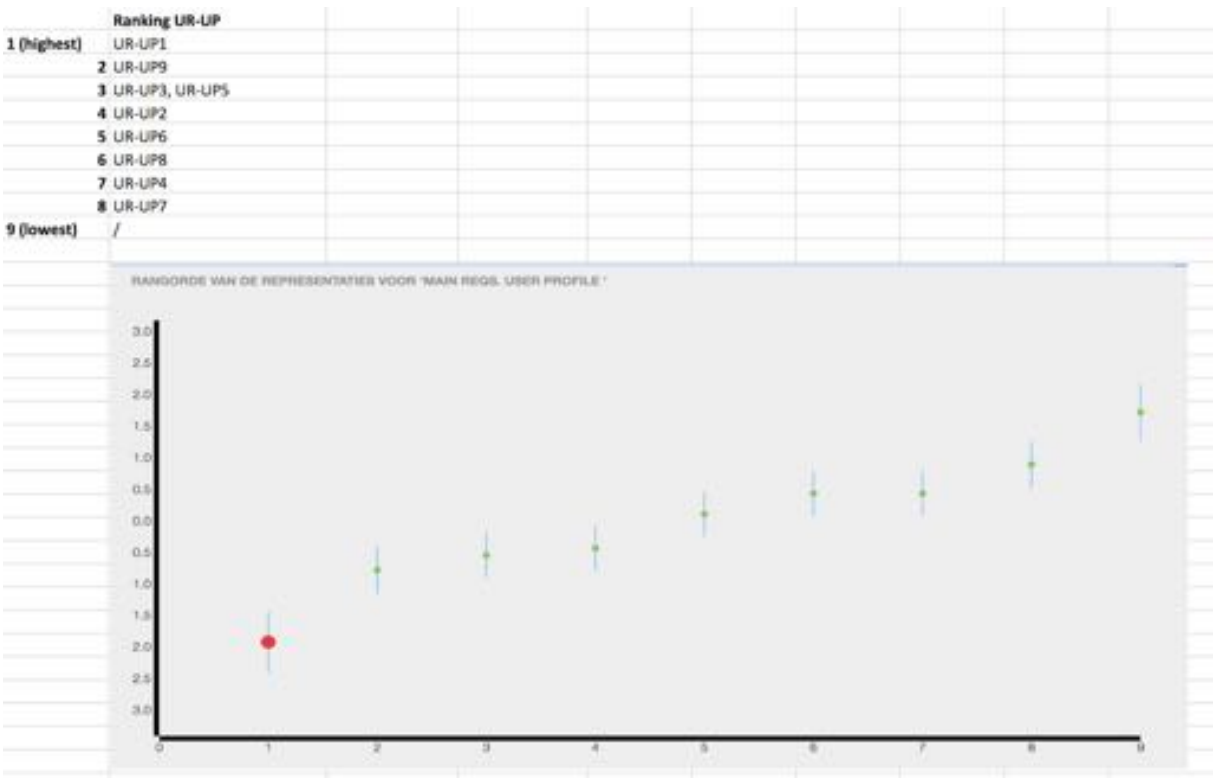
Figure 3: Ranking main UP-requirements through D-PAC

	Ranking UR-AF
1 (highest)	UR-AF5
2	UR-AF1
3	UR-AF7
4	UR-AF2
5	UR-AF8
6	UR-AF9
7	UR-AF3
8	UR-AF4
9 (lowest)	UR-AF6

RANGORDE VAN DE REPRESENTATIES VOOR 'MAIN REQS. APP FEATURES'
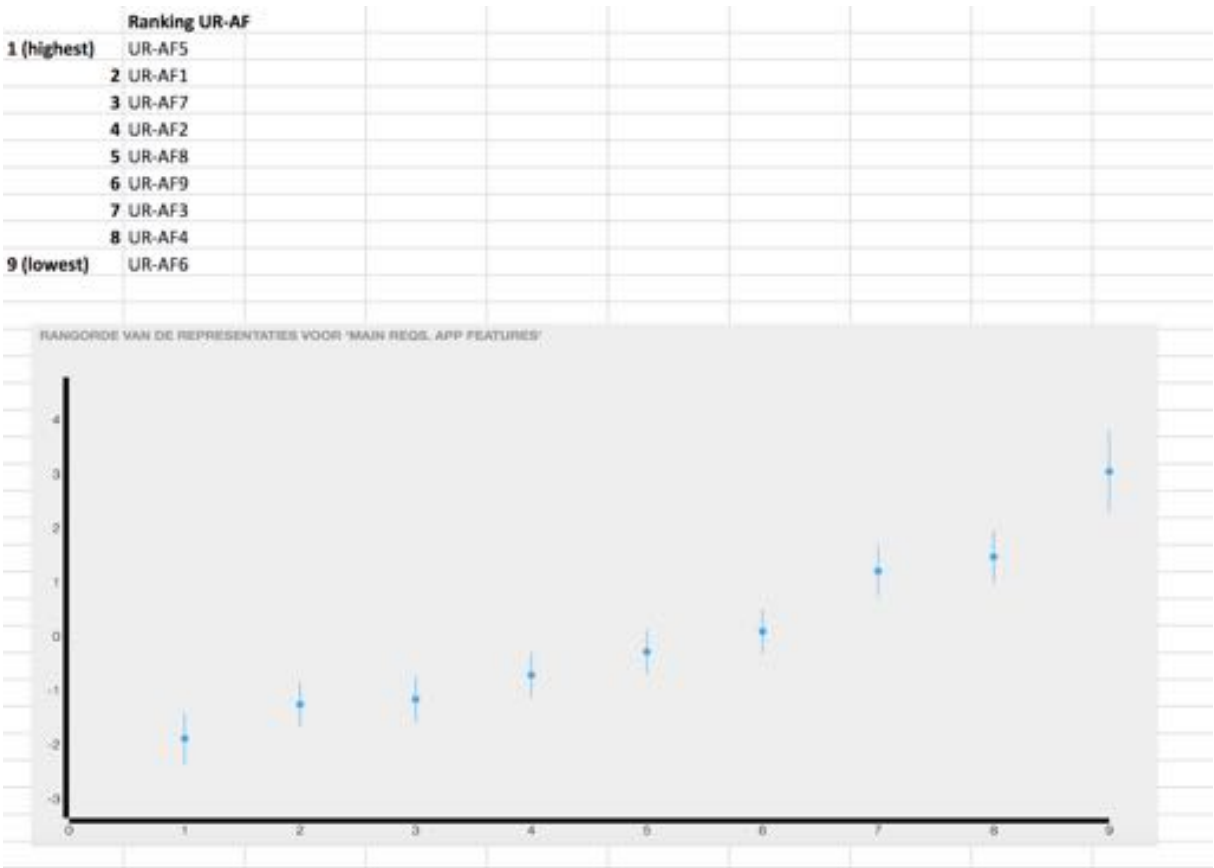
Figure 4: Ranking main AF-requirements through D-PAC

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Ranking UR-PS				
1 (highest)	UR-PS1			
2	UR-PS2			
3				
4				
5				
6				
7				
8				
9 (lowest)				

Figure 5: Ranking main PS-requirements through D-PAC

After all the partners ranked the main requirements, calls were set up to discuss the prioritization of the requirements based on the ranking, taking into account the preferences as expressed in the rankings as well as the technological feasibility.

Based on the requirement ranking and the project calls, a detailed planning was created indicating which main requirements would be addressed in each of the three pilot phases.

	Pilot 1	Pilot 2	Pilot 3
UP1 Interest	Prio 1		
UP9 Profile	Prio 2		
UP3 Time & Length	Prio 3		
UP6 Knowledge	Prio 4	More complex logic	
UP5 Location & Surroundings		Prio 5	
UP2 Network		Prio 6	
UP8 Importance		Prio 7	
UP4 Prefered Media			Prio 8
UP7 Devices			Prio 9
AF5 Transparency	Prio 1		
AF2 FOMO	Prio 2	part of it in Pilot 2	
AF7 User Feedback	Prio 3		
AF1 Filter Bubble	Prio 4	rather Pilot 2	
AF3 Content/Format		Prio 5	
AF8 Temporary Categories		Prio 6	
AF9 Muting Topics		Prio 7	
AF4 Sources			Prio 8
AF6 Archive			Prio 9
PS1 Detailed Analytics		Prio 1	
PS2 Integration			Prio 2

Figure 6: Overview ranked main requirements

The first pilot thus contains more basic requirements. In the second pilot, more complex requirements will be added. In the last pilot, all the remaining requirements will be tested. Per pilot, we also defined per group of requirements (namely the UP-requirements, AF-

requirements and PS-requirements) which priority the requirements have. For example, requirement UP1 'interest' has the highest priority within the UP-requirements in pilot 1.

2.2 RANKING SUB-REQUIREMENTS

After the main requirements, also the sub-requirements had to be ranked. For these requirements, a google spreadsheet was set up where all the sub-requirements are listed per main requirement. The partners had to give the requirements a number to rank the sub-requirements. For example for main user requirement UP1, 8 different sub-requirements exist. So, partners had to give a number from 1 (highest) to 8 (lowest) to prioritize these requirements.

Main Category	Subsection	Title	Prototype	DW	DIAS	VRT	ATC	ENG	DIGICAT (MN)
UR-UP 1		Interests (Categories, Entities, Values): What topics is the user interested in?		P1					
		Please Rank the 'User Prolife Requirements - Interest' below from 1 (highest) to 8 (lowest)		1					
	UR-UP 1.1	The system must allow the user to manually choose their interests that later define the personalisation	-	1	1	8	1	6	
	UR-UP 1.2	The system should create/refine interests based on the user's consumption habits	3	3	2	1	2	1	
	UR-UP 1.3	The system should be able to offer personalised content on the basis of the users mood or values	3	6 (P2)	4	2	5	5	
	UR-UP 1.4	The system should refine the user's interests through frequent interaction with the user (talkback)	1	5	6	7	2	7	
	UR-UP 1.5	The system should refine the interests based on the user's behaviour on social networks (through data upload or connection of the networks)	2	7 (P2)	7	6	2	8	
	UR-UP 1.6	The system should assign preferences (1-5) to categories based on the users behaviour	1	4	5	3	2	2	
	UR-UP 1.7	The system should allow users to assign and change preferences (1-5) to categories themselves	1	2	3	4	1	3	
	UR-UP 1.8	The system must allow users to completely turn off the personalisation algorithm and receive content as is and vice versa	1	8 (P3)	8	5	1	4	1

Figure 7: Example of ranking sub-requirement UR-UP1

After all the partners completed the ranking of the sub-requirements, also these requirements were discussed with all partners by calls about these sub-requirements. Based on these discussions, the consortium agreed that the following sub-requirements would be taken into account for pilot 1:

- UR-AF4.1: The system should be able to personalise news from/for the CPN media partners
- UR- UP1.2: The system should create/refine interests based on the user's consumption habits
- UR- UP1.6: The system should assign preferences (1-5) to categories based on the users behaviour
- UR- UP9.2: The system should require informed and explicit consent for processing of personal user data, beyond those required for the provisioning of the agreed service
- UR- UP9.1: The system must provide transparent, simple and easy-to-understand information on what user data are collected, for what purpose and how they are stored
- UR- UP1.8: The system must allow users to completely turn off the personalisation algorithm and receive content as is and vice versa
- UR- UP3.2: The system should create/refine time frames based on the user's consumption habits
- UR- AF2.4: The system should show users only a limited number of items at once
- UR- UP5.2: The system should allow the user to set a home/main interest location
- UR- AF7.2: The system should include guided feedback for specific elements of the system, allowing users to (help) improve it
- UR- UP1.4: The system should refine the user's interests through frequent interaction with the user (talkback)
- UR- UP3.3: The system should refine the user's time frames through frequent interaction with the user (talkback)
- UR- AF2.5: Once all articles proposed have been consumed, the system should only offer more content upon request by the users

- UR- UP1.7: The system should allow users to assign and change preferences (1-5) to categories themselves
- UR- UP3.1: The system must allow the user to choose a preferred time frame or frames to consume content
- UR- UP3.5: The system must allow the user to postpone a time frame for a chosen amount of time
- UR- UP3.6: The system must allow the user to ignore a time frame completely
- UR- AF3.4: The system should be able to offer both news content and entertainment
- UR- AF3.5: The system should be able to offer both locally and globally relevant content
- UR- UP2.7: The system should allow users to share content from the CPN system to social networks
- UR- AF4.2: The system should allow for additional content sources, outside the consortium
- UR- AF3.8: The system should allow users to filter content by language
- UR- AF1.5: The system should allow users to choose favourite sources

2.3 WRITING USER STORIES

The next step after the selection of the main and sub-requirements for each pilot phase, was the creation of user stories for all the sub-requirements. These user stories were written by the user partners and had the aim to clarify the requirements in more detail. By writing a user story, it is also more clear for the technical partner what the potential user would expect from a sub-requirement. Each user story was written from the perspective of a specific user, engaging with the CPN application.

UR-AF4.1	**The system should be able to personalise news from/for the CPN media partners (VRT, DIAS, DW)**	Z
	When I open the CPN app, I see three buttons at the bottom of my screen (the start page, the feedback/opinion page, and the settings/profile page). When I press the start page (which is the page I will see everytime I open the app), I see an overview of different (but only a few) personalized news articles. As a **CPN user** I can **receive a personalised offer of VRT/DIAS/DW news content,** So that **I'm better informed over time**	

Figure 8: Example of a user story

The user stories from all the sub-requirements can be found in Appendix A.

2.4 TRELLO BOARD

After ranking the main and sub-requirements and writing user stories, a Trello board was set up to visualise and follow-up the prioritization of all the sub-requirements within pilot 1. This prioritization was based on the calls amongst the project partners by looking at what is

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technically feasible and most urgently to be ready in pilot 1. This way, the technical partners could know with which requirement they have to start developing.

Once the technical partners start to develop a requirement, they can move the requirements into different columns (backlog; pending tasks for pilot 1; to do; doing; done; and completed tasks), so that both user and technical partners can see and follow-up on the status of a specific requirement in real-time.
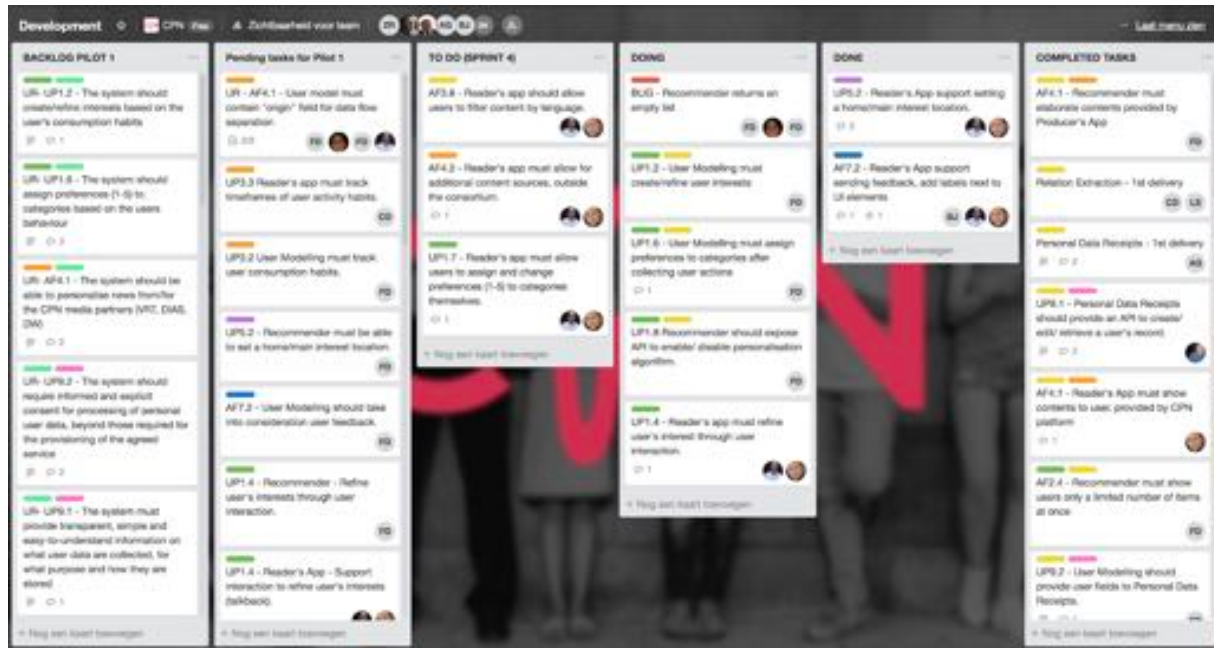

Figure 9: Trello board

3 FROM SCRIBBLES TO INTERFACE (USER SIDE)

3.1 SCRIBBLES

After the ranking and prioritizing of the requirements, a next step in the process was the creation of scribbles. These scribbles visualise the different requirements in the first design of the prototype interface. Because the first pilot round will be testing the recommender system, which is still web-based, the wireframes are there to show participants how the mobile application could look like in the future. The look and feel from these wireframes are thus tested during pilot 1. –

The user partners discussed what the main screens of the prototype should contain, namely: a user profile page, a start page, an article view page, a page when the user reads an article, and a feedback/interaction screen. Each user partner (VRT, imec, DIAS and DW) then started designing scribbles.

After DIAS, imec and DW were ready with their scribbles (see Appendix B), the scribbles were discussed amongst the user partners. Specific discussion points came forward (for example that feedback questions could maybe be part of the settings page) and DW continued to make new scribbles, taking these discussion points into account. With these scribbles (see Appendix B), imec did 5 user tests to gain information about the look and feel regarding the scribbles from DW. The questions that were asked during the user tests can also be found in Appendix B.

Participant	Sex	Age	Education	Country	Where they mostly read news
P01	M	25	Marketing	Belgium	Online (both smartphone and laptop), mostly by clicking on news items on Facebook
P02	V	23	TEW & Artificial intelligence	Belgium	Clicking items via Facebook
P03	M	28	Communication sciences	Belgium	Via VRT news-app and notifications on iPhone
P04	M	24	Journalism	Belgium	Online (mostly through Twitter)
P05	V	56	Interior designer	Belgium	Online and paper

Table 2: Participants from user tests with scribbles from DW

Through these user tests, interesting insights came forward.
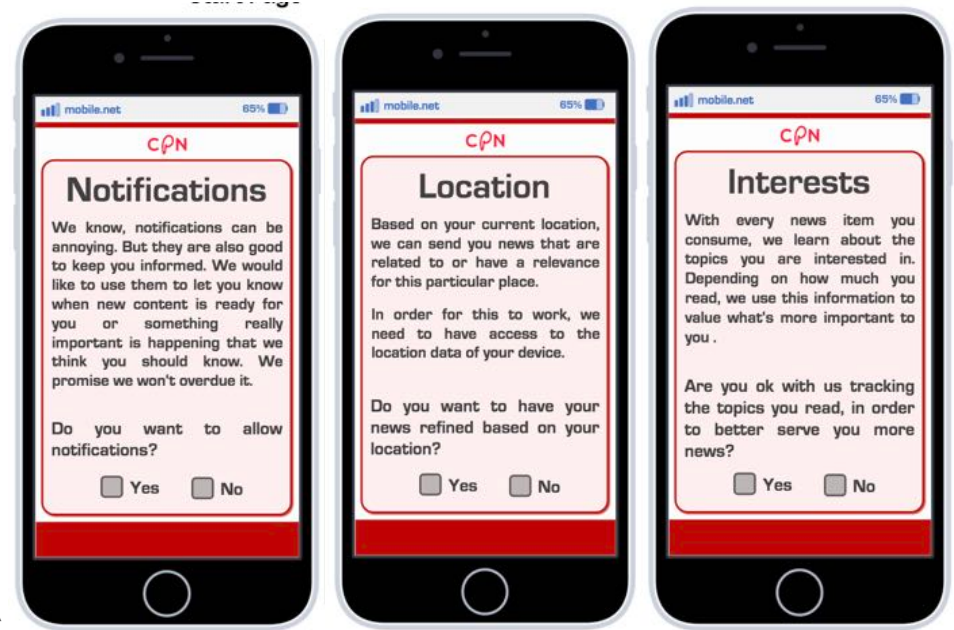
Features in the scribbles:
When first opening the app, the user would see different screens with information about for example location, notifications and interests.

User evaluation:
Some of the users wouldn't mind having different screens if there would not be more than 4 or 5. They suggested to have a little bar at the top of their screen, so that they can see how many screens they have to go through. Other users preferred to only have one screen with all the information accompanied with a 'i' where they can press on to receive more information. Next to this list of locations, notifications... the participants proposed to have a slide button through which the user could (or not) give their consent.

Features in the scribbles:
On the top right, there are three buttons: a language-button, a plus-button and a filtering button.

User evaluation:
Regarding these buttons on the top right, the users mostly had a clear understanding of them. There were no problems in understanding **the language-button**. **The plus-button,** on the other hand was described as a 'weird' button. Through this button, the user can add RSS-feeds. However, the participants want to see the existing RSS-button but are wondering if this function is still used. For **the filtering button**, meant for switching the layout of the articles in the app, the participants suggested to have a filter button whereby they can filter articles on for example 'most read' or 'most recent article'.

Features in the scribbles:
Also on the top left of the scribbles, multiple buttons exist, namely a home-button, a European button and a world-button.

User evaluation:
The home-button on the top left was misunderstood by all the participants. They thought this button would help them to go to the 'start page', meaning the top of the page when they scrolled down too much. However, this home-button means the user would receive news from their home-location. Next to this home-button, the participants just wanted to have one symbol they can press to see a drop-down menu, where they can choose between local, national, European or world news.
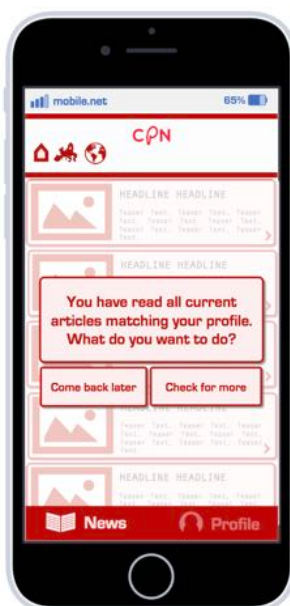
Features in the scribbles:

In the app, a notification would appear when the reader would be done reading all the articles.

User evaluation:

This notification feature was found unnecessary. Participants said it would lead to the user closing the app, which is not the purpose. The participants do think they have to receive news 24/7 and when they don't want to read news, they just close the app themselves.
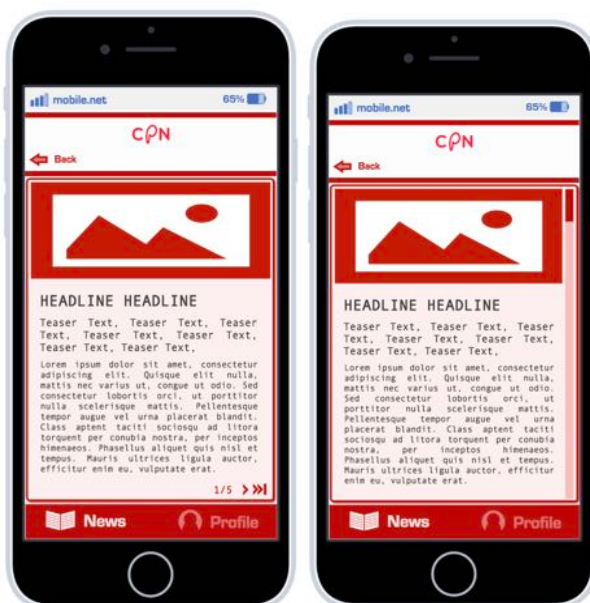
Features in the scribbles:

There were two options in the scribbles. The first one is to click on 'next page' if the user wants to read more. The second option is to just scroll down when reading an article.

User evaluation:

When asking the participants if they would like to tap on the 'next page'-icon or would like to scroll down while reading an article, they preferred the second option.
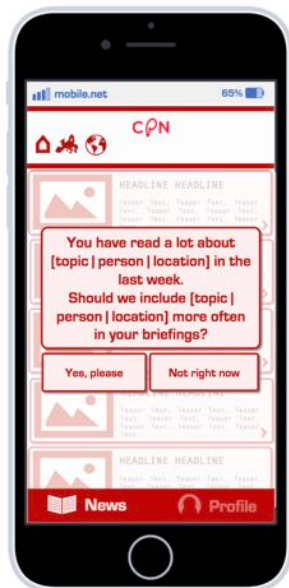
Features in the scribbles:

The user would receive notifications when using the app, for example saying: "You have read a lot about (topic) in the last week. Should we include (topic) more often in your briefings?".

User evaluation:

Regarding these notifications the user would receive, participants indicated they want a maximum of one notification per week, claiming otherwise the notifications will be too intrusive. Therefore, one participant suggests receiving notifications at the top of the application, which would disappear within a few seconds when you don't want to answer it.

Features in the scribbles:

In the 'settings', the user can learn more about their reading time and their time slots. The reading time is the amount of time the user is reading in the app. The time slots are the slots the reader has to read articles, for example, the app knows the user has time between 7am and 7.30am.

User evaluation:

For this scribble, the 'your reading times' and 'your time slots' are found to be a nice to have rather than really necessary. Not all the participants seem to be very interested in these statistics.

Features in the scribbles:

In the settings, the user can swipe left to remove the data into the trash. They can swipe right to see more information.

User evaluation:

The participants like to swipe left when they want to put something in the trash. If users would swipe to the right, they could see more information. However, the participants suggest to just tap on the box instead of swiping right. But if swiping right would remain, then the little arrow on the right has to be removed because the arrow suggests tapping on the box instead of swiping.

After the user tests with these scribbles, the VRT started to work on their scribbles to take the outcomes from the user tests into account. The user partners had discussion calls about the scribbles from the VRT to have a look at points that need to be changed. The scribbles resulting from these discussion calls were evaluated during pilot 1 interviews by end-users in Belgium, Germany and Cyprus. See section 5.3.2 for an overview of the results.

3.2 (MOVED) REQUIREMENTS

Not all the requirements we planned to implement during pilot 1 are going to be in pilot 1. Some requirements moved to other pilots mostly because of the specific scope of pilot 1, namely a web-based version with only content per partners (VRT, DIAS and DW). ATC had already a product called 'TrulyMedia', which was used as web-version for CPN as well so we didn't have to start from scratch.

The table below presents an overview of all the requirements present in pilot 1. For these requirements, the research questions are mentioned in the second column. The mentioned research questions will be tackled on two levels: questions indicated with user data will be answered based on the available logging data. Questions indicated with interview or focus group discussion will be tackled in a qualitative research approach.

For the requirements moved to a later pilot phase, column 2 describes why the specific requirement is moved to a later pilot.

Requirements within pilot 1	Method	Research question(s)
UR-AF4.1: The system should be able to personalise news from/for the CPN media partners UR-UP1.2: The system should create/refine interests based on the user's consumption habits	User data Interview or focus group discussion:	• Does usage increase (click-data)? • Were the suggested articles in the personalised stream relevant? Why / Why not? How to improve UX? Did users understand the interested/not interested button? How did they use these buttons? • Click data should be able to tell if users open more articles • Personalisation not good if they wouldn't open more articles → how does the user feel about the personalisation?
UR-UP1.6: The system should assign preferences (1-5) to categories based on user behaviour	(technical implementation)	/
UR-UP9.1:The system must provide transparent, simple and easy-to-understand information on what user data are collected, for what purpose and how they are stored + UR-UP9.2: The system should require informed and explicit consent for processing of personal user data, beyond those required for the provisioning of the agreed service	Interview or focus group discussion	• Clarity of informed consent? Clarity of what data will be used? (scale?) • Informed consent clear? Data usage understood? Control of personalisation option clear? Changes needed?
UR-UP1.8: The system must allow users to completely turn off the personalisation algorithm and receive content as is and vice versa	Interview or focus group discussion User data	• What was the user's motivation for using the app? • Is it used or not?
UR-AF2.4: The system should show users only a limited number of items at once	Interview or focus group discussion User data	• How many items are read in one visit? Where are differences? • Is there a clear preference for longer or shorter article lists?
UR-UP5.2: The system should allow the user to set a home/main interest location	Interview or focus group discussion	• Is there a preference to have a home or main interest location-button?

UR-UP1.4: The system should refine the user's interests through frequent interaction with the user (talkback) (+ UR-UP3.3 → moved to other pilot)	Interview or focus group discussion	• When did you use the 'interested' or 'not interested' button?
UR-AF2.5: Once all articles proposed have been consumed, the system should only offer more content upon request by the users	Interview or focus group discussion User data	• How do you feel about requesting more articles once you read them all? Do you like this option? How do you assess the number of articles presented & clicking 'I want more'? • Is the request-button used or not?
UR-AF3.4: The system should be able to offer both news content and entertainment & UR-AF3.5: The system should be able to offer both locally and globally relevant content	/	/
UR-UP2.7: The system should allow users to share content from the CPN system to social networks	Interview or focus group discussion User data	• Used or not? • Depending on user data: why did you use them/why not?

Table 3: overview requirements pilot 1

Requirements moved to other pilot	Reason
UR-AF3.8: The system should allow users to filter content by language	With the decision to built the first pilot per user partner, there was no mix of languages, and hence no need for a language filter.
UR-AF4.2: The system should allow for additional content sources, outside the consortium	The first pilot was planned as an exclusive internal prototype, building only on the consortium member's content. The idea is to extend the content base for pilot 2.
UR-UP3.3: The system should refine the user's time frames through frequent interaction with the user (talkback)	This was moved to the second pilot because of the decision to first set up the basic personalisation service before adding extra features which would also need more internal analytics steps.
UR-UP3.2: The system should create/refine time frames based on the user's consumption habits	
UR-UP3.1: The system must allow the user to choose a preferred time frame or frames to consume content + UR-UP3.5 : The system must allow the user to postpone a time frame for a chosen amount of time + UR-UP3.6: The system must allow the user to ignore a time frame completely	
UR-UP1.7: The system should allow users to assign and change preferences (1-5) to categories themselves	
UR-AF7.2: The system should include guided feedback for specific elements of the system, allowing users to (help) improve it	The implementation of the feedback questions was moved to a later pilot because the feature should be evaluated (and refined) first through user tests based on the wireframes with end users in pilot 1
UR-AF1.5: The system should allow users to choose favourite sources	With the decision to have only a single source per partner for pilot one, this requirement was automatically moved to pilot 2

Table 4: overview moved requirements to other pilot

3.3 STEPS TAKEN AT TECHNICAL SIDE

In pilot 1, different technology bricks are set up. These technology bricks are also discussed during two-weekly calls, including a sprint planning, a sprint execution and a sprint review.

At the content side:

- **Relation extraction**

This module will be used as a supporting tool for the Recommender module. The module parses news articles, first extracting named entities and secondly relations between found named entities within the same sentence. The module thus generates additional metadata that can be used to better match articles with user interests.

For example, consider the following short article:

"Transgender student Gavin Grimm defeated the board of his old high school before a federal court on Tuesday over the right to use the bathroom corresponding with his gender identity. US District Judge Arenda Wright Allen in Norfolk rejected a bid by the Gloucester County School Board to dismiss the civil rights lawsuit filed by Grimm."

The module will first extract the following named entities:
- student (TITLE)
- Gavin Grimm (PERSON)
- Tuesday (DATE)
- his (PERSON)
- US (COUNTRY)
- Judge (TITLE)
- Arenda Wright Allen (PERSON)
- Norfolk (CITY)
- Gloucester County School Board (ORGANIZATION)
- Grimm (PERSON)

And secondly the following (subject, relation, object) tuples:
- (Gavin Grimm, title, student)
- (Arenda Wright Allen, title, Judge)
- (Arenda Wright Allen, countries of residence, US)

The Relation Extraction Module has been integrated in the CPN platform and will be evaluated in Pilot 1 and subsequent pilots.

At the user side:

- **User modelling**

Profiles contain an up-to-date history of the user news' consumption by collecting click-streams, topics of interests (automatically extracted from news articles), demographic information and location data. User profiles play an important role in the success of the recommendation process since the profiles represent the users' information needs. The accuracy of each user profile affects the performance of the entire recommender system.

- **Reader's app (TrulyMedia)**

TrulyMedia is a collaborative platform that allows users to aggregate, curate and examine content. Truly Media served as a starting point to shape the 'User's App' module which will serve as the front end of the CPN user application.

Content grouping and filtering functionalities will be provided to prioritize users' interests and to help them navigate easily through all available content. User actions will be tracked and passed to the user modeling module so that a model of the user interests is built and continuously refined.

The user will be informed on what actions are tracked and what personal data is maintained. Users will also be able to see the model of their assumed interests and modify this manually. Both a web and a mobile interface will be developed, starting with the web application in Pilot 1 and adding a mobile native app for Android devices for Pilot 2.

Towards the preparation of the front end of the CPN user application, an initial mapping of the user requirements and the CPN technology Bricks has taken place. Based on this mapping and taking into account all discussions among the technical partners, the functionalities that each module should satisfy have been analysed and recorded in project's trello board. The User Interface of the CPN web application has been defined based on Reader's App as it is the starting point of the CPN application and provides a subscription and login user interface. Currently, the application is under development.

- **Personal data receipts**

The objective for the pilot 1 was to implement a stand-alone service that could send a Personal Data Receipt (PDR) to the users.
It was successfully designed and implemented over a 3 month period in the following steps:

- Identification of the requirements
- Creation of standardised email response templates
- Definition of the architecture and external dependencies
- Developmental setup of the project (git, npm, license)
- Creation of a linked mailgun account
- Implementation of the service in nodes
- Creation of a mock-up of the gateway for development testing
- Definition of a dockerfile for production deployments
- Deployment into the CPN project and successful testing, ready for the Pilot 1

A Personal Data Receipt is a tool for GDPR compliance regarding personal data. It is designed to be compliant with GDPR Articles on Information Notice aiming to simplify users' understanding of privacy policies while providing them with a human-readable record on what personal data are collected, the purpose of use they have consented to, and for how long given data will be stored. The present module provides users with a receipt of the permissions they have given the platform. The next implementation will be more responsive, with more permissions captured at a more granular level. We will also provide documentation to inform PII holder how to allow users to ask for data removal or for executing other digital rights. PDRs provide a non-repudiable receipt record, useful for future verification that personal data are used according to the user's wishes.

- **Producer's app (Cute4LE)**

The Producer's app module is the evolution of Cute4LE, which includes search, storytelling, analytics and monitoring features to support content marketing strategies.

The first version of Producer's app module was deployed and integrated within the CPN platform in order to provide the articles produced by the media partners.Indeed, for the first pilot, the module focuses principally on the integration of news feeds made available from media partners.

The module can integrate both API REST or RSS feed in XML format and in the case of pilot 1 includes:

- Latest Articles feeds (VRT, DIAS, DW)
- Popular articles feeds (VRT, DIAS, DW)

Once integrated the feeds, the Producer's app provides this articles to the CPN platform in two ways: via the Message Broker and via REST APIs (storing the contents in a Local Database).

The articles are provided in a standard data model format indifferently from the starting format. This facilitates the integration of the contents and the exploitation of different kind of information.

Furthermore, the module offers a series of services both for external and internal components and in particular:

- an internal service to retrieve a list of contents starting from a list of ids (used by the orchestrator during the recommendation process)
- an external service through the API gateway to retrieve the latest articles of a media source
- an external service through the API gateway to retrieve the most popular articles of a media source

At the mapping side:

- **Recommender**

The state of the art techniques for recommending items are based on two main areas:

- content based, which relies on good semantic modelling/feature extraction and selection on the items to be recommended
- collaborative filtering techniques, which are essentially domain-independent and take into account network metrics based on emerging similarity graphs of users and items

The recommender system uses a hybrid approach. It uses variable proportions of the mentioned techniques for each user/groups. It learns from explicit and implicit feedback given by the users themselves, such as clicks, ratings, sharings, etc. (which is called hyper-parameter learning). The system is also customisable for including content-delivery strategies' optimisation, such as multichannel and date/time optimization (predicting the probability of interests at a given time on a given channel). Lastly, it also includes mechanisms for fostering "serendipitous" discoveries.

Formally, the recommender allow to define a list of triples:

- UsersSelectionCriterion: partitioning the users in groups
- ItemsSelectionCriterion: partitioning the news in groups

- RecommendationStrategy: the type of technique to be used<

Currently, in pilot 1, the following recommenders are now combined into the hybrid recommender:

- content-based
- collaborative filtering
- non-personalised recommendations (the 'most popular' and 'latest news' streams)
- controlled dithering (which are random items that help escaping the 'filter bubble')
- business rules (which are precise criteria for items to be recommended)

These items are combined by a percentage of recommendations and (hyper-)parameters learning.

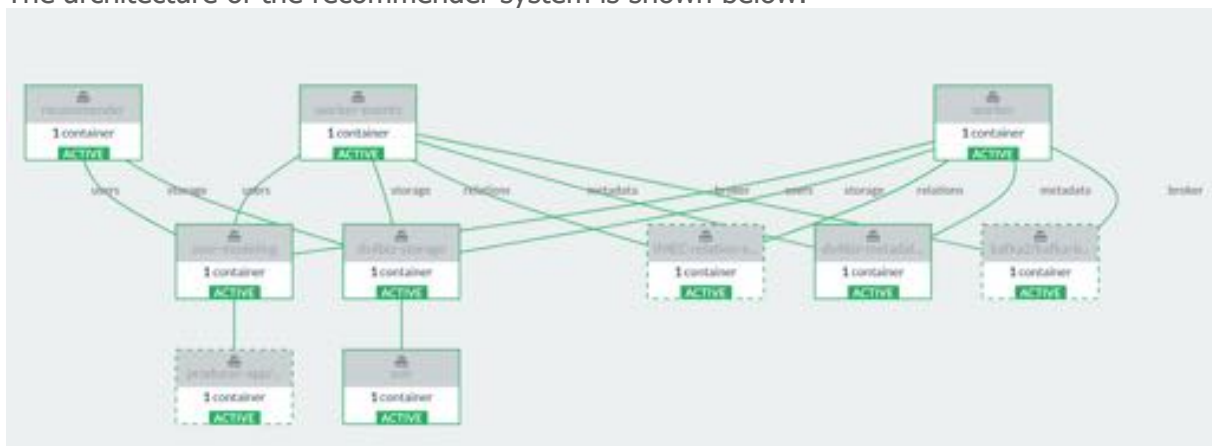The architecture of the recommender system is shown below:

Figure 10: Recommender architecture

4 PILOT 1: RESEARCH SET-UP

During pilot 1, the web interface (Recommender v1) and the wireframes (News App v1) are tested by end-users in the three pilot countries simultaneously. The goal is to get end-user feedback on the developed recommender and to evaluate the algorithm behind it, in order to take these insights with us for pilot 2.

In pilot 2, a mobile application will be developed. Wireframes of the mobile app were already developed and evaluated by the pilot 1 respondents as well.

Additionally, in-depth research questions were explored (Analytics stream). The table below gives an overview of these additional questions.

Additional topics	Related research questions
General acceptance	• How do people feel about a personalised news application? • What is the trade-off people make when providing personalised information in exchange for a personalised news stream?
Feedback questions	• Are people willing to receive feedback questions to improve the algorithm? • How many questions would they like to receive? What is the breaking point?
Cold start vs. categories	• What method do people prefer? Why? • How extended should the list with categories be?
News summaries vs background info	• What is the right balance between news summaries/headlines or more information (background info) on personalized topics?
Location based news	• What does 'location'-based news mean for people? (location where you are at that moment, home-location,...)

Table 5: additional topics and research questions

The pilot 1 end-user evaluation consisted of 4 research actions:

1. Research action 1: The zero measurement survey
2. Research action 2: Testing the recommender system
3. Research action 3: The follow-up survey
4. Research action 4: Interview or focus group discussion

These research actions were executed chronologically in each pilot country. The figure below shows the research process. These actions are described in more detail in the following sections.
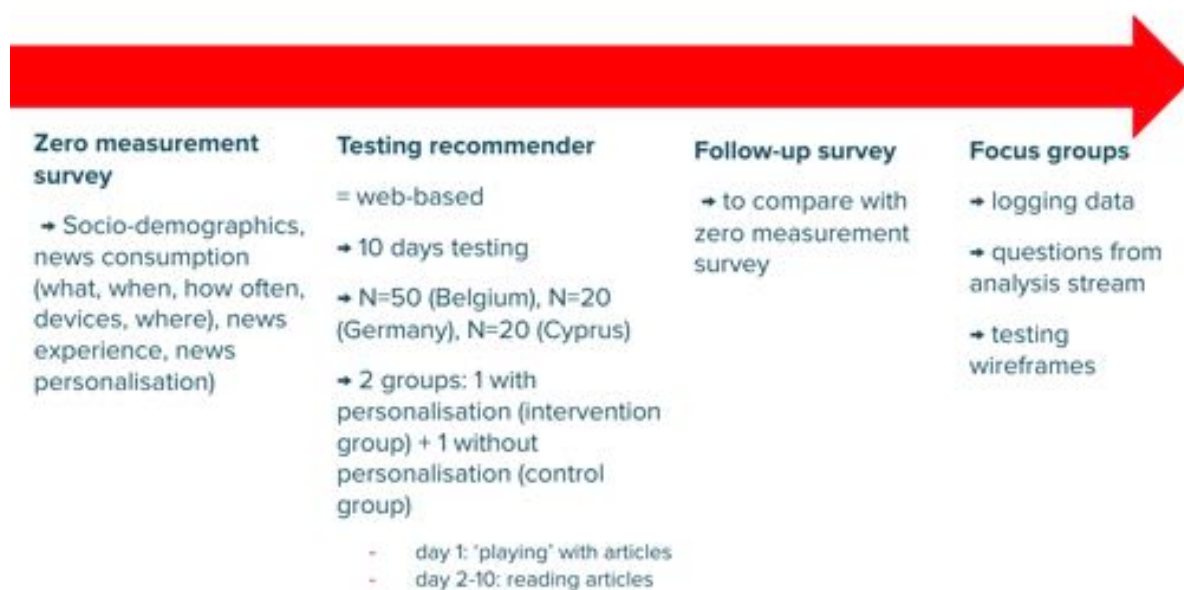
Figure 11: overview research actions pilot 1

4.1 RESEARCH ACTION 1: ZERO MEASUREMENT SURVEY

First, participants of the pilot were asked to fill out a zero-measurement survey. This survey allowed the consortium to build participant profiles to know what type of news consumers the participants are, but also how they rate themselves as being 'informed' and how 'diverse' their news consumption is. This is in line with the goal of the project to better inform citizens rather than create a filter bubble. By having a zero-measurement survey, we were able to compare how participants rate themselves as being 'informed' prior to and after using the CPN app (see research action 4). It refers to the research question: 'Does personalization in the news app lead to better-informed citizens?'

For the zero measurement survey, the Reuters Digital News Report Questionnaire 2018, Pew Research Center's American Trends Panel 2016 and Digimeter were used as inspiration sources.

An online survey was created using the Qualtrics survey software. In Belgium, the survey was distributed in Dutch. In Germany and Cyprus, the survey was distributed in English. Appendix C shows the survey questions.

56 respondents completed the survey in Belgium, 18 respondents completed the survey in Germany and 20 in Cyprus.

4.2 RESEARCH ACTION 2: TESTING THE RECOMMENDER SYSTEM

In the second part, users were asked to test the recommender system through the web application.

For this test, we created two groups in each pilot country: **a control group and an intervention group**.
The intervention group is the group that received personalised articles. The control group, on the other hand didn't receive personalised articles but was not informed about this. They thus thought they received personalized news as well. The respondents were randomly assigned to one of the two groups. This allowed us to compare both groups and look for specific differences in the evaluation of the recommender engine.

The link to the recommender system for the control group was: http://dl64i87gh7rrw.cloudfront.net/login, the link to the recommender system for the intervention group was: http://d2bvbut7x447nb.cloudfront.net/login.
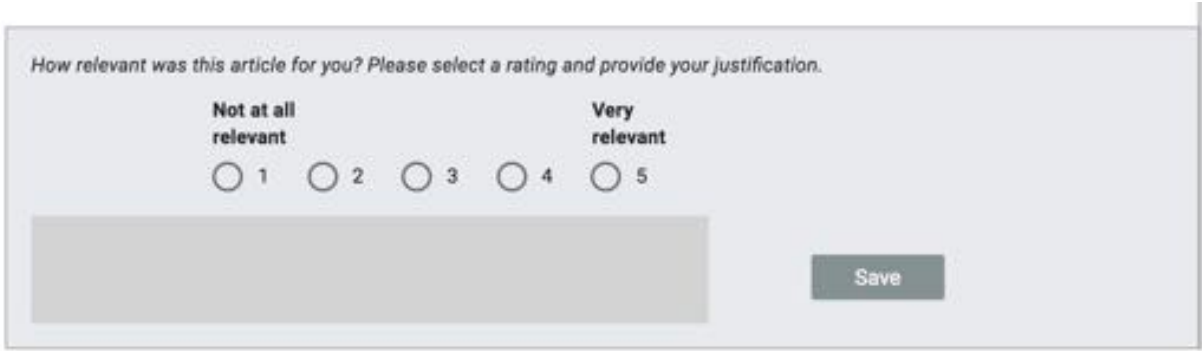
All respondents that filled in the zero measurement survey were invited to test the recommender. In total, 56 users started participating in Belgium, 18 in Germany and 20 in Cyprus as well. Both Germany and Cyprus did friendly user tests, meaning they involved participants from their own company. Belgium involved participants by recruiting people via personal networks and via social media (Facebook and Twitter). The recruitment flyer can be found in Appendix D.

Use of recommender
Participants had to test the recommender app for **10 days.** The first day, participants had to first 'play' a little bit with the articles, this means: pressing on 'not interested' or 'I'm interested' so the recommender can start and personalise news. This had to be done for at least 20 articles. After this, participants could then use the recommender app by reading articles as they would do with other news services. The only requirement is that they had to do this at least twice a day.

After reading an article, the user could see a box with the question 'How relevant was this article for you?'. The user thus had to rate the article. There also was a box underneath to explain why they rated an article low or high.

Figure 12: Rating articles recommender

During these 10 days, the users' logging data was tracked and analysed each day. When something interesting showed up, the user researchers within the project could call the participants to ask them why they did (not) do something, to gain more insights in their user behaviour. These data is logged for research purposes within pilot 1. The following table gives an overview of the updated datasets that are logged during pilot 1:

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Tab	Logging data
Summary	E-mail Name Number of interesting Number of not interested in Number of reads Shared to Twitter Shared to Facebook Shared to LinkedIn Shared to Google+
Interested articles	E-mail Title of interested article Tab Personalisation Shared to Twitter Shared to Facebook Shared to LinkedIn Shared to Google+ Date
Not interested articles	E-mail Title of non-interested in article Tab Personalisation Date
Read articles	E-mail Title of read article Tab Personalisation Shared to Twitter Shared to Facebook Shared to LinkedIn Shared to Google+ Date

Table 6: logged datasets pilot 1

4.3 RESEARCH ACTION 3: FOLLOW-UP SURVEY

After participating in the CPN pilot test with the web application, participants completed another online survey. The goal of this second survey was to ask about the use of and experience while using the CPN website on the one hand. On the other hand, the survey asked the respondents again to rate themselves in terms of 'informedness', 'personalisation' and 'diversity of news consumption'. This follow-up survey allows us to compare between the starting point and further pilot actions but also provided input for the discussions in research action 4. Appenddix E shows the full survey.

4.4 RESEARCH ACTION 4: INTERVIEW OR FOCUS GROUP DISCUSSION

At the end of pilot 1, we invited the participants to take part in a focus group discussion or an interview. Through these discussions, we wanted to get more in-depth information on how they experienced using the web application, what we can improve and how they consider themselves 'informed'. Further, the research questions from the analytics stream were explored in depth and the wireframes were shown to the end-users.

In appendix F, the full topic list can be found. This topic list was used in all three pilot countries. All participants signed an informed consent form prior to their participation in the focus groups. The focus groups were fully recorded on video and audio. A full ad verbatim transcript of each focus group was made.

Figure 13: Setting focus group Brussels

4.4.1 Participants Belgium

In **Belgium**, a total of **37 end-users (out of 56 pilot participants)** took part in a focus group or interview. All end-users were invited to participate in a focus group. Separate focus groups were organized with the control and intervention group. With the end-users who were not available on the proposed dates, an individual interview was scheduled. In total 22 people took part in a focus group and 15 in an individual interview.
The focus groups were organized at VRT premises in Brussels and imec premises in Antwerp. Two additional focus groups were organized online (with an online conference call tool).

Nr.	Date	Group	number of participants	Location
1	22/10/18	Intervention group	3	Brussels (VRT)
2	24/10/18	Control group	5	Brussels (VRT)
3	29/10/18	Control group	5	Online
4	31/10/18	Intervention group	6	Antwerp (imec)
5	7/11/18	Intervention group	3	Online

Additionally, 9 interviews were organized with users from the control group and 6 interviews with users from the intervention group. The interviews took place in november 2018 and were organized online (with a conference call tool).

The tables below give an overview of the profile of the participants in the focus groups.

FG 1: 22/10/18

Participant	Age	Gender	Occupation
Andreas	20	M	Student
Nina	23	F	Student
Bram	22	M	Student

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FG 2: 24/10/18

Participant	Age	Gender	Occupation
Lars	24	M	Commercial analyst
Simone	22	F	Student
Hade	33	F	Financial advisor
Valerie	50	F	Economy teacher at University college
Maarten	/	M	Servant

FG 3: 29/10/18

Participant	Age	Gender	Occupation
Janne	29	F	Entrepreneurship coach at university of Antwerp. Also teaches management.
Joris	41	M	ICT-coordinator and mediacoach at 6 primary schools
Lotte	21	F	Student communication sciences
Nadine	34	F	Media and press officer
Stan	45	M	ICT teacher and media coach in high school

FG 4: 31/10/18

Participant	Age	Gender	Occupation
Arnaud	22	M	Student
Max	38	M	Servant (logistics sector)
Dennis	30	M	Has his own start-up
Nicolas	24	M	Communication assistant
Steven	25	M	Production of shows and expos (freelance)
Arno	26	M	Researcher

FG 5: 7/11/18

Participant	Age	Gender	Occupation
Dorien	26	F	Communication manager
Marie	26	F	Phd student
Hannah	41	F	Kindergarten teacher

4.4.2 Participants Germany

In **Germany**, 11 people were interviewed in November 2018 in total.

Date	Group	Number of participants	Location
15/11/2018	Intervention Group	4	Bonn, Germany (DW)
20-26/11/2018	Individual Online Interviews	(4 Control group, 3 Intervention group)	Bonn/Berlin, Germany (DW)

The tables below give an overview of the profile of the participants in the focus groups and interviews.

Participant	Age	Gender	Occupation
Carsten	34	M	Editor
Coline	31	F	Editor
Gina	26	F	Journalist
Ela	34	F	Product Manager

Participant	Age	Gender	Occupation
Oliver	37	M	Product Manager
Marius	47	M	Product Manager
Ina	32	F	Developer
Anna	27	F	Editor
Beate	45	F	Editor
Andreas	40	F	Editor
Katharina	32	F	Editor

4.4.3 Participants Cyprus

In **Cyprus**, 2 focus groups were organized. One with the control group, and one with the intervention group. A total of **9 end-users** took part in the focus groups.

Nr.	Date	Group	number of participants	Location
6	05/11/2018	Control group	5	Nicosia
7	06/11/2018	Intervention group	4	Nicosia

The tables below give an overview of the profile of the participants in the focus groups.

FG 6: 05/11/2018

Participant	Age	Gender	Occupation
Eliza	58	F	Chief operation manager
Yiota	36	F	Marketing
Erotokritos	37	M	Group Marketing manager
Michalis	36	M	Journalist
Anna	28	F	European Projects manager

FG 7: 06/11/2018

Participant	Age	Gender	Occupation
Constantinos	/	M	Consulting & Coordination
Christos	32	M	Journalist
Andreas	30	M	Journalist
Giorgios	45	M	Sound engineer

In the following section, the results of the three streams are discussed.

5 PILOT 1: RESULTS

In the following sections, the results of the zero measurement survey, post survey, focus groups and interviews are discussed.

5.1 ZERO MEASUREMENT SURVEY

In Belgium, 56 participants filled in the zero measurement survey, in Germany 18 respondents and in Cyprus 20 respondents. In the graphs below, this is also the number of participants (N) for each country (unless indicated different).

Socio-demographic profile

There was an (almost) equal division of male and female respondents in Belgium and Germany. In Cyprus, there was a slightly higher share of female participants (60%).


Most of the respondents have obtained a higher education degree.
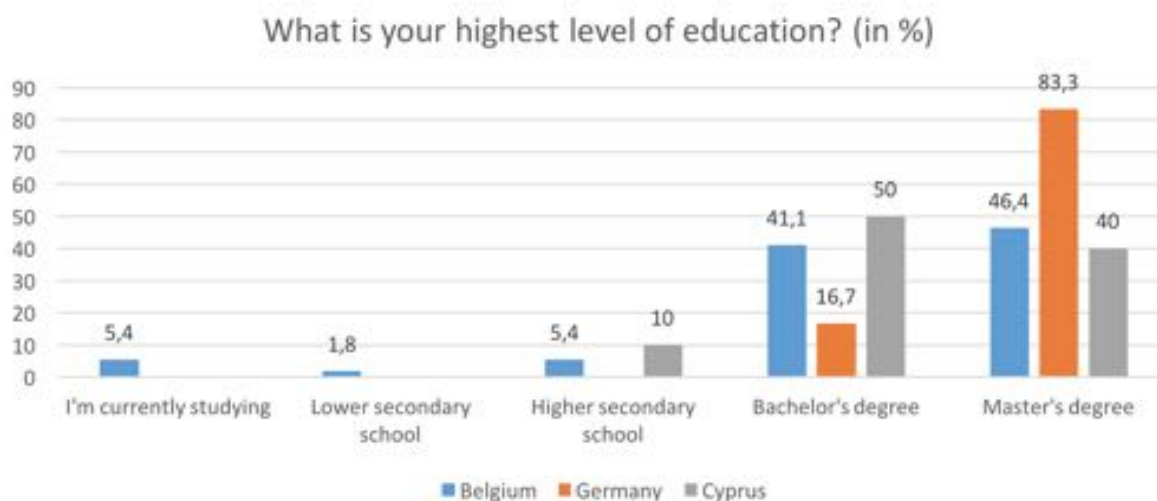
The 3 people in Belgium still studying are all three in the process of obtaining a higher education degree.

In the Belgian sample, 66,1% of the sample indicates to work full-time. In Germany, this number goes up to 88,9% and in Cyprus the complete sample works full-time. In Belgium, the remaining 30,4% who doesn't work full-time, indicates to work part-time (10,7%), to be (temporarily) not working (17,9%, including students) and to be retired (1,8%). In Germany, the remaining 11,1% who is not working full-time, indicates to work part-time.

The following graph shows the profession of the respondents. In the three pilot countries, the highest share of participants is working as an employee.

Profession (in %)
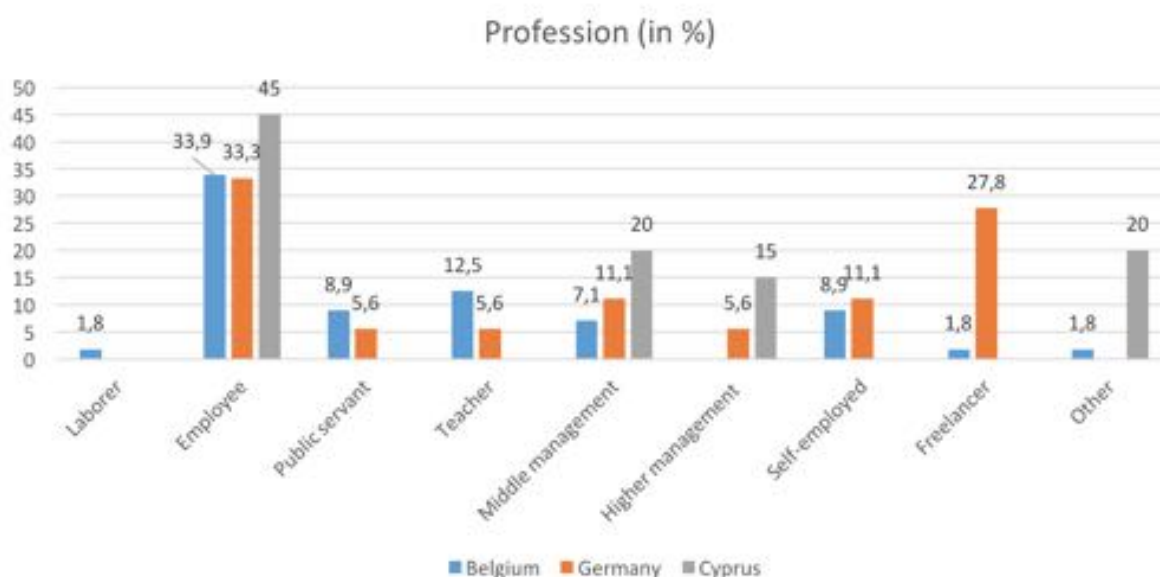
The following graph shows the family situation of the respondents. In Germany, 3 respondents (or 16,7%) indicated that their family situation was 'different', but they didn't specify in what way.

Family situation (in %)
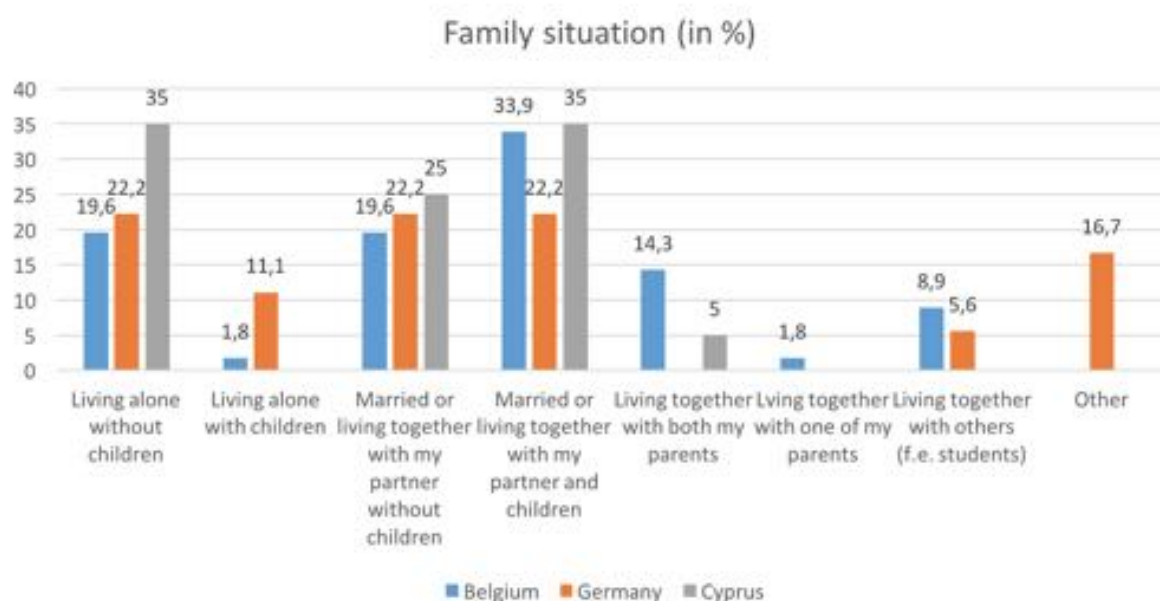
Internet use and device ownership

All the participants indicated they are using the internet daily. In every pilot country, more than half of the sample says to use the internet more than 10 times a day. In Cyprus, this even goes up to 80,4% of the sample.

Daily internet use (in %)
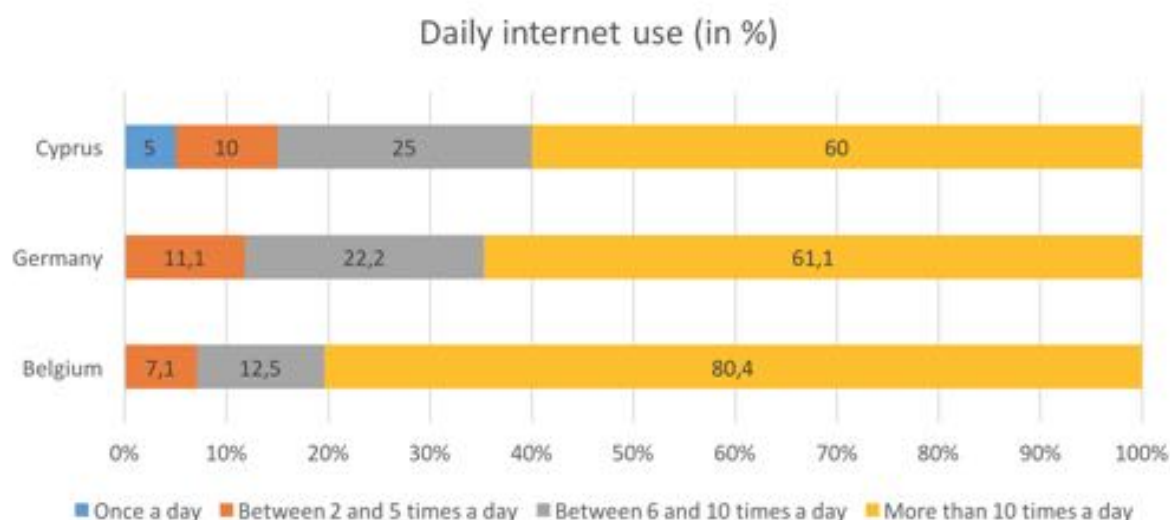
The next graph shows the main reasons why the respondents use the internet. Participants are using the internet the most for the following purposes: looking up information, reading and sending mails and visiting social network sites. In Belgium and Germany, consulting news as also the main purpose for 94% of the sample. However, in Cyprus this is only 60%. The internet is the least used for playing games.

Internet use (in %)
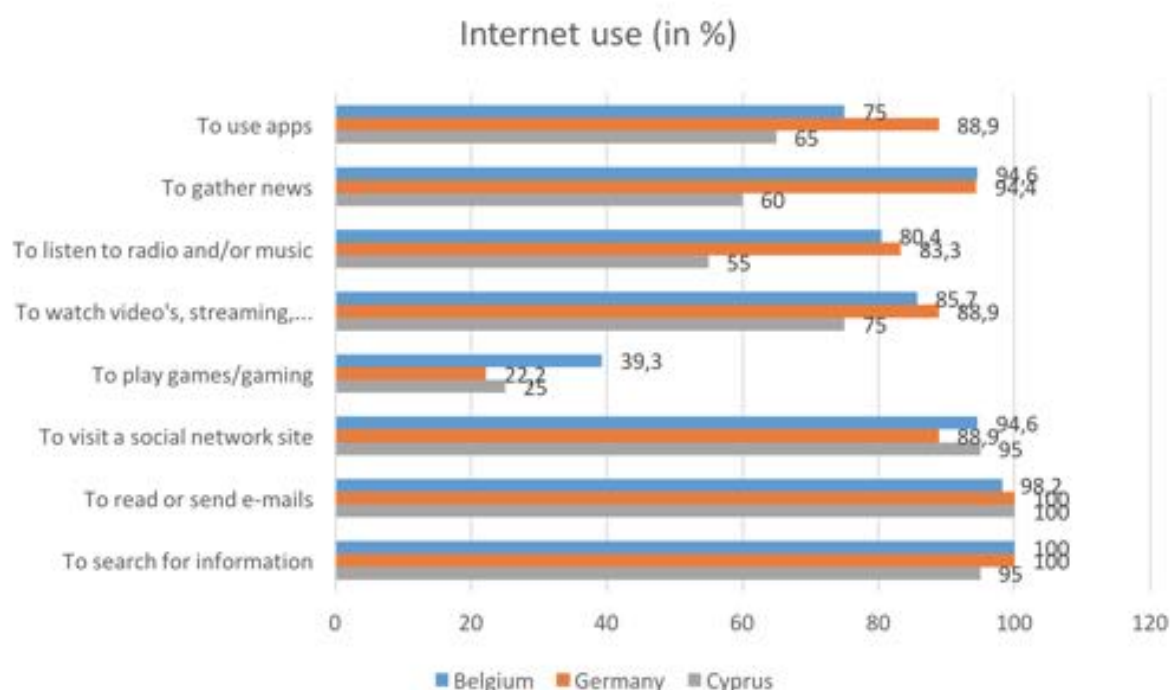
The 5 most used social network sites in the 3 pilot countries are Facebook, Twitter, Linkedin and YouTube. The following table gives an overview of the percentage of respondents that use these social network sites.

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Use of social media (in %)
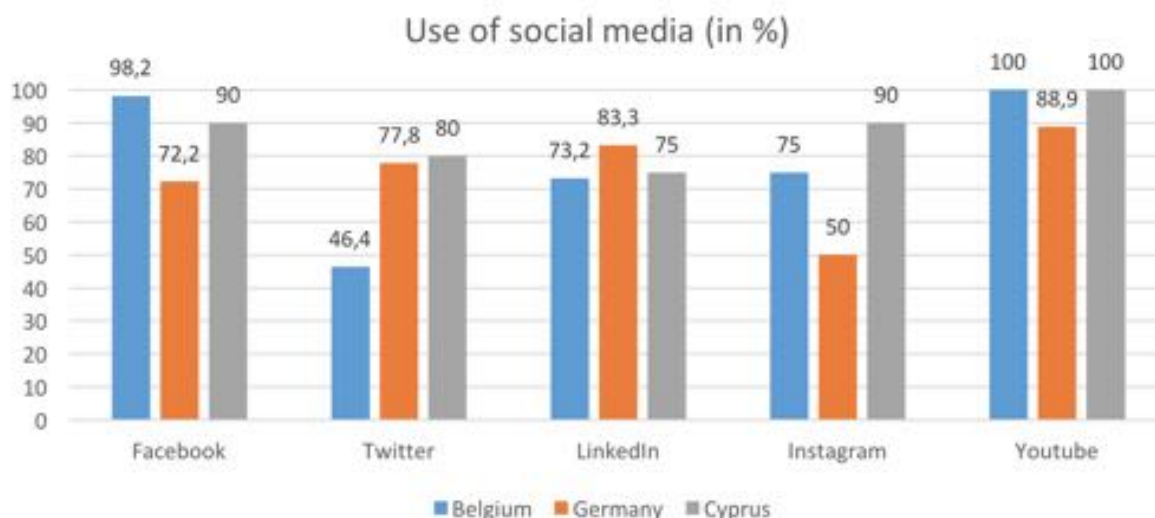
The next graph shows the share of respondents that own each of the following devices:

Device ownership (in %)
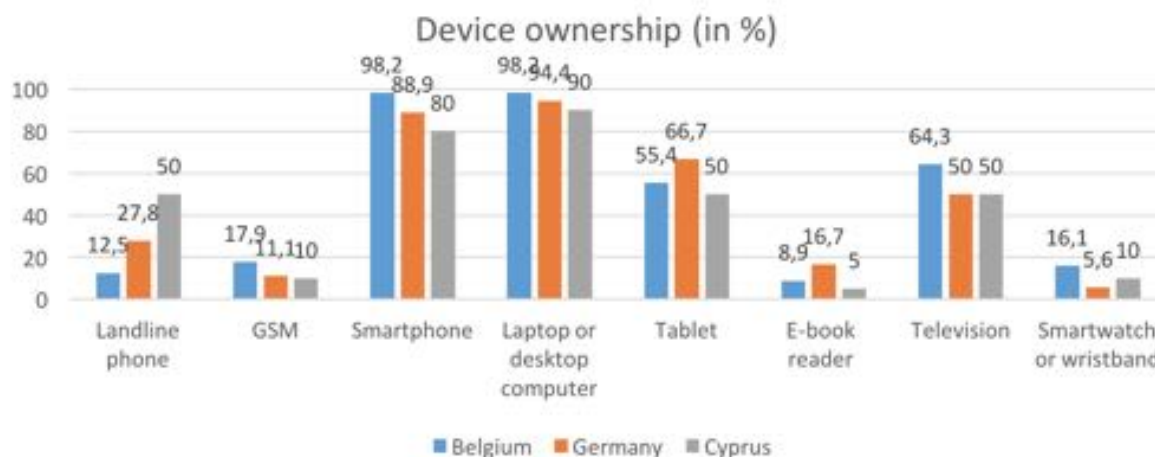
A smartphone and/or laptop or desktop computer are the most used internet-connected devices amongst our respondents. Of the respondents who own a smartphone, in Belgium, 40% has a smartphone from Apple. In Germany, this is 50% and in Cyprus this is 62,5%. Other popular brands are Samsung and Huawei. Of the people who own a tablet, the majority has a tablet from Apple (74,2 % in Belgium, 50% in Germany, 90% in Cyprus).

News consumption

In the Belgian pilot, 96,4 % says to consume news on a daily basis. By news we mean national, international, regional/local news and other actuality that can be consulted via any possible platform (radio, TV, newspaper or online). In the German pilot, this is 82,4% and in the pilot in Cyprus this is 90%. The people who indicated to consume news daily, where asked how many times they check the news every day. The next graph shows that almost everyone checks the news multiple times as day.

Devices and sources for news consumption

Daily news consumption (in %)

	More than 10 times a day	Between 6 and 10 times a day	Between 2 and 5 times a day	Once a day
Belgium (n=54)	11,1	25,9	61,1	1,9
Germany (n=14)	14,3	21,4	57,1	7,1
Cyprus (n=18)	38,9	11,1	44,4	5,6

■ More than 10 times a day ■ Between 6 and 10 times a day ■ Between 2 and 5 times a day ■ Once a day
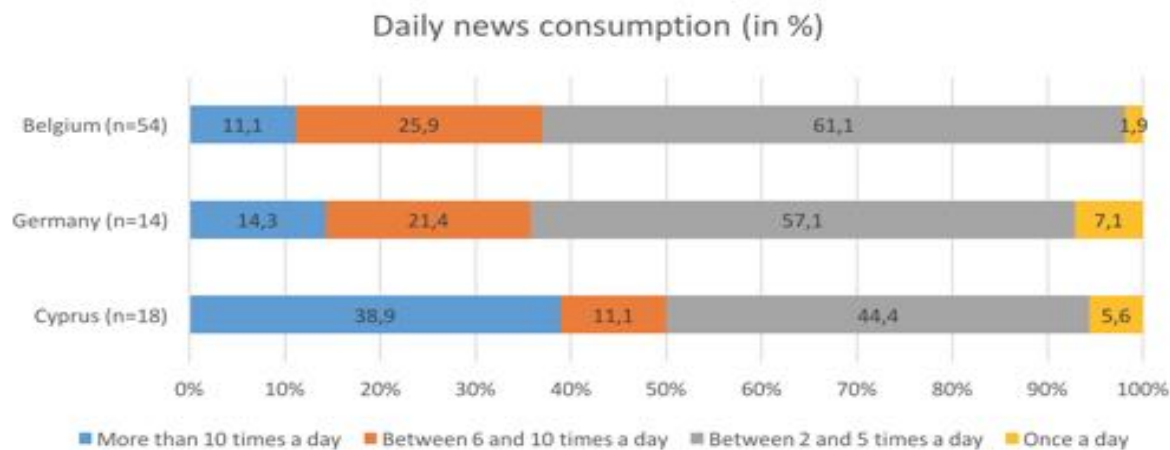
The next 3 graphs show the devices and news sources use for news consumption for respectively Belgium, Germany and Cyprus. In Belgium and Germany, the smartphone, the computer and the radio are used most often on a daily basis to consult news. In Cyprus, this is the smartphone, the computer and the television. The smartwatch, the smart TV and the tablet are least often used in all pilot countries.

Devices for news consumption in Belgium (in %)

	Never	Rarely	Monthly	Weekly	Daily
Radio	1,8	7,1	5,4	28,6	57,1
Smartwatch	91,1			5,4	1,8 1,8
Smartphone	7,1				92,9
Tablet	41,1	17,9	7,1	8,9	25
Computer	8,9		12,5		78,6
Smart TV	51,8	21,4	1,8	12,5	12,5
Television	7,1	17,9	5,4	33,9	35,7
Printed magazine	7,1	51,8	8,9	30,4	1,8
Printed newspaper	7,1	30,4	8,9	39,3	14,3

■ Never ■ Rarely ■ Monthly ■ Weekly ■ Daily

Devices for news consumption in Germany (in %)

	Never	Rarely	Monthly	Weekly	Daily
Radio	17,6	11,8	11,8	11,8	47,1
Smartwatch	94,1				5,9
Smartphone					100
Tablet	29,4	29,4	5,9	5,9	29,4
Computer	5,9			17,6	76,5
Smart TV	23,5	17,6		35,3	23,5
Television	17,6	11,8	5,9	35,3	29,4
Printed magazine	5,9	47,1		23,5	23,5
Printed newspaper	17,6	41,2	11,8	17,6	11,8

Devices for news consumption in Cyprus (in %)

	Never	Rarely	Monthly	Weekly	Daily
Radio	20	20		15	45
Smartwatch	85			5	10
Smartphone	5			10	85
Tablet	50	10	10	15	15
Computer	10				90
Smart TV	45	15		10	30
Television	10			20	70
Printed magazine	15	25	15	25	20
Printed newspaper	10	30	15	30	15

The participants were also asked to rank these news sources and say which ones they prefer to consult news (from 1 until 9, with 1 = most preferred and 9 = less preferred). The figures below are consistent with the figures above and shows that the most preferred sources to consult news are the smartphone, the computer and the radio for Belgium and Germany, and the smartphone, the computer and the television for Cyprus.

Preferred way to follow the news: Belgium (mean rank)

Preferred way to follow the news: **Belgium** (Ranked 1)

Preferred way to follow the news: Germany (mean rank)

Preferred way to follow the news: Germany (Ranked 1)

Preferred way to follow the news: Cyprus (mean rank)

Preferred way to follow the news: **Cyprus** (Ranked 1)
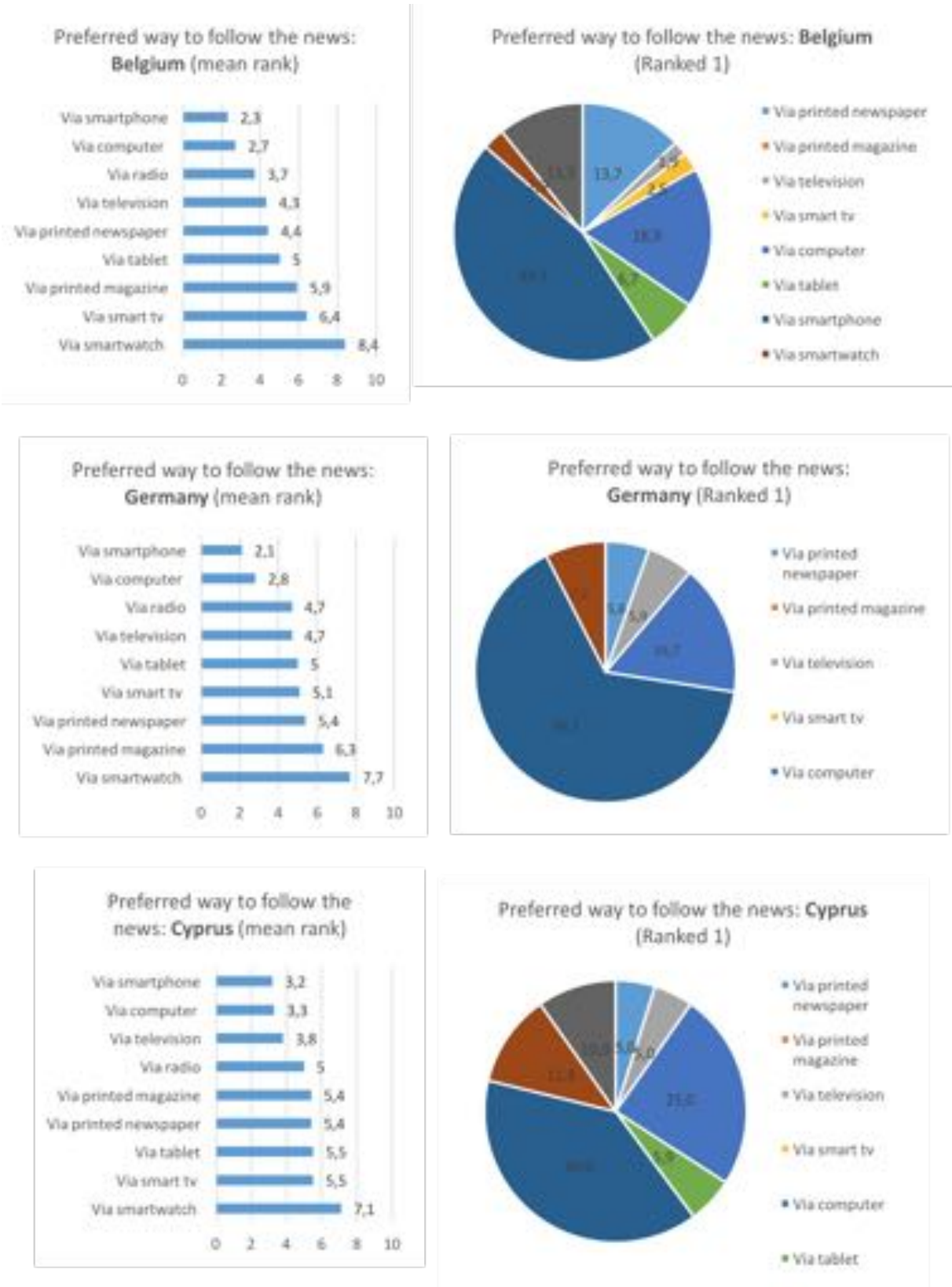
The respondents that indicated to sometimes read a printed newspaper were asked if they bought or read a newspaper in the last week and how they obtain a printed newspapers.
In Belgium, 25% of this sample says to not have bought or read a printed newspaper in the past week. In Germany and Cyprus, this number is significantly higher with respectively 44,4%
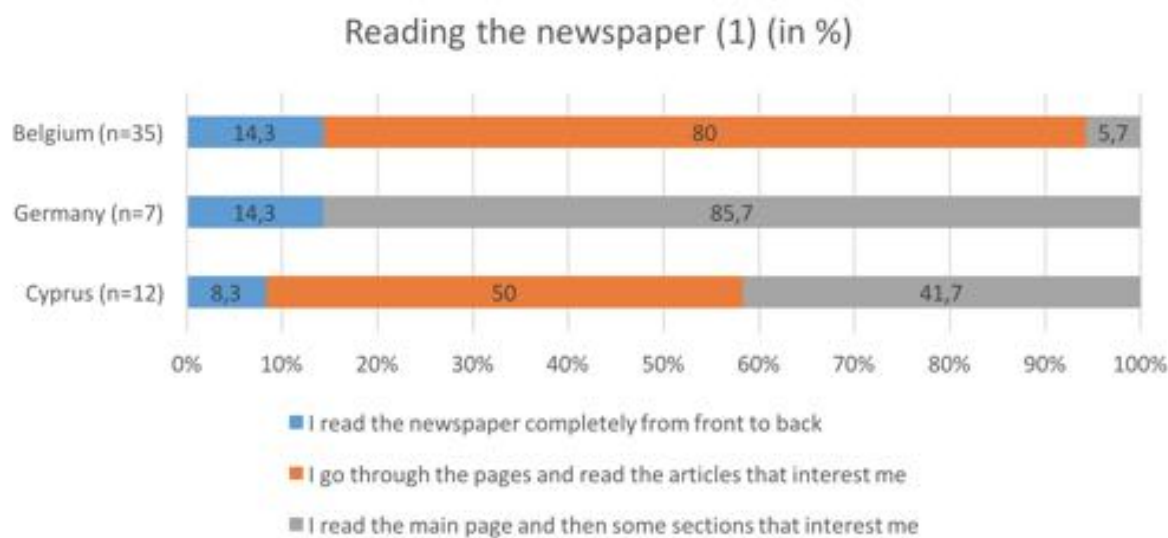
and 45% that indicated to not have bought or read a newspaper in the past week. The table below shows how the remaining participants obtain their printed newspaper (in %).
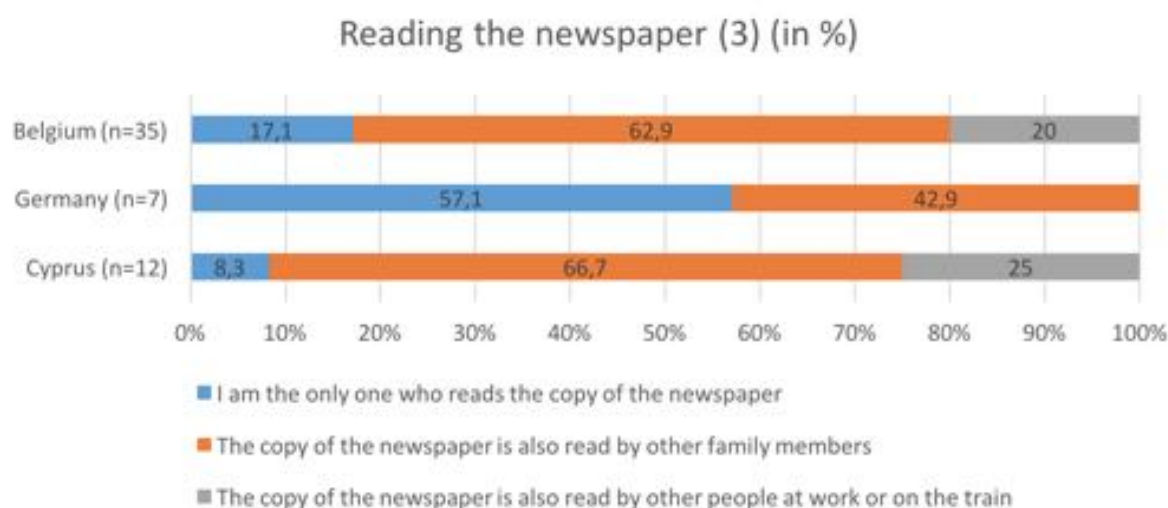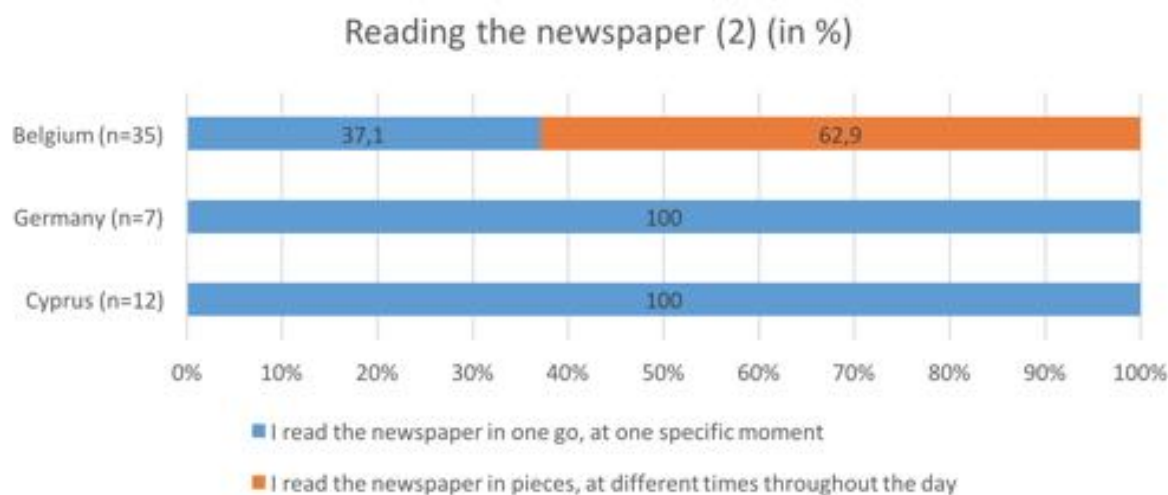
	Belgium (n=52)	Germany (n=15)	Cyprus (n=18)
Via a kiosk of shop	10,7%	5,6%	25%
Delivered at home	39,3%	16,7%	5%
Other source	17,9%	11,1%	15%
I did not buy a paper newspaper in the past week	25%	44,4%	45%

Other sources are mostly newspapers read at work or distributed in public transport (Metro).

The respondents who indicated to read at least monthly a printed newspaper (Belgium: N= 35, Germany: N= 7, Cyprus: N= 12), were asked how they usually read their newspaper.

Reading the newspaper (1) (in %)

Belgium (n=35): 14,3 | 80 | 5,7
Germany (n=7): 14,3 | 85,7
Cyprus (n=12): 8,3 | 50 | 41,7

- I read the newspaper completely from front to back
- I go through the pages and read the articles that interest me
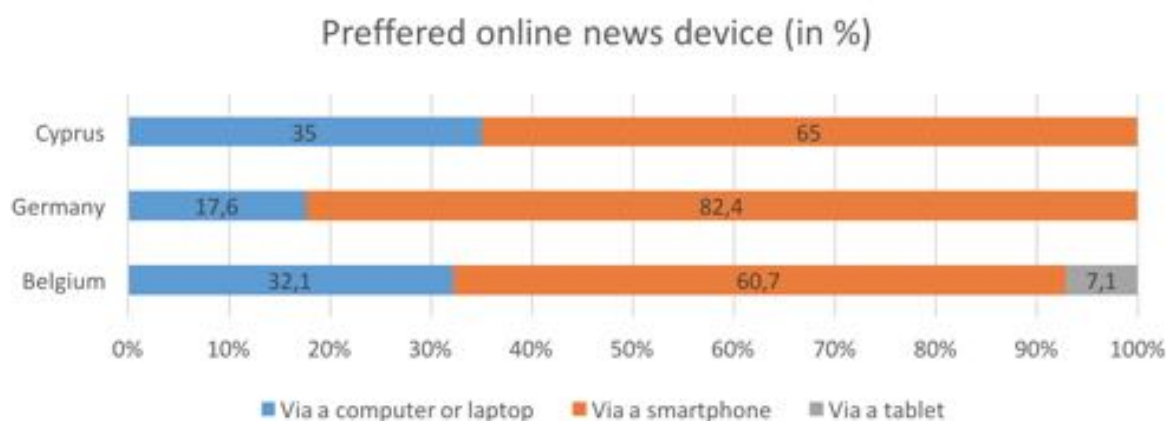- I read the main page and then some sections that interest me

In Germany and Cyprus, all of these participants say to read the newspaper in one time. This is relevant for the CPN use case, as this can mean that once a day a complete general and personalized news overview needs to be offered. In Belgium this is only 37,1%. 62,9% of the Belgian participants reads the newspaper in smaller parts, on different moments throughout the day.
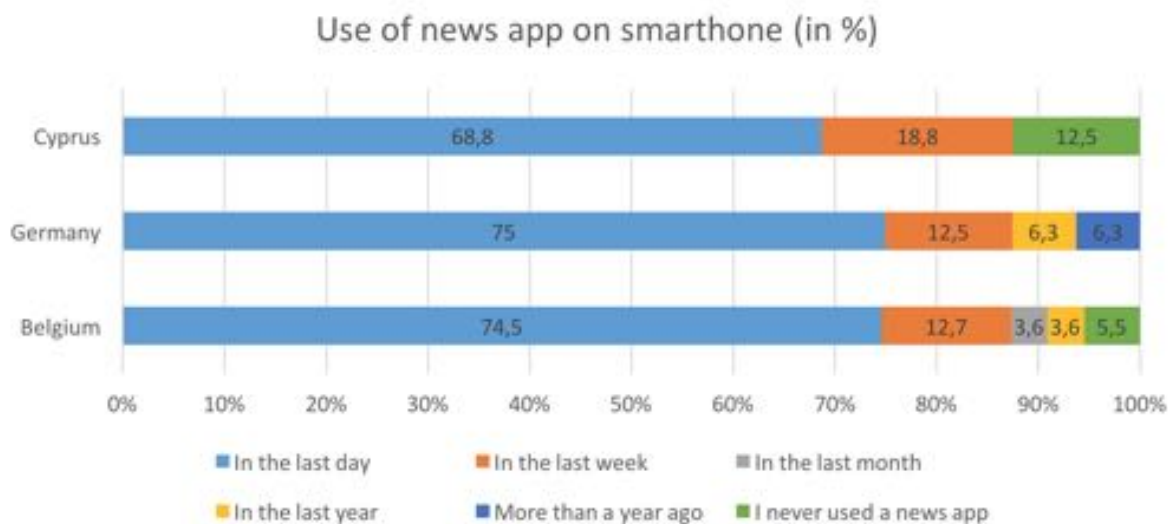
Reading the newspaper (2) (in %)

Country	I read the newspaper in one go	I read the newspaper in pieces
Belgium (n=35)	37,1	62,9
Germany (n=7)	100	
Cyprus (n=12)	100	

■ I read the newspaper in one go, at one specific moment

■ I read the newspaper in pieces, at different times throughout the day

Reading the newspaper (3) (in %)

Country	Only one who reads	Also read by family	Also read at work/train
Belgium (n=35)	17,1	62,9	20
Germany (n=7)	57,1	42,9	
Cyprus (n=12)	8,3	66,7	25

■ I am the only one who reads the copy of the newspaper

■ The copy of the newspaper is also read by other family members

■ The copy of the newspaper is also read by other people at work or on the train

We also asked the respondents whether they paid for online news or had access to a paying online news service in the past year. This can be a digital subscription, a combined digital/printed subscription, or a payment for an article or app or online edition.In Belgium, this was 64,3%, in Germany 55,6% and in Cyprus 20%. For Germany and Cyprus, mostly international newspapers were listed (The New York times, Washington Post).
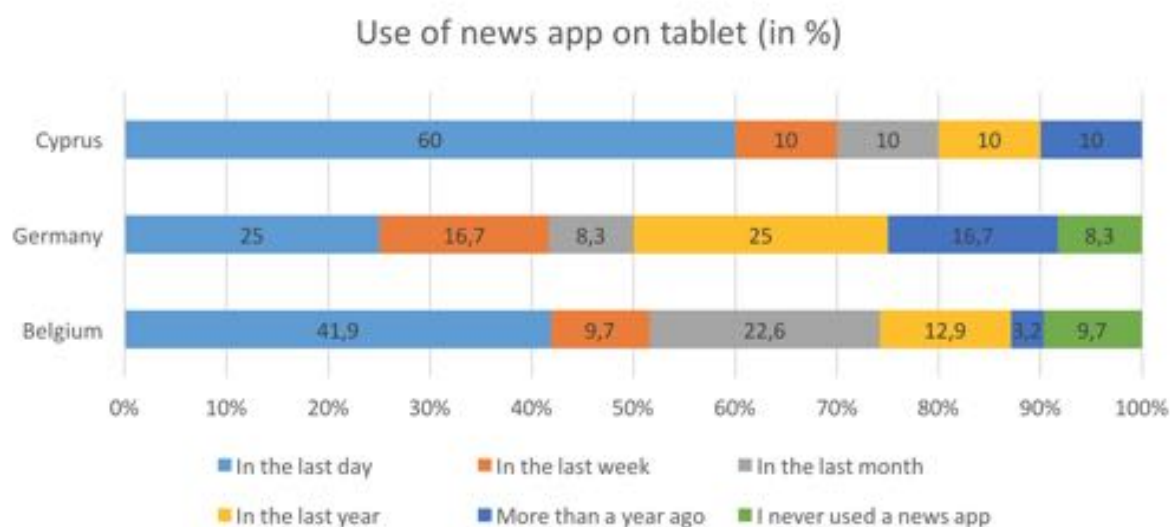
Online news consumption
The participants were asked to indicate their preferred devices for online news consumption: the smartphone, the computer or the tablet. The smartphone was most popular in all 3 pilot countries. This is consistent with the findings from previous questions in the survey.
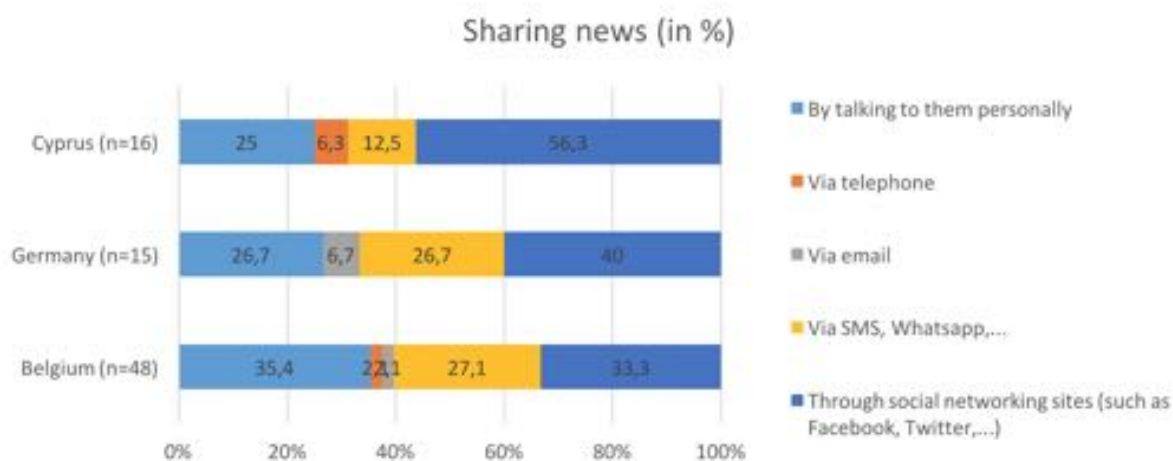
Preffered online news device (in %)

Legend: ■ Via a computer or laptop ■ Via a smartphone ■ Via a tablet

Country	Via a computer or laptop	Via a smartphone	Via a tablet
Cyprus	35	65	
Germany	17,6	82,4	
Belgium	32,1	60,7	7,1

The respondents were asked how often they are using a news app via their smartphone and tablet. The majority uses a news app on a smartphone on a daily basis. Only 5,45% of the respondents in Belgium and 12,5% in Cyprus never used a news app before. This shows that it is of very high importance that the CPN recommender can be easily used via a mobile device. Compared to how often participants are using a news app via their tablet, differences appear. In Cyprus the majority (60%) also uses a news app on the tablet on a daily basis, but in Belgium and Germany this is respectively 41,9% and 25%.

Use of news app on smarthone (in %)

Legend: ■ In the last day ■ In the last week ■ In the last month ■ In the last year ■ More than a year ago ■ I never used a news app

Country	In the last day	In the last week	In the last month	In the last year	More than a year ago	I never used a news app
Cyprus	68,8	18,8				12,5
Germany	75	12,5		6,3	6,3	
Belgium	74,5	12,7	3,6	3,6		5,5

Use of news app on tablet (in %)

Legend:
■ In the last day ■ In the last week ■ In the last month
■ In the last year ■ More than a year ago ■ I never used a news app

In Belgium, 85,7% (N=48) says to sometimes share news with others. In Germany and Cyprus, this is respectively 88,2%(N=15) and 80%(N=16). The people who said to sometimes share news with others, were asked how they do this. Social media sharing is common in every pilot country. It thus important to also incorporate this in the CPN recommender.

Sharing news (in %)

Legend:
■ By talking to them personally
■ Via telephone
■ Via email
■ Via SMS, Whatsapp,....
■ Through social networking sites (such as Facebook, Twitter,...)

Interest in news
In general, 87,5% in Belgium says to be very to extremely interested in news, 82,4% in Germany and 75% in Cyprus.

General interest in news (in %)
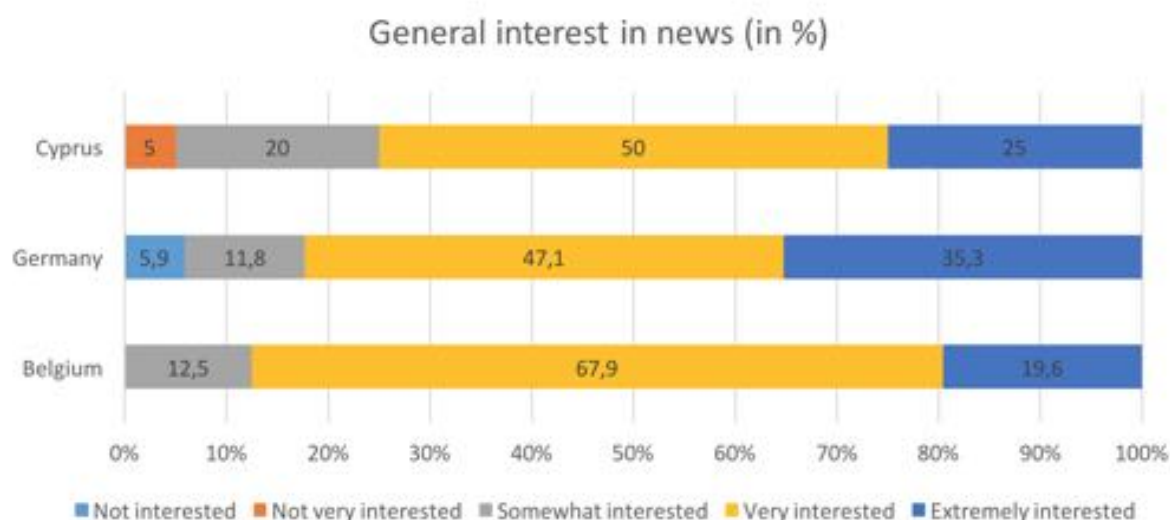
The respondents were asked what their main reason was to follow the news. They were asked to rank the following 4 reasons in terms of importance:

Mean reason to follow the news (mean rank)
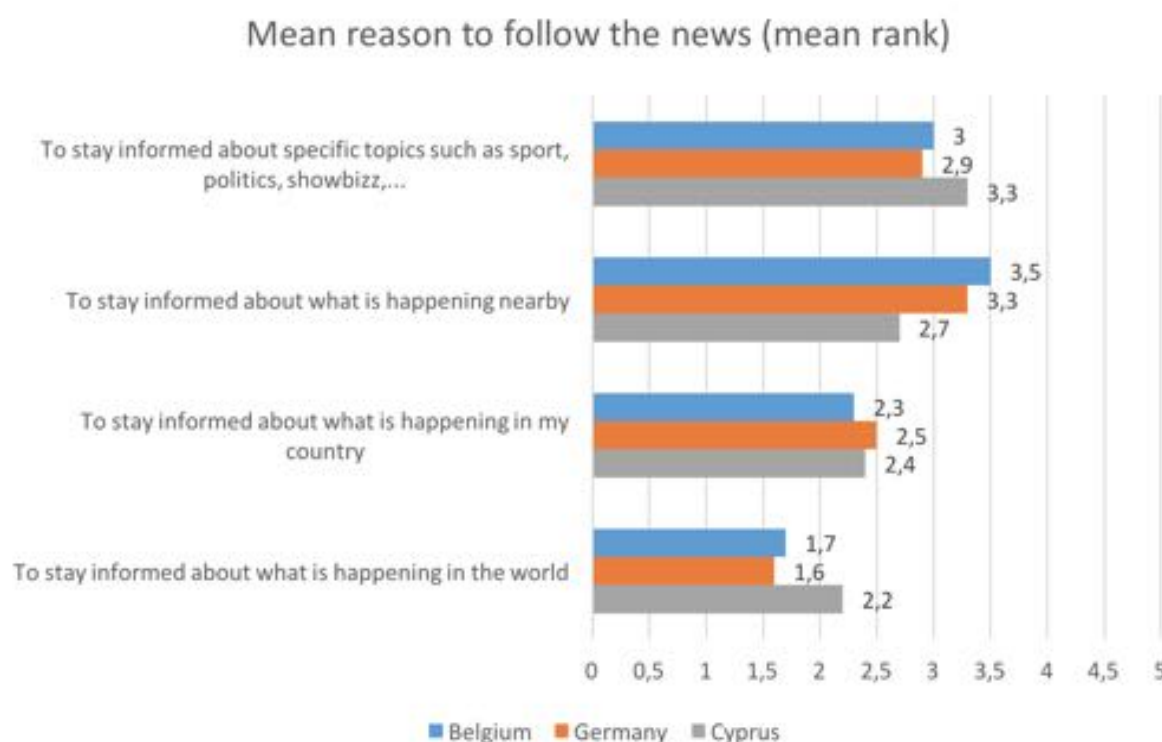
In all 3 pilot countries 'To stay informed about what's happening in the world' was ranked the most as the number one reason (60,7% in Belgium, 75,2% in Germany and 35% in Cyprus). It is thus important within the CPN personalized news application to also include latest news on top of personalized news.

The next graphs show how the respondents rate their news consumption in terms of its diversity, objectivity, correctness and completeness. They were asked to rate their news consumption on each of these factors on a scale from 1 (extremely) to 5 (not at all). This is important for CPN, as one of our main aims is to have better informed citizens. This measurement will therefore also be important in the different pilot phases of CPN.

Rating **diversity** news consumption (in %)

Rating **Objectivity** news consumption (in %)

Rating **Correctness** news consumtion (in %)

Rating **completeness** news consumption (in %)
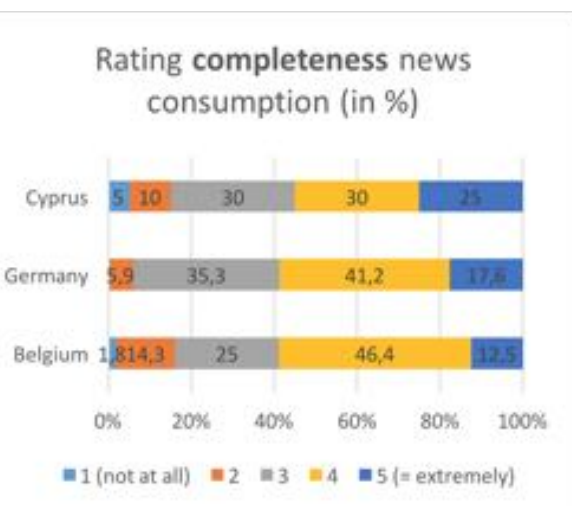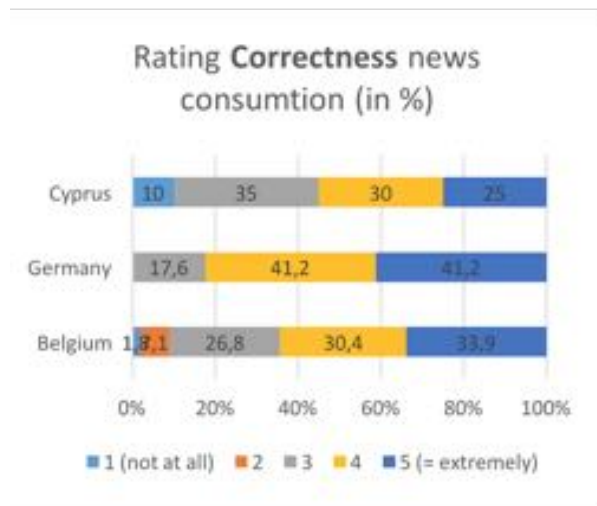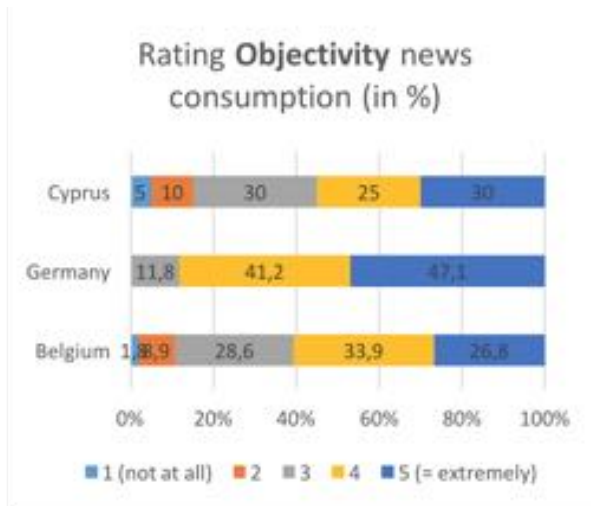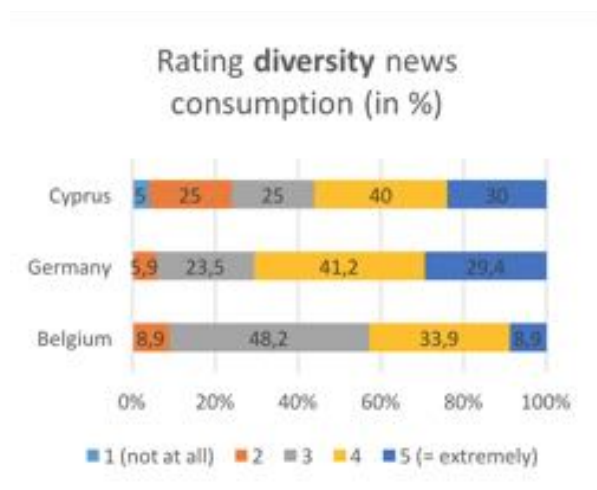
50% of the respondents in Belgium, 83,3% of the respondents in Germany and 50% in Cyprus says to consume foreign language news.

Informedness and diversity
The respondents were asked to rate on a scale from 1 to 10 how informed they feel when they read the news online (1: Not informed at all, 10: fully informed). In general, the respondents feel quite informed. In Belgium 60,7% gives a score of 7 or higher, in Germany this is 70,5% and in Cyprus this number goes up to 75%.

How informed do you feel when you read news online? (in %) (1)

Not informed at all

Belgium — Germany — Cyprus

How informed do you feel when you read news online? (in %) (1)

■ 0-3 (Not informed at all) ■ 4-6 ■ 7-10 (Fully informed)
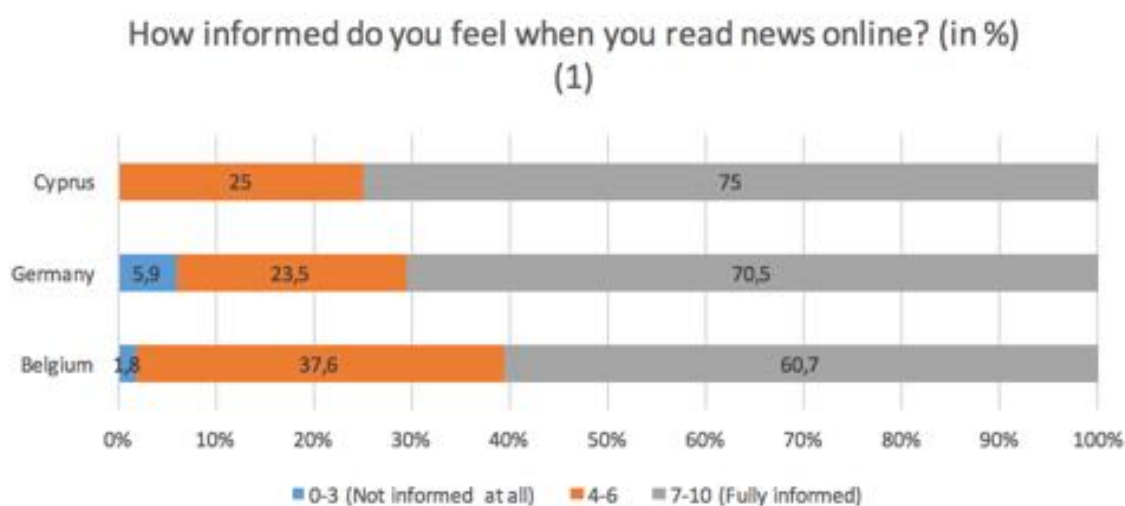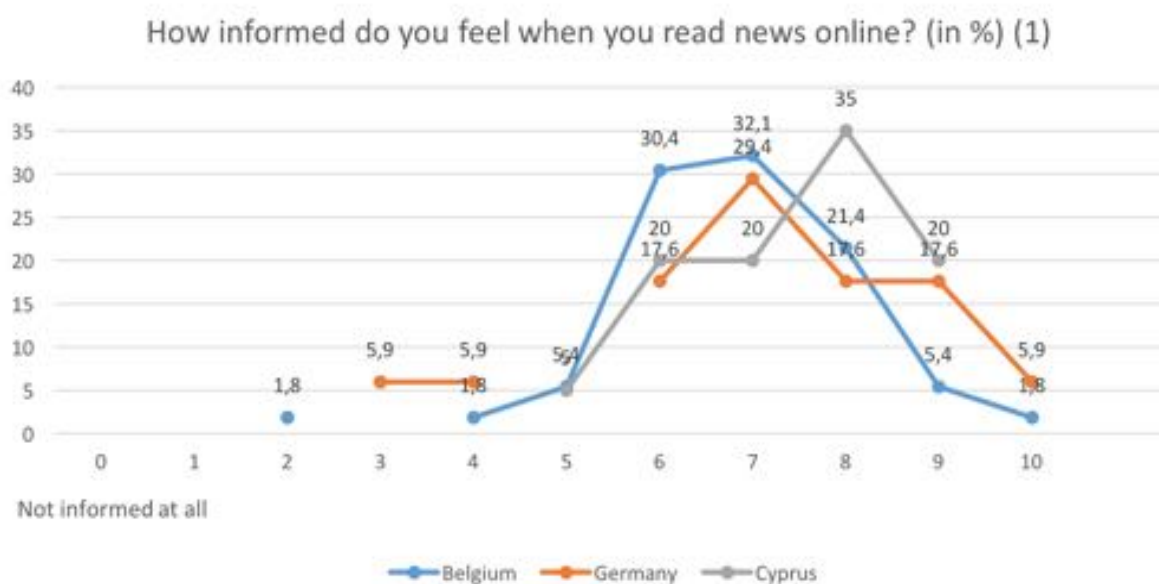
The next graphs show how the respondents rated 4 statements on their news consumption.
- In general, the respondents agree that it is important to follow the news. In Belgium, 92,8% agrees ('agree' + 'completely agree') with this, in Germany 88,3% and in Cyprus 75%.
- With regards to the statement 'I just want to follow the news about the topics that interest me', meanings are more varied. In Cyprus, 80% agrees ('agree' + 'completely agree') with this statement. In Germany a bit more than half of the sample agrees (53%) and in Belgium this is only 39,3%.
- In all three pilot countries, the respondents are quite worried about fake news on society. In Belgium, 82,1 % agrees to be worried, in Germany 94,1% and in Cyprus 85%.
- The respondents are much less worried about the impact of fake news on themselves than on society. In Belgium 48,2% agrees worried about the impact of fake news on themselves, in Germany 41,1% and in Cyprus 60%.
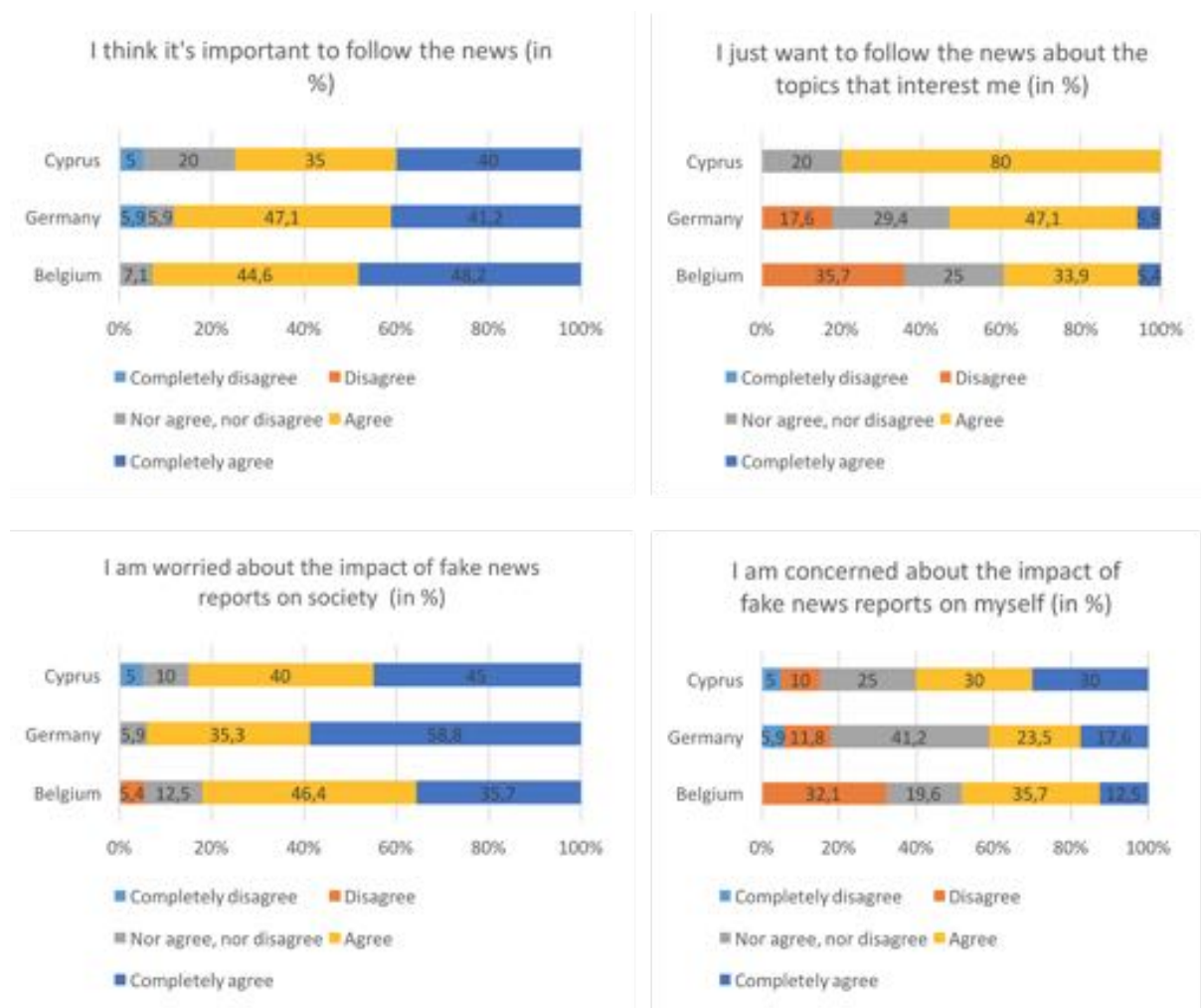
I think it's important to follow the news (in %)

I just want to follow the news about the topics that interest me (in %)

I am worried about the impact of fake news reports on society (in %)

I am concerned about the impact of fake news reports on myself (in %)
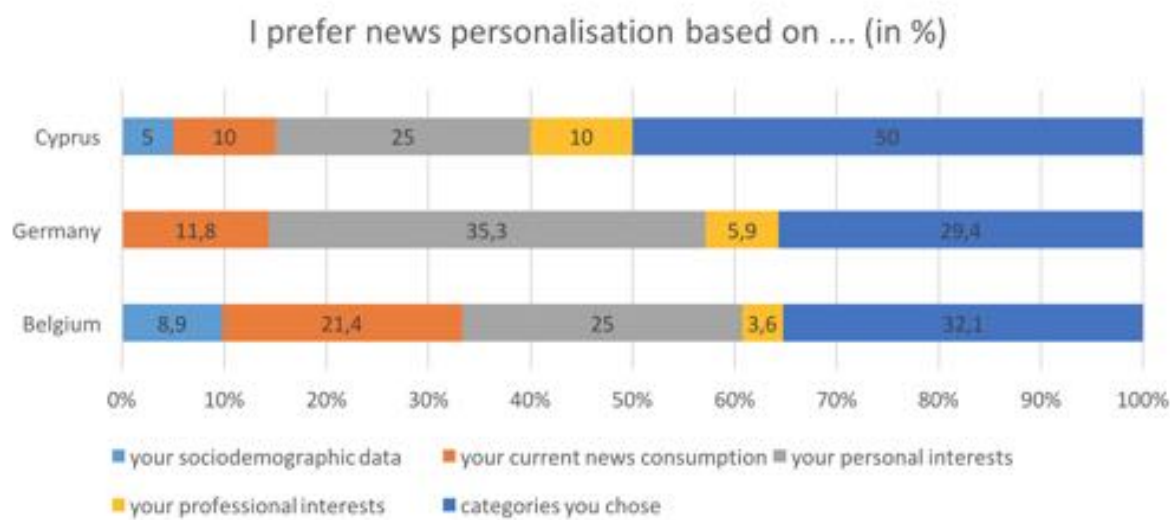
Personalisation

In the last part of the questionnaire, we asked 2 questions on the topic of personalisation. Personalisation was defined like this; 'With news personalisation, news relevant for you is offered.' First, the respondents were asked to rate personalisation on a scale from 1 (very unnecessary) to 10 (necessary). In Belgium, 46,4% gives a rating of 7 or higher, meaning that they thing personalisation is quite to very important. In Cyprus this is 50%. In Germany this number is lower, with only 35,3% giving a score of 7 or higher. Over half of the sample in Germany (58,8%), gives a score between 4 and 6.
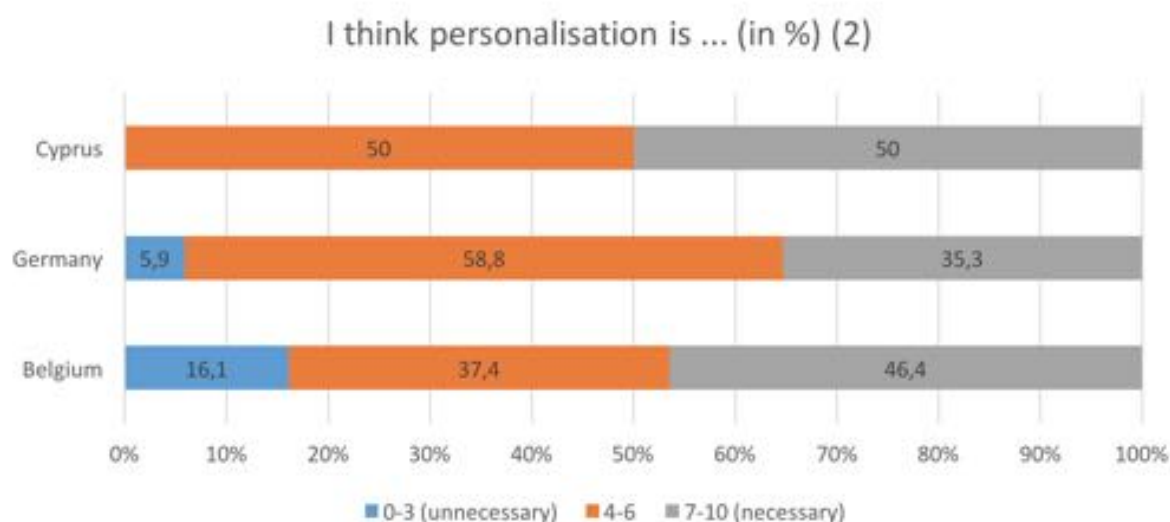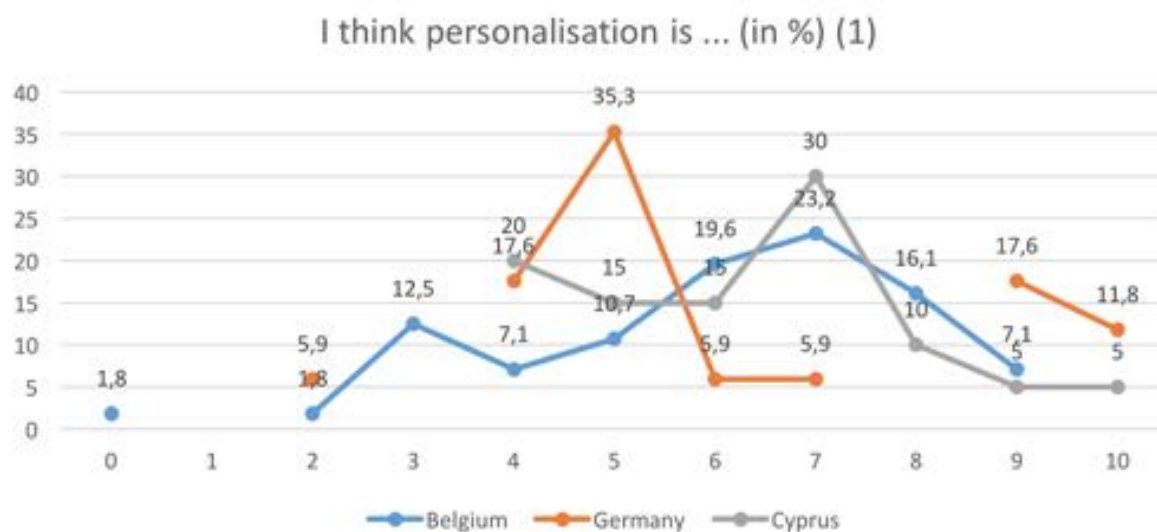
I think personalisation is ... (in %) (1)

I think personalisation is ... (in %) (2)

In Belgium and Cyprus, the highest share of respondents prefer news personalisation based on self-picked categories (respectively 50% and 32,1%). In Germany, the highest share of respondents (35,3%) prefers personalisation based on personal interests. This is the second most popular choice for Belgium and Cyprus, with for both countries 25% of the respondents who chose this category.

I prefer news personalisation based on ... (in %)

Country	your sociodemographic data	your current news consumption	your personal interests	your professional interests	categories you chose
Cyprus	5	10	25	10	50
Germany		11,8	35,3	5,9	29,4
Belgium	8,9	21,4	25	3,6	32,1

■ your sociodemographic data   ■ your current news consumption   ■ your personal interests

■ your professional interests   ■ categories you chose

5.2 POST TEST SURVEY

Use of the CPN website
In Belgium, 38 participants filled in the zero measurement survey, in Germany 9 respondents and in Cyprus 12 respondents.

In Belgium, 71,8% of the respondents used the CPN website at least once a day during the test period. In Germany, this is 77,7% and in Cyprus 58,3%. In Cyprus, all daily users indicated to use the website only once a day, whereas in Belgium and Germany about one third of the sample said they use the website multiple times a day.

Daily use CPN website (in %)
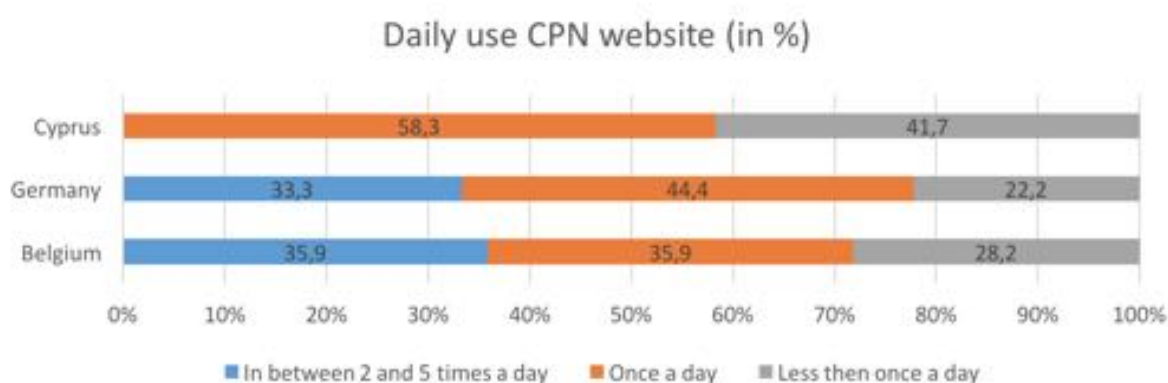
In Cyprus and Germany, the majority mostly consulted the CPN website at work. In Belgium, almost half of the sample said the location differed depending on when they had time. One person (2,6%) said to most frequently use the website while being on the train.

Most frequent location to use CPN website (in %)
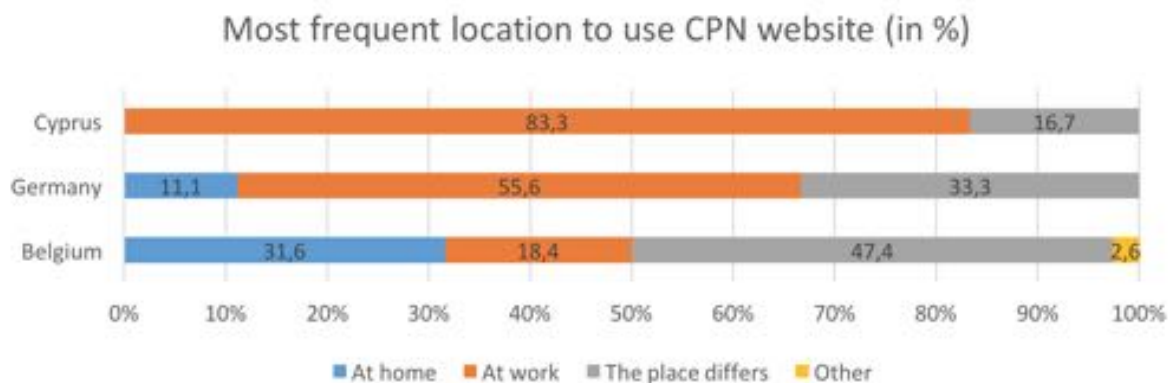
The following graph shows the average duration of a visit to the CPN website (as estimated by the respondents themselves).

Duration CPN website visits (in %)

Cyprus	33,3	41,7	25
Germany	11,1	11,1	33,3	44,4
Belgium	7,9	10,5	28,9	50	2,6

■ Longer than 40 min. ■ In between 31 and 40 min. ■ In between 21 and 30 min.
■ In between 11 and 20 min. ■ In between 5 and 10 min. ■ Less than 5 min
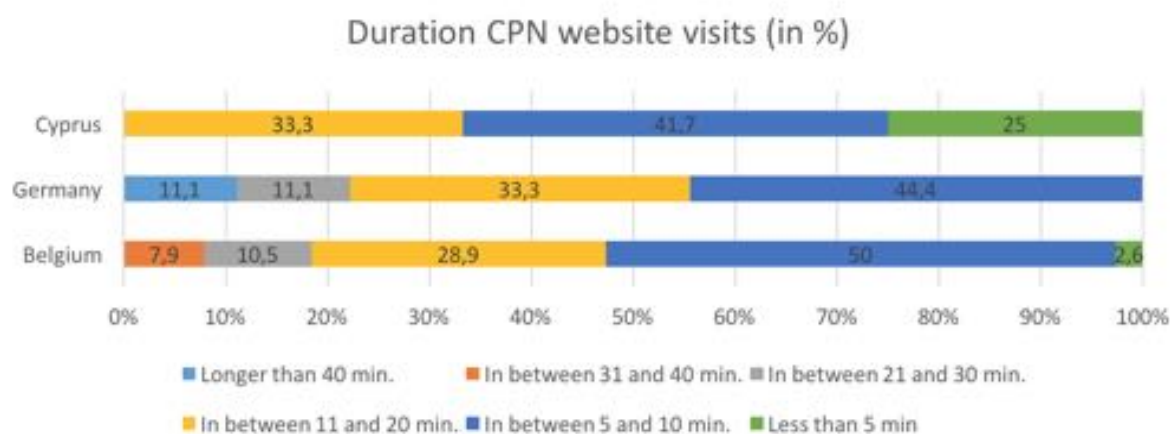
It was possible to share news articles on social media (Facebook, Twitter, Linkedin and Google+) via the CPN website. Surprisingly, in Germany all participant indicated they didn't know this was possible.

Social media shares (in %)

Cyprus	66,7	33,3
Germany	100	
Belgium	2,6	18,4	78,9

■ I shared multiple articles

■ I didn't share articles, but I knew this was possible

■ I didn't share articles and I didn't know this was possible
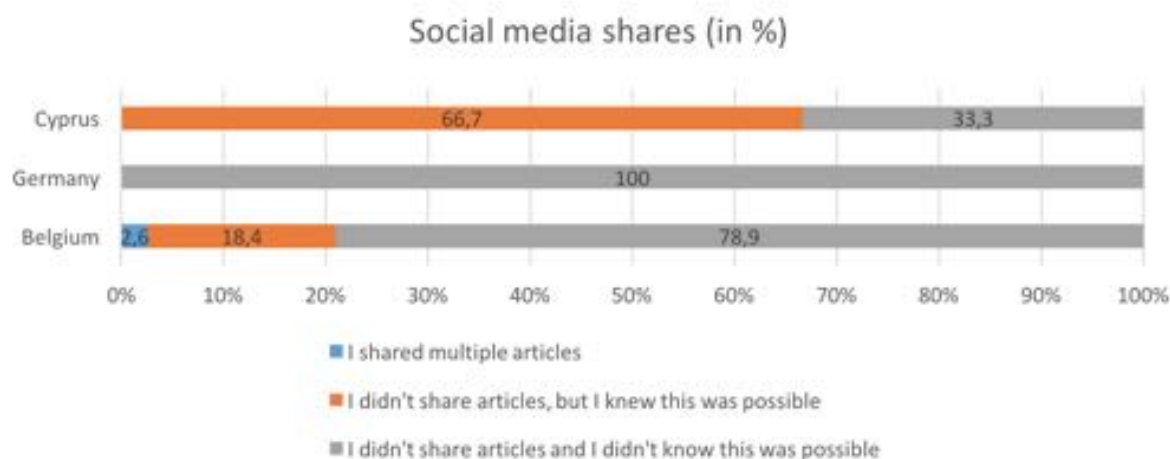
Evaluation CPN website

First, the respondents were asked to indicate if the website worked properly during the test In Belgium, 65,8% said yes, in Germany 55,6% said yes and in Cyprus 91,7% said yes. The respondents who replied 'No' were asked what went wrong (open answer). The following issues were mentioned:

- *Website not accessible on mobile device*
- *Rating articles not always possible*
- *Login issues*
- *Not able to play videos*
- *Same articles appear in multiple feeds*
- *Articles 'jumped' when clicking 'not interested'*
- *Lay-out articles:*
  - *Icons under articles too big*
  - *Quotation marks too big*
  - *Weird symbols in articles*
  - *Subheadings and captions were intermingled with body text*

In general, there was an expectation before the start of the test that the CPN recommender would have been mobile accessible. This was considered as a big frustration. The fact that this wasn't possible, might have negatively impacted the quality ratings of the recommender. (And

resulted in a higher likelihood to drop out of the Pilot or not being able to interact with the platform over the whole 10 days.)

The respondents were asked to indicate on a scale from 1 to 5 how they experienced the use of the CPN website. In Belgium, 34,2% had a good to very good experience. In Germany this is 44,4% and in Cyprus this is 50%. In Cyprus, nobody indicated to have had a bad experience.

How did you experience the overall use of the CPN website? (in %)
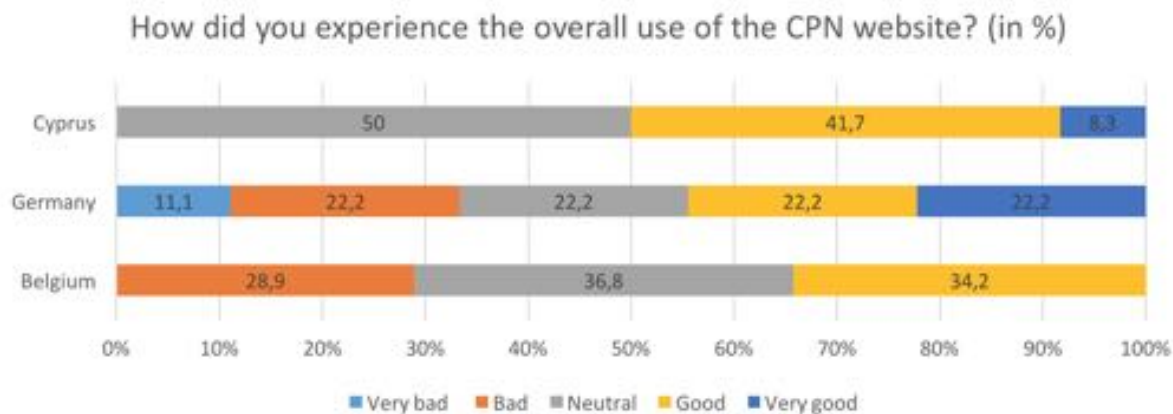
Next, the respondents were asked to indicate on a scale from 1 (totally disagree) to 5 (totally agree) whether they thought the website was useful, fun, easy to use, informative and trustworthy.

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Belgium (in %)

	1	2	3	4	5
Trustworthy		7,9%	26,3%	52,6%	13,2%
Informative	5,3%	10,5%	18,4%	42,1%	21,7%
Easy to use	7,9%	26,3%	21,1%	31,6%	13,2%
Fun	5,3%	28,9%	34,2%	28,9%	2,6%
Useful	5,3%	18,4%	15,8%	44,7%	15,8%

Germany (in %)

	1	2	3	4	5
Trustworthy	11,1%		44,4%	33,3%	11,1%
Informative			22,2%	55,6%	22,2%
Easy to use	11,1%	11,1%	22,2%	33,3%	22,2%
Fun		33,3%	33,3%	33,3%	0,0%
Useful	11,1%	22,2%	22,2%	22,2%	22,2%

Cyprus (in %)

	1	2	3	4	5
Trustworthy	8,3%	16,7%		66,7%	8,3%
Informative	8,3%	16,7%		58,3%	16,7%
Ease of use			33,3%	50,0%	16,7%
Fun		33,3%	58,3%	8,3%	0,0%
Useful	8,3%	25,0%		50,0%	16,7%

The next graph gives a more clear indication of the results. Mean scores were calculated for the 5 different factors and plotted on a graph for the 3 pilot countries. The mean scores show a similar trend for every pilot country. 'Fun' got the lowest score, and 'informative' and 'trustworthy' the highest scores.

	Belgium	Germany	Cyprus
Useful	3,47	3,75	3,22
Fun	2,95	2,75	3
Easy to use	3,16	3,83	3,44
Informative	3,68	3,83	4
Trustworthy	3,71	3,75	3,44

How would you describe the CPN website? (mean scores)
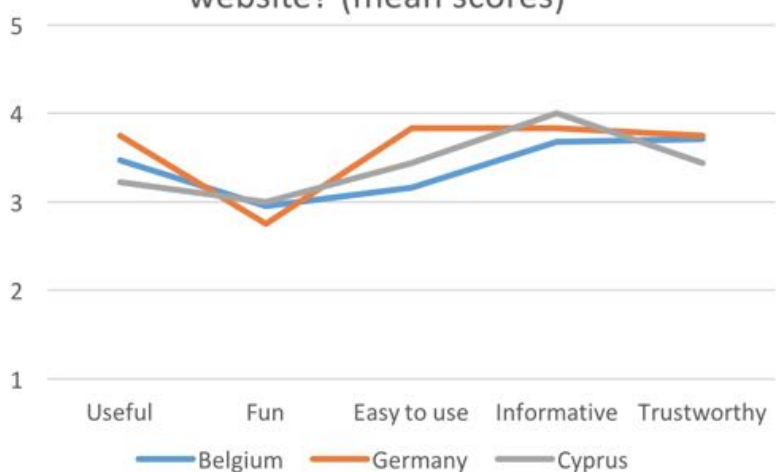
The next graph shows how the respondents evaluated the diversity of the articles on the CPN website. In Belgium, 63,2% thought the articles were a little to very varied. In Germany, this is 77,8% and in Cyprus 58,4%.

How do you evaluate the diversity of the articles on the CPN website? (in %)
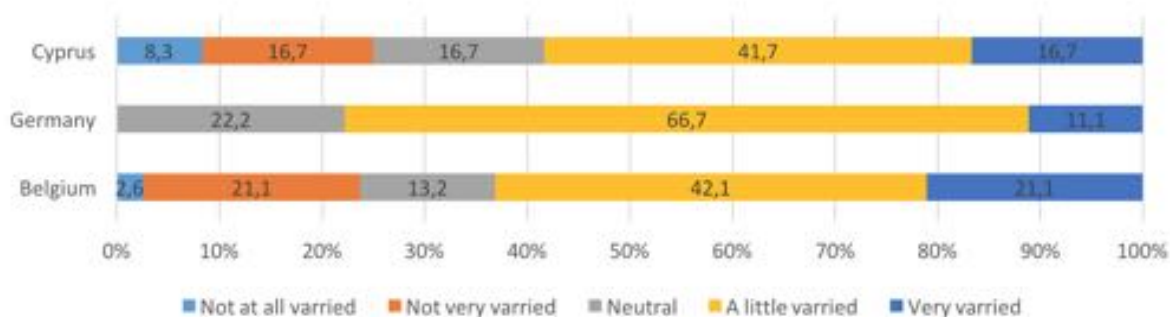
The personalized stream was the most read stream in all three pilot countries. However, the differences between the countries were quite big. Whereas in Germany two thirds of the sample chose the personalised stream, in Cyprus this is only one third of the sample. The main argument was the fear of missing out important news. Most of the users were not feeling fully informed with reading only the personalised stream.

Most frequently read stream (in %)

	'Personalised' stream	'Most popular' stream	'Latest news' stream	I don't know
Cyprus	33,3	25	16,7	25
Germany	66,7	11,1	11,1	11,1
Belgium	52,6	10,5	31,6	5,3
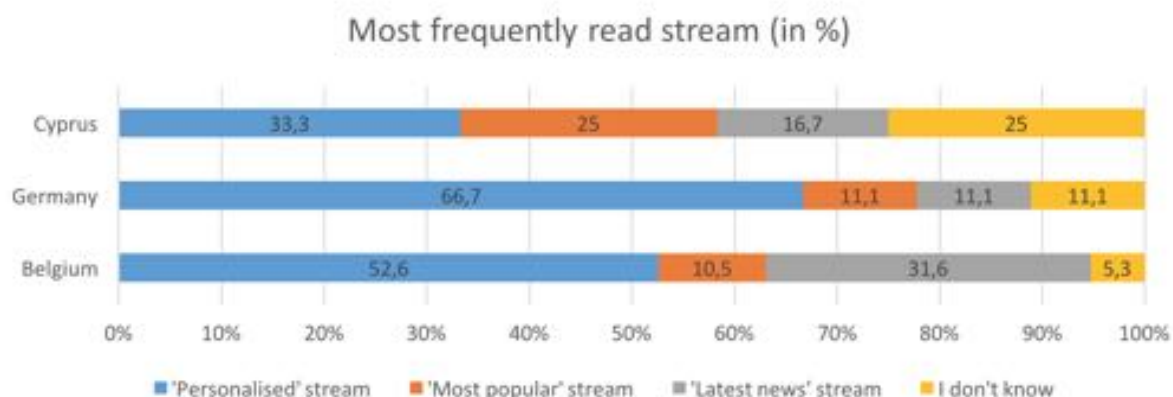
Next, the participants indicated how satisfied they were with the relevance of the articles that appeared in every stream on a scale from 1 (not at all satisfied) to 5 (very satisfied).
In total, 55% of all participants (from all pilot countries) says to be a little to very satisfied with the relevance of the articles in the personalized stream. 43,6% is be a little to very satisfied with the relevance of the articles in most popular stream and 58,3% is a little to very satisfied with the articles in the latest news stream. The latest news stream is thus best evaluated.

Most popular stream (in %)

	Not at all satisfied	Not very satisfied	Neutral	A little satisfied	Very satisfied
Total	0,0	8,2	49,8	41,0	2,6
Cyprus		8,3	58,3	33,3	
Germany		11,1	33,3	55,6	
Belgium		5,3	57,9	34,2	2,6

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Personalised stream (in %)

	Not at all satisfied	Not very satisfied	Neutral	A little satisfied	Very satisfied
Total	9,5	15,4	22,7	48,1	7,3
Cyprus		8,3	33,3	50	8,3
Germany	11,1	22,2	11,1	44,4	11,1
Belgium	7,9	15,8	23,7	50	2,6

■ Not at all satisfied ■ Not very satisfied ■ Neutral
■ A little satisfied ■ Very satisfied

Latest news stream (in %)

		Neutral	A little satisfied	Very satisfied
Total	5,5	38,0	45,7	12,6
Cyprus	8,3	33,3	50	8,3
Germany		33,3	55,6	11,1
Belgium	2,6	47,4	31,6	18,4

■ Not at all satisfied ■ Not very satisfied ■ Neutral
■ A little satisfied ■ Very satisfied
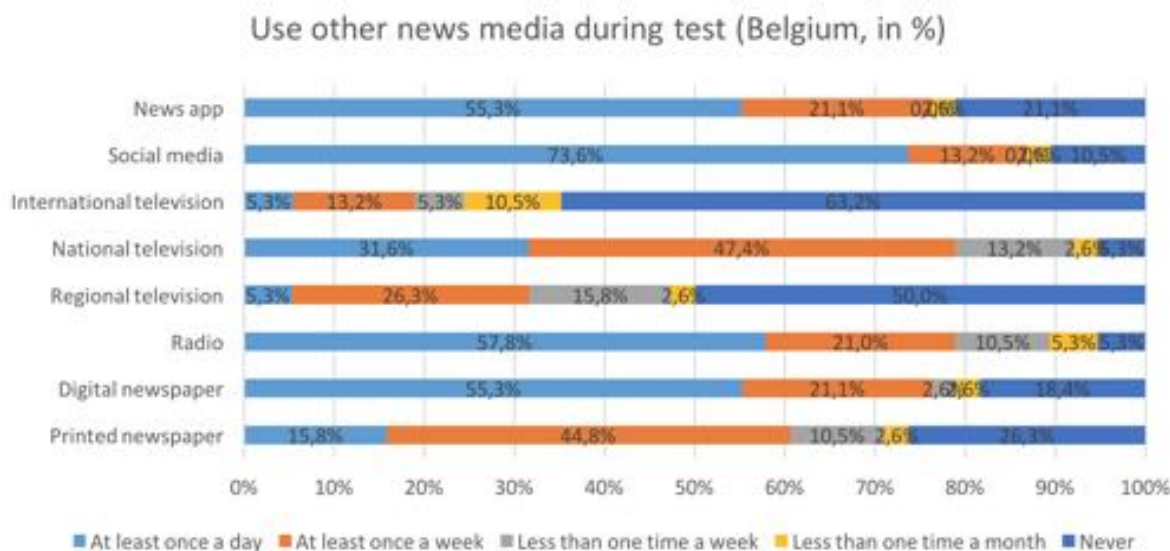
For Belgium, an extra statistical analysis was done for this question to compare the responses for the intervention and control group. A Mann-Whitney revealed that **the two groups give a similar satisfaction rating to the three streams** (no statistical difference). The detailed output of the statistical analysis can be found in Appendix H. A reason for this could be that in Cyprus there were media professionals amongst the participants who have more expertise and are more critical towards media innovations.

The respondents were asked whether they would still want to use the CPN website in the future. In Belgium 34,2% said yes ('I think so' + 'definitely yes') and in Germany 44,4% said yes. In Cyprus, the results show a different picture: 91,7% says they would not use the CPN website in the future anymore ('definitely not' + 'I don't think so'). The 'negative' answer to this question is mainly to blame to the fact the website was not accessible via a mobile device. Mobile news consumption is an essential part of news consumption in general.

Would you still want to use the CPN website in the future? (in %)
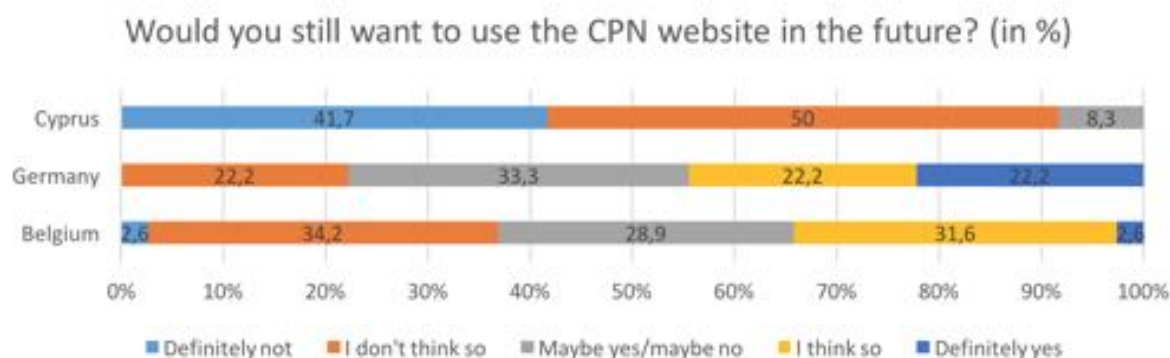
Informedness, personalisation and diversity of news consumption

This pre-measurement survey asked the respondents again to rate themselves in terms of 'informedness', 'personalisation' and 'diversity of news consumption'. The same questions were asked again in the post-test survey.

Informedness

The respondents were asked to rate on a scale from 1 to 10 how informed they felt after reading the news on the CPN website (1: Not informed at all, 10: fully informed).

How informed did you feel after reading the news on the CPN website? (in %)

How informed did you feel after reading the news on the CPN website? (in %)
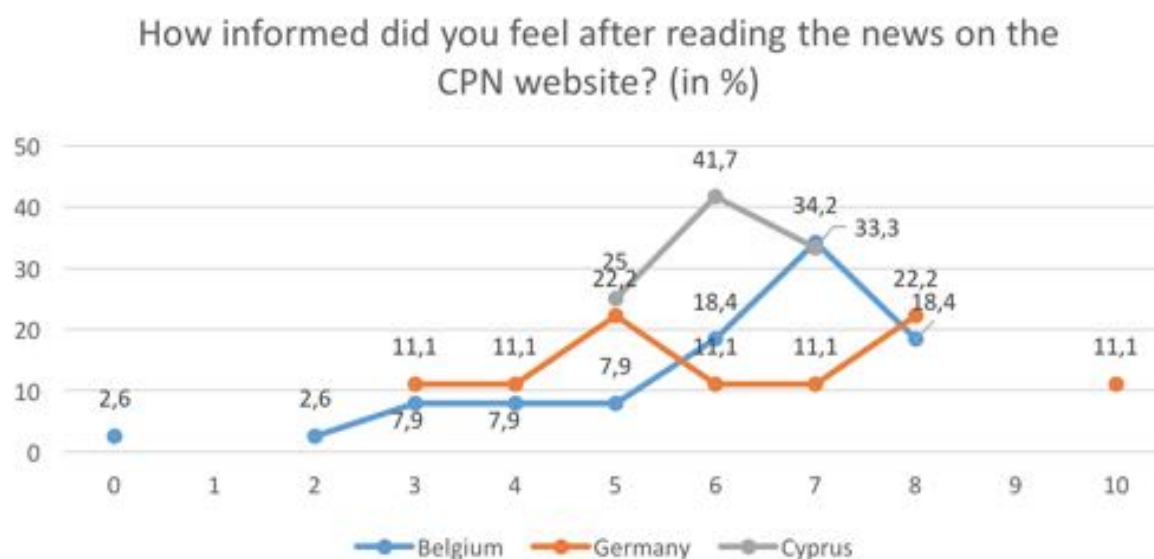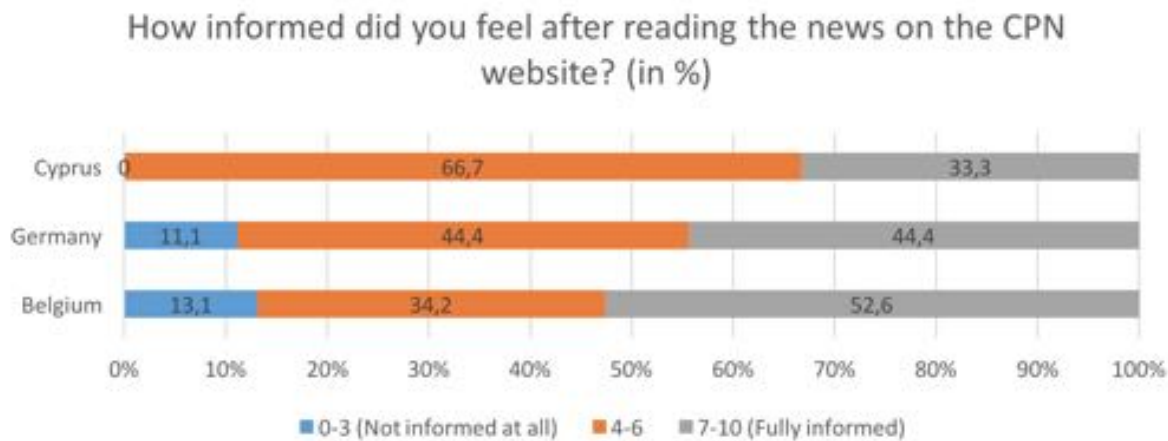
	Belgium	Germany	Cyprus
Median	7	6	6
Mean score	5,97	6,08	6,22

For Belgium, an extra statistical analysis was done for this question to compare the responses for the intervention and control group. A T-Test revealed that the two groups give a different average score on this question. **The control group feels better informed than the intervention group (statistical difference (sig. < 0,05)).** The mean score of the control group is 6,6, whereas the mean score of the intervention group is 5,3. The detailed output of the statistical analysis can be found in Appendix H.

Personalisation

In the last part of the questionnaire, we asked 2 questions on the topic of personalisation. Personalisation was defined like this; 'With news personalisation, news relevant for you is offered.' First, the respondents were asked to rate personalisation on a scale from 1 (very unnecessary) to 10 (necessary).

I think personalisation is … (in %)

I think personalisation is ... (in %)
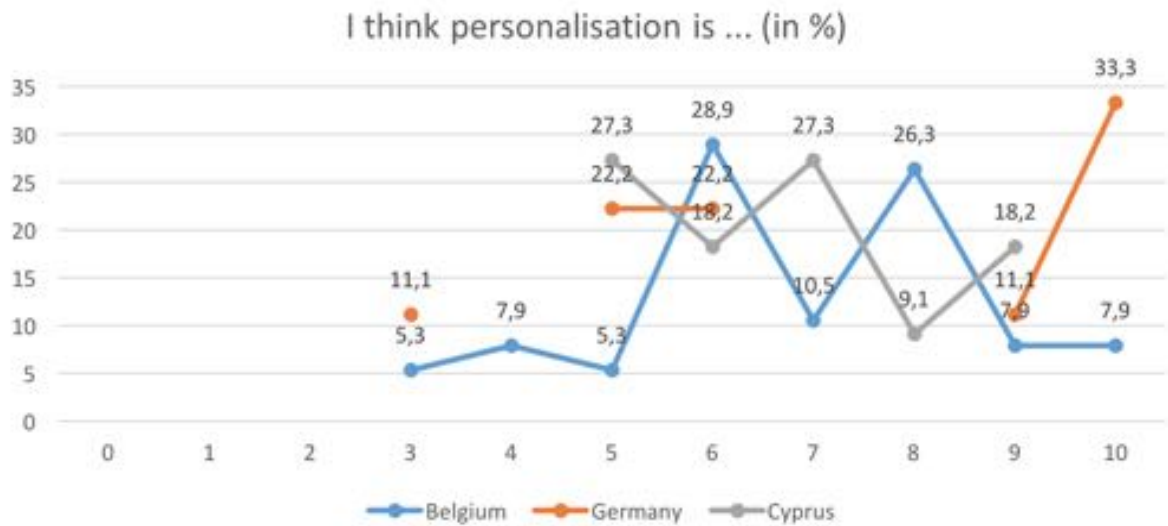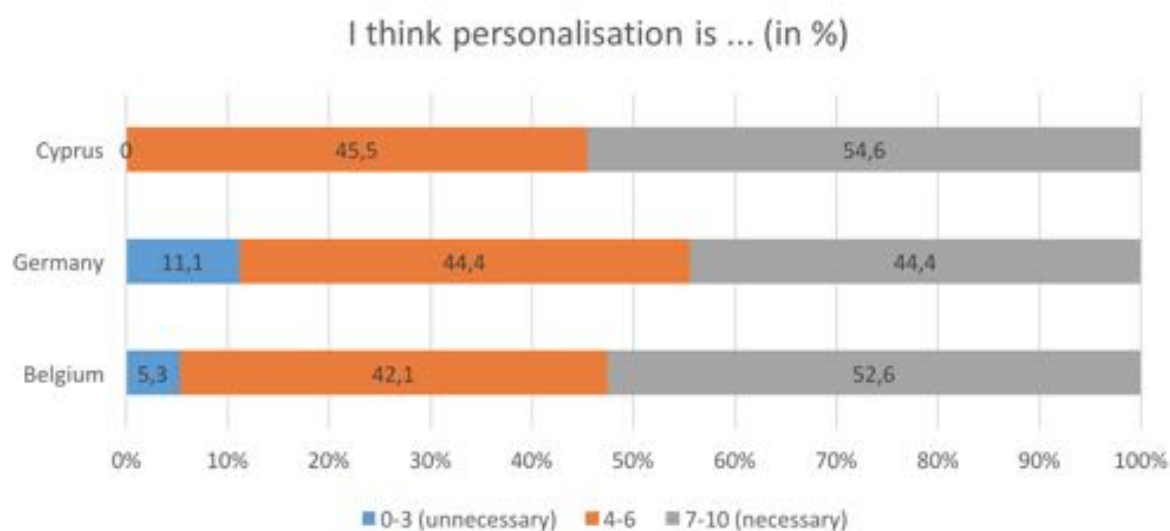
	Belgium	Germany	Cyprus
Median	7	7	6
Mean score	6,82	6,73	7,11

For Belgium, an extra statistical analysis was done for this question to compare the responses for the intervention and control group. **A T-Test revealed that the two groups give a similar average score to personalisation. There is no statistical significant difference in answers.** The detailed output of the statistical analysis can be found in Appendix H.

In Belgium and Cyprus, the highest share of respondents prefer news personalisation based on self-picked categories (respectively 54,5%% and 39,5%). This is a bit higher than in the pretest, where respectively 50% and 32,1% of the respondents chose this answer. Surprisingly, in Germany, only 11,1% prefers personalisation based on self-picked categories. In Germany, the highest share of respondents (55,6%) prefers personalisation based on personal interests. In the pretest, this was only 35,3%.

I prefer news personalisation based on ... (%)

Legend:
- your sociodemographic data
- your current news consumption
- your personal interests
- your professional interests
- categories you chose
- Other
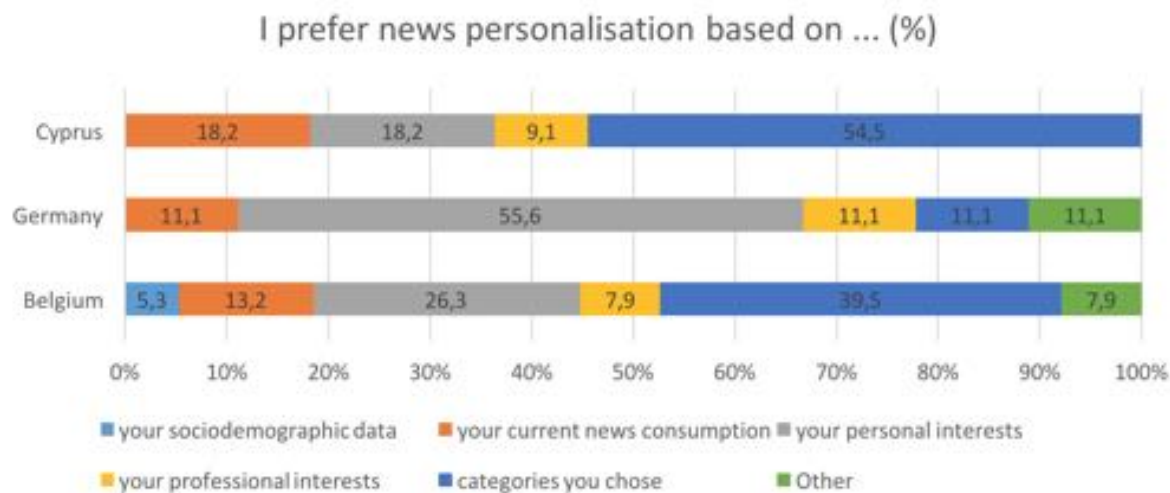
Diversity of news consumption

The respondents were asked to indicate what other news sources they used during the test as well and how often. The graphs below show the answers for every pilot country.

Use other news media during test (Belgium, in %)

Legend:
- At least once a day
- At least once a week
- Less than one time a week
- Less than one time a month
- Never

Use other news media during test (Germany, in %)

	At least once a day	At least once a week	Less than one time a week	Less than one time a month	Never
News app	55,5%	22,2%	0,0%		22,2%
Social media	66,6%	11,1%	11,1%	0,0%	11,1%
International television	22,2%	11,1%	0,0%		66,7%
National television	22,2%	22,2%	11,1%	0,0%	44,4%
Regional television	0,0%	11,1%	0,0%	11,1%	77,8%
Radio	55,5%	22,2%	0,0%		22,2%
Digital newspaper	66,6%	22,2%	0,0%		11,1%
Printed newspaper	0,0%	11,1%	11,1%	11,1%	66,7%

■ At least once a day ■ At least once a week ■ Less than one time a week ■ Less than one time a month ■ Never

Use other news media during test (Cyprus, in %)

	At least once a day	At least once a week	Less than one time a week	Less than one time a month	Never
News app	25,0%	16,7%	8,3%	0,0%	50,0%
Social media	83,3%		0,0%	8,3%	0,0% / 8,3%
International television	16,7%	41,6%	0,0%	16,7%	25,0%
National television	25,0%	41,7%	0,0%	8,3%	25,0%
Regional television	16,6%	41,7%	0,0%		41,7%
Radio	58,3%		8,3%	0,0%	33,3%
Digital newspaper	58,4%		8,3%	8,3% / 0,0%	25,0%
Printed newspaper	16,7%	33,3%	16,7%	16,7%	16,7%

■ At least once a day ■ At least once a week ■ Less than one time a week ■ Less than one time a month ■ Never

5.3 RESULTS FOCUS GROUPS AND INTERVIEWS

During the focus groups and interviews, interesting results arose. In the following parts, we will discuss different important findings regarding the recommender system and wireframes.

5.3.1 Recommender system (website)
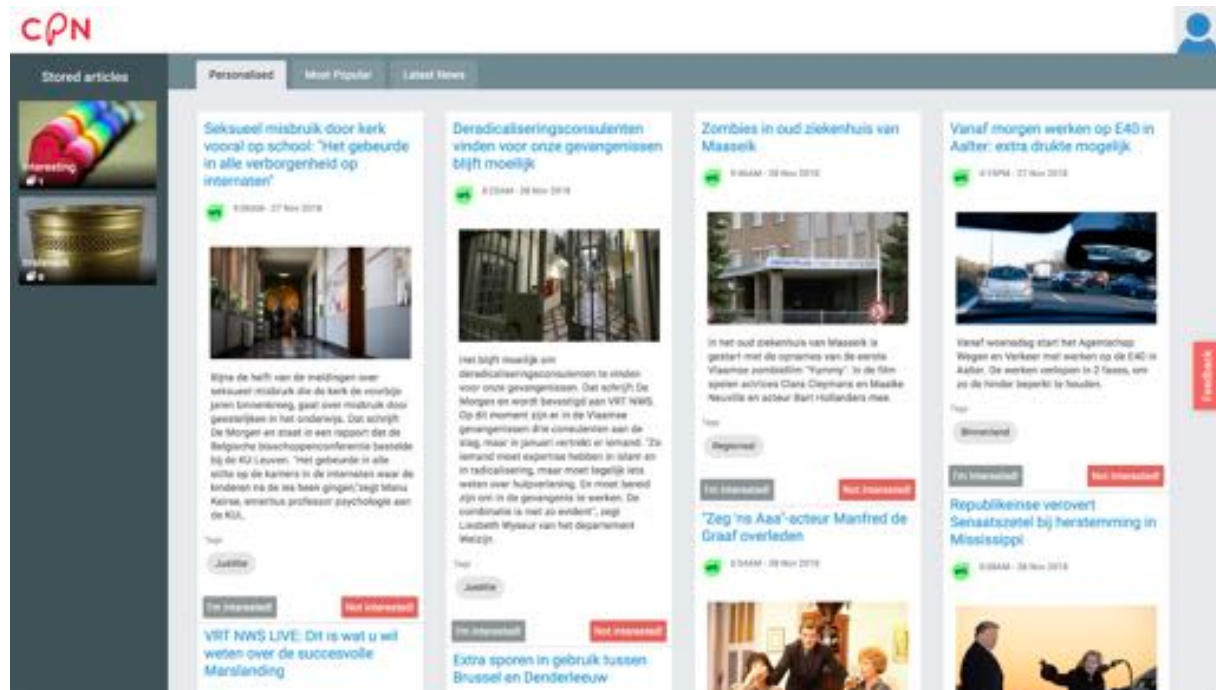
Figure 14: print screen from website pilot 1, example Belgium

Positive points

In general, most respondents in the intervention group found articles more personalised than the respondents in the control group. However, not ever control group respondent noticed the articles weren't For the intervention group, some participants thought the website began to be more personalised after day 2. This is normal, as the recommender system had to be used for multiple times before it could be offering personalised news.

Regarding the layout of the website, the website showed a good overview of news articles and gave an interesting collection of news. Also the personalisation itself was evaluated as positive.

> *"I liked the personalised articles because for example politics doesn't interest me"*
> *(Erika, 35, Belgium).*

Also the simple and dry layout of the website were nice to the user and very straightforward.

> *"I like it to be sober" (Hendrik, 57, Belgium)*
> *"I liked the layout and design of the site" (Marie, 26, Belgium)*

"The App is easy to access and very functional, only three columns to look at, that's very intuitive. I've also never seen such a layout but it's interesting" (Coline, 31 Germany).

"I liked the app, In the end, I did the testing for pleasure. The layout is quite interesting"(Gina 26, Germany).

It is also good that the homepage showed a title, picture and short introduction of each article. This is a quick way to get up to date of everything without having to click everything. If really interested, you could learn more by clicking on the article. Also the fact that there weren't any ads was appreciated.

"It makes it structured and accessible." (Stan, 45, Belgium)

Negative points
All the participants found it not handy that there wasn't a mobile application because most participants are reading news on their smartphone. It was not handy to search for the link everytime they wanted to use the app.

"Mostly I read the news on my phone because I don't use my laptop all day, but the website didn't work on my phone" (Nina, 23, Belgium)

"I had a good first impression. The site still looks like a beta, and some elements are quite ugly, e.g. the pictures for stored articles, but overall the design is simple – you immediately know where to click" (Carsten, 34, Germany).

Some participants found it annoying that same articles came back in the different tabs, even if you already read them.
"The personalised tab and latest news tab were not synchronised, same articles, even if you already read them, appears in both tabs" (Danny, 65, Belgium)

Some remarks were made with regards to the lay-out. Sometimes the articles was difficult to read, because different fonts were used, sometimes big semicolons in articles appeared:

"I found it prettier to read the articles on the normal website (VRT NWS) than on the test website" (Jonas, 24, Belgium)

"It does not look like a typical news web page/app. This is clearly a Prototype, I get it and treat it as such" (Marius, 47, Germany).

"It didn't look like a real website, it looked like it was built to practice" (Hannah, 41, Belgium)
"The design wasn't 2018/2019" (Dorien, 26, Belgium)

Also, it wasn't always clear from which day the news was;

"News in personalised news tab was a little bit older, it was lagging behind" (Gert, 46, Belgium)
"I would like a chronological order." (Pierre, 44, Belgium)
"I mainly went to watch latest news because personalized news were articles from a month earlier" (Max, 38, Belgium)

> *"I had the feeling that the feeds changed very slowly, that's why I liked the latest news stream the most, it was changing the fastest". (Gina, 26, Germany).*

Some participants evaluated the personalisation as good, however there was also a feeling of danger to get only your own interests and not something else (see discussion on the filter bubble and FOMO below).

What's missing:
Participants were also asked what they felt was missing on the website. Some participants said visualisation would be better to give an overview of more or less important articles, or a possibility to switch with the display to have for example only titles, only pictures, or only a summary (customisation of the tool):

> *"You can show the importance of a news article to make it bigger or smaller. Now, all the articles were of the same size, but visualisation is very important" (Eline, 24, Belgium)*
> *"All news seem to have the same importance. I missed the editor's in chief highlight on the most important news." (Unknown participant, Cyprus)*
> *"I didn't like that all titles had the same size. At a regular newspaper they work with headlines, some articles need to get more attention than other ones" (Arno, 26, Belgium)*

Next to this, also breaking news in the personalised news tab was missing for some participants (see below in section: 'Non-personalised articles in personalised stream').

Other participants wanted to have categories (or even subcategories) or tags instead of the three tabs:
> *"I would like a fourth tab where I can choose between different news categories" (Andreas, 20,Belgium)*
> *"There may be a better subdivision in the categories." (Stan, 45, Belgium)*

In this pilot phase, there was only one news source used. Participants were saying other news sources were missing for them as well.

I'm interested & I'm not interested-buttons:
Each article on the website had an 'I'm interested' and 'I'm not interested'-button:
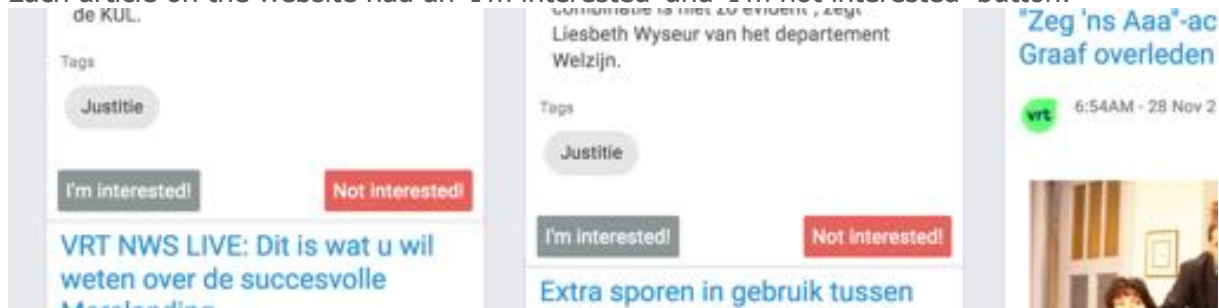
Figure 15: interested and not interested buttons

The participants used this feature in different ways. Some just clicked it to indicate what they thought was interesting and what not. Others, when opening the webpage, indicated first

everything they thought was interesting, and then went to the 'interested' folder to start reading the articles they selected. Others used it the other way around. First they would delete everything that seemed not interesting and then they would read the articles that remained.

> *"What I really liked was that during the first days you just could click 'interested' or 'not interested', so I scrolled rapidly through the whole feed and at the end I just opened the 'interested' folder and read everything in it" (Bram, 22, Belgium)*
> *"I deleted everything not-interesting. Then I would go through the remaining articles." (Maarten, Belgium)*

But these buttons were not always handy because of its vagueness:

> *"I would rather expect from a news app that such things might be built in, because sometimes it is a very vague line" (Nicolas, 24, Belgium)*
> *"Is it not the real action you want to measure? Because someone clicks on the article or not and the fact that they don't click says they are not interested" (Dennis, 30, Belgium)*
> *"Good feature but not handy when you click 'not interested' for a political article and you don't get anything from politics anymore" (Emma, 22, Belgium)*

And not all participants are willing to click on these buttons:

> *"I prefer not to click on it. It's too dangerous" (Sandy, 35, Belgium)*

In cyprus, the discussion was directed to the 'Not interested' button as the participants said that negative evaluation is not a pleasant situation for them. There were several suggestions related to this button. Constantinos suggested to amend 'Not interested' to 'Not interested now'. Another suggestion was to leave just the button 'I'm interested'.

Giving ratings:
After an article was read, the participant could give a rating in terms of its relevance for the reader:

Figure 16: rating at the end of article

A lot of participants were against this feature for different reasons. For example, it wasn't clear for the participants what they are rating: is it the article, the way it is written, the layout,...?

> *"It was not clear for me, if the rating was related to relevance to his preferences or to the subject. I also noted that rating was not an easy process as he finds it difficult to evaluate an article with numbers." (Eros, 37, Cyprus)*

> *"The subject of an article can be interesting, but that doesn't make it a good article. So you can give 1 star to an article that actually seemed interesting to you." (Janne, 29, Belgium)*

Most of the participants also would not rate articles in a real app because it is too much work.

> *"During my daily life I wouldn't take the time to give a rating" (Nina, 23, Belgium)*

In Cyprus, most of the participants expect from the web app to understand if they like one article or not from the time spent on that page.

Although a lot of participants were against the rating-system, there were also some participants who were willing to rate:

> *"I would do it but not with every article. It should be after a certain time or amount of articles" (Jonas, 24, Belgium)*
> *"Rating with stars is fine for me if it guarantees that the articles with bad ratings will be filtered out by the algorithm. It is also harder to describe why I don't like or like an article" (Janne, 29, Belgium)*

How to personalise: option 1 (cold start) or option 2 (selecting categories):
The website made use of a cold start, meaning it was operating after a few days on the base of the reading behaviour of the participants. Another option could be to select categories the first time when you are using the app, that would then be used for the personalisation. This requires some more effort of the users, but will provide a more accurate personalisation from day 1. The participants were asked which option they would prefer. For some participants, it was difficult to choose an option:

> *"It's difficult to say: i'm only interested in this and that. But on the other hand, I also don't like it that the algorithm knows which my interests are. For example: Facebook, it really knows what you like and I don't like it, I have no control over it" (Yvan, 30, Belgium)*

In general, half of the participants preferred option 1 (cold start), because your reading behaviour can be different than what you would select:

> *"Option 2 is not interesting, because you are losing all other interests then" (Mona, 61, Belgium)*
> *"I think it's a lot of work to set up a whole account before using the app, I think that it should go automatically" (Nicolas, 24, Belgium)*
> *"Then you don't have to decide for yourself that you never wanna see that again, maybe I do want to see that. It's more natural" (Andreas, 20, Belgium)*

The other half of the participants prefer option 2 (choosing categories) because giving your interests yourself is good because you as a reader know what you want to read:

> *"I would like to select categories, but it has to be easy to change it afterwards. For example, I don't like sports, but if there is something I should know, I want to know it as well. There should be a sort of breaking news." (Jonas, 24, Belgium)*
> *"I would go for the categories because that way you have more control and you know why you get something" (Marie, 26, Belgium)*

In Cyprus, the participants agreed that a simple and basic questionnaire is sufficient to set up the app and that is because a quick set up is always preferred by the users.

A few participants would like to have a mix between option 1 and 2:

> *"I want to start with the cold start, but if you can adjust for the future that a certain category needs to be there or not. It would be a nice feature" (Nina, 23, Belgium)*
> *"I personally think that using both would give the best results." (Pierre, 44, Belgium)*

3 tabs:

On the website, the reader can choose between 3 tabs (personalised, most popular, latest news):

Figure 17: 3 tabs

Also here, half of the participants found the existence of these 3 tabs a good idea for different reasons:

> *"..., so you can choose where you are going to read" (Annie, 60, Belgium)*
> *"It was good to have the 3 tabs, because when you don't have a lot of time you can read the personalised tab, but if you have more time, you also have the other tabs to read" (Erika, 35, Belgium)*
> *"It was useful, because with a personalised tab, you can get a tunnel vision, so I liked it to have a more general tab as well" (Sally 37, Belgium)*
> *"I liked the three tabs, because if there's only personalized news than you get an other worldview" (Hannah, 41, Belgium)*

The other half were not happy with the 3 tabs because the existence of different categories was preferred or because of the fear of missing out:

> *"I don't like to have 3 tabs, because I prefer to have an overview of everything, because I'm afraid to miss something" (Amber, 39, Belgium)*
> *"I would like to have different categories (like politics, sports,...) where you can press on, instead of the 3 tabs" (Eline, 24, Belgium)*
> *"I would prefer to have one page with all the news and a specific color for personalized articles" (Nicolas, 24, Belgium)*

News personalisation in general:

We asked the participants if they like news personalisation in general. Some participants were pro personalisation, because they have for example not that much time during the day:

> *"Once it works like it should be working why not? I don't have much time so in my daily life it could come in handy" (Dennis, 30, Belgium)*
> *"I find it easy, you open the application and I see all the articles which according to you are personalized" (Max, 38, Belgium)*

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However, some of the participants who liked to have personalised news also have a few doubts about the fear of missing out other relevant news:

> *"I'm pro personalisation, but I have my doubt about how safe the company is towards my data"* (Yvan, 30, Belgium)
> *"It's good because you will consume more news if it interests you, but I would prefer to also have more general news articles"* (Emma, 22, Belgium)
> *"I liked that is started at personalized news, your own homepage, but after that I always went to the other tabs just to be sure that I didn't miss anything"* (Bram, 22, Belgium)
> *"I don't want only the interesting news for me, there is more happening in the world"* (Hannah, 41, Belgium)

However, more participants are restrained towards personalisation, because the fear of missing out is bigger than the desire to receive personalised news articles:

> *"I'm afraid to miss things. I'm afraid it will narrow down due to personalization"* (Amber, 39, Belgium)
> *"News personalisation happens a lot on social media, but I find that it falls short. It's not your preferences that should decide what you have to read. You also have to read things that are 'out of the box' or are new to you"* (Eline, 24, Belgium)
> *"We don't like personalisation, we prefer to decide ourselves what we want to" read* ((Danny, 65 & Mona, 61, Belgium)
> *"It's the big danger of personalized news that the things you may be interested in or things that you should know are not in your personalized news"* (Nicolas, 24, Belgium)
> *"What is the goal of personalized news? Will it be an app that works somewhat like a 'fansite' whereby I already know what kind of articles I'm gonna read. Will it be too repetitive?"* (Maarten, Belgium).

Better informed when receiving personalised news?

We askeds the participants if they would have the feeling to be better informed when they would receive personalised news. Unfortunately, nobody thought he/she would be better informed through personalised articles:

> *"Not better, but more informed I think. Because when you like for example movies about little kittens, yeah…"* (Jonas, 24, Belgium)
> *"I don't think so. It's indeed news I would read, but you are filtering and there are things you are not reading, so it's not that good"* (Sally, 37, Belgium)

However in Germany, there was one participant saying to be better informed by reading personalised news:

> *"Yes! A big yes! I feel like I got a better sense of the news on a given day than I do from crawling different newspaper sites and Twitter. It felt like a curated feed that had a decent understanding of my interest – and importantly a feed that did not prioritize stories based on what would click. Twitter, Facebook and regular news websites feed more on outrage than I think the algorithm does. This is really the reason that I could see myself being a happy user of a service like this."* (Carsten, 34, Germany)

FOMO (fear of missing out), how to deal with it:
Because a lot of participants said they would have a fear of missing out, we also asked how this problem could be solved. Interesting solutions came to the front to indicate there is breaking news, like:

> *"There should be a little bar appearing when there is something important, where you can press on" (Annie, 60, Belgium)*
> *"Maybe there has to be a category 'to read' with articles that have a added value" (Andreas, 20, Belgium)*
> *"At the bottom of the website a bar with 'this might interest you'" (Dorien, 26, Belgium)*
> *"Yes, summaries or are great. As far as I know, there are two ways to do this: 1) Ask seasoned editors to write a „morning briefing" or „evening briefing" based on aggregated news. 2) Use algorithms to provide a list of headlines and automated summaries (using tools like the SUMMA platform)." (Andreas 40, Germany)*

To conclude, the following table gives a summary of the main take-aways for pilot 2.

Take-aways for pilot 2
- A mobile application or mobile optimized website is a necessity.   - The simple and dry lay-out of the website is preferred.   - It is very good that the homepage shows a title, picture and short introduction of each article. This is a quick way to get up to date of everything without having to click everything.   - Nice to have: Customisation of the lay-out (The possibility to switch with the display to have for example only titles, only pictures, or only a summary)   - The way in which the articles are presented, should give a quick view of the more or less important articles. Now all the articles are the same size.   - After having read an article, it should not come back in other tabs.   - The publication date of each article should be indicated.   - The 'Not interested' button should get a different name. A negative evaluation of an article is not a pleasant situation for people. A suggestion is to amend 'Not interested' to 'Not interested now'   - Article ratings after reading it should not be part of the recommender. This is considered difficult and too much work.   - If a list of 'interest' categories is included in the registration process, the list should be short and general. A quick set up is always preferred.   - There is a big fear of missing out when receive personalised news articles. A suggested way to deal with FOMO is to have in indication of an important news item in the personalized tab, e.g. a notification or a bar at the bottom of the page.

Table 7: Take-aways for pilot 2

5.3.2 The wireframes

As described above, also wireframes were tested during the focus groups or interviews to let the participant know how the website would be changed during the project, into a real working app.

2 versions of starting screen(s):
When first opening the app, there are two options to show the user information about what data the app is gathering from the reader, namely:

Figure 18: option 1: different screens with information

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What permissions we will need

Notifications
We know, notifications can be annoying. But they are also good to keep you informed. We would like to use them to let you know when new content is ready for you or something really important is happening that we think you should know. We promise we won't overdo it.

Location
Based on your current location, we can send you news that are related to or have a relevance for this particular place.
In order for this to work, we need to have access to the location data of your device.

Interests
With every news item you consume, we
learn about the topics you are interested

Figure 19: option 2: one screen with information

Half of the participants liked option one because in that case, you would really read the different information texts, which is not the case in option 2 because people would just click on next and ignore the information.

> "I prefer to have it like option 1 with the different screens, because I wouldn't read it when you get just one screen like option 2" (Emma, 22, Belgium)
> "It needs to be there, because you can choose what they can see. For example, I don't like to share my location but I don't have a problem that they know when I'm using it" (Nina, 23, Belgium)

However, although considered important, starting with showing all these screens, might scare users to continue registering.

> "I think it might act as a deterrent. Because you have to read a lot, permission for this, permission for that. I think it should be slightly shorter" (Dorien, 26, Belgium)

Half of the participants preferred option 2, mainly because it goes faster:

> "It goes faster" (Annie, 60, Belgium)
> "The second option is more practical and more clear, but you should make the 'more information' button obligatory, so you have to press on it." (Jonas, 24, Belgium)
> "I prefer to see everything right away than when I get the feeling that I must click a thousand times" (Nicolas, 24, Belgium)

By showing the register screens to the participants, one participant asked if he should really need an account if you want to use the app. In Cyprus, the idea came up to log in by using Facebook.

> *"Do you really need an account? Isn't it possible with a cookie that follows you through the website?" (Arnaud, 22, Belgium)*

Information on starting screen(s):
For the participants, the different information texts were clear.

- **Notifications**

Some participants would find the notifications as annoying:

> *"I would turn it off, I find it annoying" (Bram, 22, Belgium)*
> *"Sometimes it's too much and sometimes they are not interesting. But if I can choose which ones and how many, I would prefer that" (Nina, 23, Belgium)*
> *"It would be nice to have the possibility to click 'follow the story' and then when there are updates you get notifications about that. So if it isn't that interesting for you, you don't get any updates about it" (Nina, 23, Belgium)*

But on the other hand, other participants would definitely try the notifications:

> *"I find that easy, especially for breaking news. But don't overdo it" (Dorien, 26, Belgium)*
> *"I would always try it at first" (Hannah, 41, Belgium)*

- **Interests:**

For the participants, it was the evidence itself that 'interests' are included in the app:

> *"It's the whole point of personalization" (Dorien, 26, Belgium)*

- **Location:**

Most participants are not willing to give their location:

> *"I put it off. They don't need to know where I am. That's a violation of my privacy" (Anita)*
> *"It can be interesting to know the news from a certain region, for example when you are on a holiday, but I won't share my location for that" (Hannah, 41, Belgium)*
> *"When I use the app it's all right. But there are also apps that know my location when I am not using it. I turn that off." (Simone, 22, Belgium)*

Instead of letting the app track your location, it would be better if you can indicate manually of which location(s) you want to receive news:

> *"Isn't it better, for example, to select the location where you live and to give the data you want to give so they don't need to track you 24/7?" (Steven, 25, Belgium)*
> *"I would give them the place where I live so I can get personalized information but I wouldn't accept that they follow me everywhere I go" (Andreas, 20, Belgium)*
> *"It is better if we can indicate: the news of this and this region" (Marie, 26, Belgium)*

Also, different interpretations of location appeared. It could for example be where someone is at the moment or where he/she lives with a radius around that place:

> *"It means where I am at that moment" (Jonas, 24, Belgium)*

- ***Time***

The time-feature, meaning a reader would receive a certain amount of articles regarding his/her free time, is not handy for every participant, although some participants would give it a try:

> *"It can be handy for commuters, but not for me. My day differs a lot from day to day" (Erika, 35, Belgium)*
> *"I think it is important that you have the possibility to decide if you want to read a long article or a shorter one." (Stan, 45, Belgium)*
> *"Instead of that they register your time, you can indicate that you want to receive your personalized news at 10 a.m. and 5 p.m." (Steven, 25, Belgium)*
> *"Maybe, at least I would give it a try" (Dorien, 26, Belgium)*
> *"What worries me is that if I only spent 10 minutes a day on the app, I solely will get short, irrelevant articles." (Nadine, 34, Belgium)*
> *"I'd prefer using a folder where I can store the articles that I want to read. That makes it possible to read what I want, when I have the time for it." (Stan, 45, Belgium)*

Giving (personal) information in general:

By showing the different screens with information about location, time,... some participants said they don't want to give all that kind of information. Although in Cyprus and Belgium, participants are more resistant about giving information to let the app work, the participants in Germany are not:

> *"Yes, I would give it, if the offering has good quality". (Andreas 40, Germany)*
> *"I think it's a good idea. I usually don't pay much attention to privacy settings." (Gina 27, Germany)*
> *"I like this, it makes everything transparent." (Coline 31, Germany)* In Belgium, participants also mentioned that they like to choose which cookies they allow and which ones they block (the VRT app asks this). However, they just want to do this only once, not every time when using the app.

Article overview and 3 tabs:
- **Order of 3 tabs:**
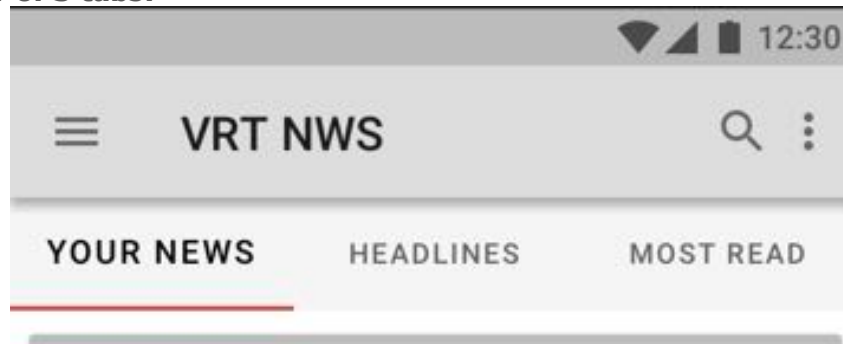
Figure 20: Order of tabs in wireframes

Some participants said during the focus group or interviews that they want to have the 'headlines' tab as first tab:

> *"I would like to have 'headlines' as the first tab, because I don't want to miss anything"* (Gert, 46, Belgium)
> *"I would like to read the 'headlines' articles first, and when I have more time, I would switch to the personalized articles"* (Sandy, 35, Belgium)
> *"I prefer the general news as the first screen and my personalized news as a second tab."* (Stan, 45, Belgium)

Thus, an option could be to make it possible for the user to choose him/herself which tab is standing first, second, third.

> *"Maybe it would be interesting to be able to choose the order of which feed you will see first"* (Nicolas, 24, Belgium)
> *"Or you should have the possibility to choose"* (Dorien, 26, Belgium)

However, in Germany, all 11 participants didn't have any remarks about the tabs:

> *"I would keep it that way."* (Gina, 26, Germany)

- **Non-personalised articles in personalised stream:**

We also asked our participants about how they feel to get non-personalised articles in the personalised stream. Also here, half of the participants found this a good idea, the other half found it bad.

Participants who agreed that there should be non-personalised articles in the personalised tab, found this relevant as long as the article is something that it is something important:

> *"It's good to have non-personalised articles there, because you wouldn't miss important news, for example breaking news, which you would normally not read"* (Emma, 22, Belgium)
> *"The non-personalised article should be the third or fourth article in the personalised stream, not the first one. The non-personalised article should be a breaking news article"* (Jonas, 24, Belgium)
> *"I like it because at least you see a title of important things"* (Andreas, 20, 22/10)

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"Only if it's really breaking news" (Andreas, 20, Belgium)
"Maybe there should be a ratio of 5 personalized articles and 1 not-personalized. In function of avoiding the filter bubble" (Janne, 29, Belgium)

Participants who didn't like to get non-personalised articles in the personalised stream said:

"I would not put non-personalised articles in the personalised stream, unless it's good indicated" (Gert, 46, Belgium)
"You have to see a difference between the regular articles and the personalized articles, otherwise I don't know why it is standing there" (Arnaud, 22, Belgium)
"I don't want anything in my personalized feed that isn't personalized" (Max, 38, Belgium)
"It's really confusing to have a breaking news article by 'your news' that isn't personalized. You have created two feeds so you won't mix up these two" (Nicolas, 24, Belgium)

So, if non-personalized articles are placed in the personalised tab, this should be visually clear by for example using a different color.

User profile
Regarding the user profile, no remarks came up during the interviews.
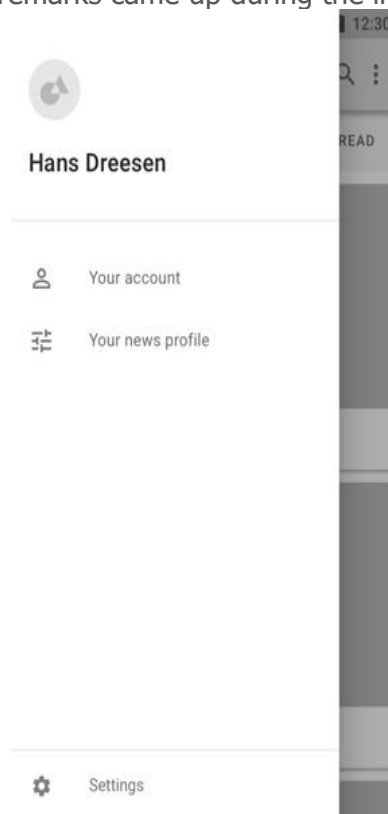
Figure 21: user profile

List with tags:

When the participant will click on 'your news profile > my interests' in his/her account, they would see a list with tags. This list was clear for all participants and some would definitely have a look at it:

> *"It's good because you can also put if off if you want" (Els, (Jonas, 24, Belgium)*
> *"It gives you an explanation why you get the article, and when you get to much about one topic you can consciously choose to read some different things" (Nina, 23, Belgium)*
> *"It's to much information" (Hannah, 41, Belgium)*

The participants wonder if the algorithm is able to register their interests as interesting and not-interesting, and could indicate this visually in the list of tags (e.g. topics with the highest interest in on top of the list).

> *"Is it possible that some tags will be viewed as more important or more interesting than others? (Nadine, 34, Belgium)*
> *"Some tags may counterbalance each other. Trump and Climate Change for instance." (Janne, 29, Belgium)*
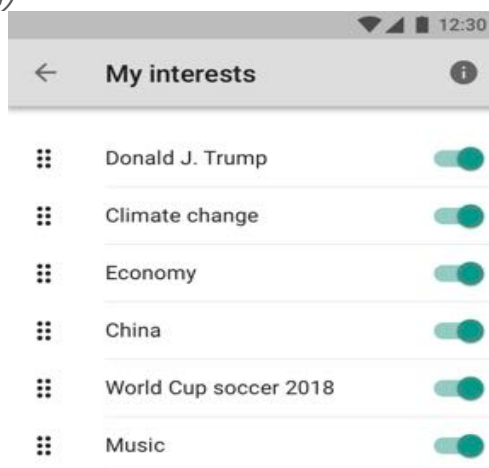
Figure 22: list with tags

Tags under article:

When a certain article is read in the app, the reader can see some tags below each article. When clicking on them, they would also go to the list with tags. However, all participants expect to go to a list with related articles when they press on a tag underneath an article:

> *"For the usability I would say that if you click on the tag, you go to a certain theme" (Andreas, 20, Belgium)*
> *"If you click on the tag it's nice that you see other articles with the same tag. It's a way to see new things and that's something I like" (Marie, 26, Belgium)*
> *"I don't expect to find other articles when I click on it. I don't know if I would use the app then. The app would become more like wikipedia then." (Pierre, 44, Belgium)*

semper mi eu accumsan vulputate. Quisque
sodales posuere erat.

Lorem ipsum dolor sit amet, consectetur
adipiscing elit. Mauris et iaculis libero, at
volutpat purus. Pellentesque vitae purus
lorem. Duis consectetur viverra ante nec
mollis. Nunc et odio posuere, cursus turpis
at, iaculis nulla. Nullam placerat tincidunt
posuere.

Because you've shown an interest in:

Donald J. Trump Climate change

Economy China

Figure 23: tags below each article

You're all caught up
Below a certain amount of articles, the text 'You're all caught up!' will be showed. Most of the participants were happy to have this as a feature:

> *"It's a sign for alright, now I can stop. Otherwise I would keep scrolling" (Arnaud, 22 Belgium)*
> *"It would put my mind at rest." (Simone, 22, Belgium)*
> *"Isn't the point of personalized news to read the articles that are relevant for you in a shorter amount of time. Making this list of articles endless makes no sense then." (Lars, 24, Belgium)*

However, participants would appreciate it but only in the personalized tab. The headline tab or the tab with the general news shouldn't have a maximum number of articles.

There were also a fes participants who didn't like this:

> *"I don't think it's necessary, there will be always something that I don't know yet" (Hannah, 41, Belgium)*
> *"I don't see the added value, I don't mind it standing there but it isn't necessary" (Marie, 26, Belgium)*

An alternative could be to add some kind of bar or sign that indicates that all the articles that follow after the bar are less fitting for your interests than the ones above it. Another option could be to show a notification that informs the user that there are no more personalized articles. Then the user can decide if he wants to continue, reading news from another stream.

Willingness to pay:
Some participants would pay for the app, but there are a few requirements that should be in the app like other news sources, low cost app,…:

> *"I would pay for it but it depends how much it will be because there are already so many online news sources available for free." (Annie, 60, Belgium)*

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> *"I'm willing to pay a certain amount of money for a personalized app if I get access to all the articles that they recommend"* (Max, 38, Belgium)
>
> *"In a Netflix-formula kind of way it would be an option. Which means that there can be several users for one account and maybe add some foreign media channels like BBC or CNN."* (Janne, 29, Belgium)
>
> *"Only of I'm able to read articles from different sources."* (Nadine, 34, Belgium)
>
> *"Yes, I'd pay for a really good personalised news app. A good model would be „pay once", as you're buying an aggregator, not a news service (which would justify subscribing)."* (Andreas, 40, Germany)
>
> *"As of now, I see a monthly subscription of 5-8€/month as something I would realistically consider."* (Carsten, 34, Germany)

However, most of the participants would not pay for a personalised news app, because there are already a lot of existing news sources which are free:

> *"I would not pay for it because there are so many options to consume news for free."* (Emma, 22, Belgium)
>
> *"I would not pay for it because I have Twitter where I can find news for free."* (Jonas, 24, Belgium)
>
> *"I am not going to pay for news"* (Yvan, 30, Belgium)
>
> *"Not as long as there are free offerings. like Flipboard and it's free."* (Coline 31, Germany)
>
> *"Undecided. I am still hesitant to pay for digital news as I trust mainly radio and partially TV (public broadcaster) as well as print magazines. I am willing to pay for high quality content online as well but in reality, I do it rarely. Might change."* (Anna, 27, Germany)

To conclude, the following table gives an overview of the main take-aways for the pilot 2 app development.

Take-aways for pilot 2
- It stays important to lead users through the different registration and data permission screens. However, the process should be refined. Now it's a bit too long and scares users of to share all the data.   - Instead of letting the app track location, users should be able to indicate manually of which location(s) they want to receive news.   - Customisation of the lay-out: Make it possible for the user to choose him/herself which tab is standing first, second, third.   - Non-personalised articles in personalised stream can be a solution for FOMO if: - The article really is very important (breaking news).   - There is a clear difference between the regular articles and the personalized articles (e.g. different colour)   - When clicking on the tags below an article, users expect to go to a list with related articles.   - After reading a certain amount of articles, the text 'You're all caught up!' should be showed. However, participants would appreciate it but only in the personalized tab. The headline tab or the tab with the general news shouldn't have a maximum number of articles.

Table 8: Take-aways for pilot 2

5.4 OVERVIEW REQUIREMENTS

In the previous sections, the results of the surveys and interviews were discussed. To conclude, we are referring back to the requirements that should be integrated in pilot 1 (see above). We give an overview if the requirements are implemented during the first pilot or not, and describe why.

Requirements within pilot 1	Evaluation	
UR-AF4.1: The system should be able to personalise news from/for the CPN media partners UR-UP1.2: The system should create/refine interests based on the user's consumption habits	Successfully implemented in pilot 1.	✅
UR-UP1.6: The system should assign preferences (1-5) to categories based on user behaviour	This requirement is fulfilled in pilot 1. The recommendation system, in automated way, assigns preferences to the user, based on its behaviour.	✅
UR-UP9.1:The system must provide transparent, simple and easy-to-understand information on what user data are collected, for what purpose and how they are stored + UR-UP9.2: The system should require informed and explicit consent for processing of personal user data, beyond those required for the provisioning of the agreed service	During the registration, the system asks to the user to give or not three permissions: time, location and interests. All these information is recorded into the user profile and sent to the user through the Personal Data Receipt. The recommender exploits only the information provided by user. At any time the user can modify this permissions and a new Personal Data Receipt is generated. A text asking for explicit user consent will be prepared for pilot 2. The legal department will provide the appropriate text.	✅
UR-UP1.8: The system must allow users to completely turn off the personalisation algorithm and receive content as is and vice versa	Was possible in pilot 1.	✅
UR-AF2.4: The system should show users only a limited number of items at once	This requirement is fulfilled in pilot 1.	✅
UR-UP5.2: The system should allow the user to set a home/main interest location	This requirement will be completely fulfilled in pilot 2. Currently the user can set a home/ main interest location but this information is not saved on the Recommender's side.	/
UR-UP1.4: The system should refine the user's interests through frequent interaction with the user (talkback)	The interaction with the user (talkback) will be implemented on Pilot 2. The interaction policy (messages, display frequency) should be defined and the responses should be saved on the Recommender.	/

UR-AF2.5: Once all articles proposed have been consumed, the system should only offer more content upon request by the users	There is no concept of "Read more" or infinite scroll due to the finite/ limited number of personalized articles (20-40). But, since we have introduced 2 more tabs ("Most Popular" and "Latest News"), the user can consume more articles.	/
UR-AF3.4: The system should be able to offer both news content and entertainment & UR-AF3.5: The system should be able to offer both locally and globally relevant content	Both requirements are fulfilled.	✅
UR-UP2.7: The system should allow users to share content from the CPN system to social networks	This requirement is well done: users could share articles with Google+, LinkdIn, Facebook or Twitter.	✅

Table 9: evaluation requirements pilot 1

6 NEXT STEPS

After pilot 1, technical bugs will be solved and the recommender app will be refined. Other requirements will be added to the recommender system, to be tested in pilot 2 (M24) and pilot 3 (M30).

During pilot 2, the news app version 2 will be made, which means the clickable wireframes and recommender version 1 from pilot 1 will be integrated as a whole. The same process will be repeated for pilot 3.

Whereas pilot 1 was a controlled (small) testing phase, we will move to a semi-controlled testing phase for pilot 2 and finish in an open setting for pilot 3.

7 APPENDICES

7.1 APPENDIX A: USER STORIES

UR-AF4.1	**The system should be able to personalise news from/for the CPN media partners (VRT, DIAS, DW)**	Z
	When I open the CPN app, I see three buttons at the bottom of my screen (the start page, the feedback/opinion page, and the settings/profile page). When I press the start page (which is the page I will see everytime I open the app), I see an overview of different (but only a few) personalized news articles. As a **CPN user** I can **receive a personalised offer of VRT/DIAS/DW news content**, So that **I'm better informed over time**	
UR-UP1.2	**The system should create/refine interests based on the user's consumption habits**	Z
	When I open the CPN app, I will automatically see the 'start page', where I receive personalized news offers. These personalized articles are based on my consumption habits. As a **CPN user** I can **automatically receive a personalised offer**, so that **I don't have to worry about setting up anything myself**	
UR-UP1.6	**The system should assign preferences (1-5) to categories based on the users behaviour**	Z
	When I open the CPN app and press the 'start page', personalized articles are shown. These articles match with my most preferable categories, because they are based on my user behavior. As a **CPN user**	

	I can **read articles in different categories based upon my user behaviour**		
	So that **the most preferred news category for me is automatically accessible/first in line**		
UR-UP9.2	**The system should require informed and explicit consent for processing of personal user data, beyond those required for the provisioning of the agreed service**	**Z**	
	When I first open the app as a CPN user, the system offers me an introductory explanation of what CPN does. Leading me through 3 different screens with detailed explanations CPN then asks me for an explicit consent for using my data in the process by clicking on a yes/no button.		
	As a **CPN user**		
	I have to **give an informed and explicit consent for processing my personal data, beyond those data required for the provisioning of the agreed service**		
	So that **the system can operate on behalf my consent and I am in control of the agreement**		
UR-UP9.1	**The system must provide transparent, simple and easy-to-understand information on what user data are collected, for what purpose and how they are stored**	**Z**	
	When I open the CPN app and press the 'user profile' button, there is a section called 'Information'. Below that, I can see different sections, and when I press on one of these sections, I can read transparent, simple and easy-to-understand information on what user data are collected, for what purpose and how these data are stored.		
	As a **CPN user**		
	I can **easy find what kind of data are collected, for what purpose and how these data are stored within the CPN system**		
	So that **I have the feeling that the CPN system is transparent and trustworthy**		

UR-UP1.8	**The system must allow users to completely turn off the personalisation algorithm and receive content as is and vice versa**	T
	When I feel like the personalisation algorithm of CPN is keeping information from me, I disengage the personalisation feature on the overview page. I then get a display of all articles available from the connected sources, in chronological order, which I can scroll through to pick whatever I like. If I feel like prefere the personalised list, I can turn the algorithm back on. The system will then switch back to the list of media items fitting my settings (including time, available time left and my preferences in topics). As a **CPN user** I can **turn off the personalisation algorithm and receive non-personalized content** So that **I can choose whether I want to receive personalised or non-personalized articles, without having to use an anonymous browser or using a different service than CPN for general news**	
UR-UP3.2	**The system should create/refine time frames based on the user's consumption habits**	T
	When I use the system I usually stay on for a certain amount of time, based on how much I want to consume and how much time I have left (due to travel or other restrictions). I expect the CPN system to take notice of recurring time-frames in terms of when they happen and for how long and to send me notifications of what there is to read, when those time slots begin. The number of items and the length of them is directly related to how long the time slot is that the system noticed. When I change my habits over time, the system should follow those changes, offering me more or less to consume and to different times. As a **CPN user** I can **receive news articles within the moment I have the most time to read articles** So that **I don't receive push notifications on moments I don't have time to read.**	
UR-AF2.4	**The system should show users only a limited number of items at once**	T

	When I log onto the system, I only get a certain amount of items to consume at a time (fitting the timeslots from UR-UP3.2). Once I've consumed all items available to a certain slot, the system should not automatically load more items. I expect the system to identify the most fitting items (most interesting, fitting length) to show me in the slot that is available. As a **CPN user** I can **see a limited number of news items** So that **I don't have the feeling to be overwhelmed**		
UR-UP5.2	**The system should allow the user to set a home/main interest location**	**T**	
	In the system-settings, I have the possibility to choose a home-location (center of my life) and a main-interest-location - a city/area/country that I'm most interested in. This will find influence in the algorithm, as I expect the system to show me stories related to these location with a higher priority than others, outside these locations. I also expect the system to value stories relation to/affecting these locations higher than others that are not. As a **CPN user** I can **choose to set a home/main interest location** So that **I have the feeling I know what is happening at that location**	**T**	
UR-AF7.2	**The system should include guided feedback for specific elements of the system, allowing users to (help) improve it**	**T**	

	After I've consumed a number of items, the system shows me a short dialogue, related to what I have consumed, and asks me about my opinion to refine the algorithm. It might ask me about the categories I've most read (that it detected as such) or when it noticed that I've been reading a lot about a specific topic or around a specific location. I get a notification stating what the system has detected (e.g. "In the last week, you've read 5 more times about Mark Zuckerberg, than about anyone else" Would you like to get more stories on him?") and a question, whether I want more/less of this, whether this is of specific interest to me etc. I can then answer the question accordingly with yes or no or tell the system to forget about it. The system then takes this answer into account to refine the algorithm serving me. These questions can cover a variety of areas, from topics, locations, people, time-frames, length of articles or sources. In the settings area of the application, I can see, how I answered these questions and how the answers influence the algorithm. As a **CPN user** I can **give feedback about specific elements of the CPN system** So that **I can help to improve the system to my needs**	
UR-UP1.4	**The system should refine the user's interests through frequent interaction with the user (talkback)**	**H**

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One a week, I will receive a question from the CPN app about my interests. I can answer these questions by pressing on 'yes' or 'no'. When I'm going to the feedback-page, I can see all the answered questions and change my answer if I want to. These questions about my interest can refine the system and thus giving me better personalized articles.

As a **CPN user**

I can **receive questions about topics that are in line with my refined interests and / questions on how I value articles**

So that **the CPN system stays a personalized system that takes into account my explicit feedback**

===

Maybe use "information boxes" below an article to ask questions in the context of the reader. Thye can select to see more of the article's topic, less, or ignore it. They can also navigate directly to the personalisation settings screen.

As a CPN user

I regularly see a little information box below an article in my feed explaining why it has been selected for me

so that I am informed about CPN's ongoing personalisation efforts

As a CPN user

I can select to see more of a certain topic, directly in an article information box

So that I can explicitly update my preferences accordingly

As a CPN user

I can select to see less of a certain topic, directly in an article information box

So that I can explicitly update my preferences accordingly

As a CPN user

I can follow a link to my personalisation settings from an article's information box

So that I don't have to look for it in the general setting

UR-UP3.3	**The system should refine the user's time frames through frequent interaction with the user (talkback)**	**H**
	One a week, I will receive a question from the CPN app about my time frames. I can answer these questions by pressing on 'yes' or 'no'. When I'm going to the feedback-page, I can see all the answered questions and change my answer if I want to. These questions about my time frames can refine the system and thus giving me better personalized articles. As a **CPN user** I can So that **explicitly give feedback on when to receive news updates**	
UR-AF2.5	**Once all articles proposed have been consumed, the system should only offer more content upon request by the users**	**H**
	When I'm done reading all the proposed articles that I can see on the start page, a question will appear on my screen: 'You've read all articles. Do you want to read more?'. I can click on 'yes' (and will receive more news articles then) or 'no' (and I don't get any new news articles). As a **CPN user** I can **request more articles after I have read the proposed articles** So that	
UR-UP1.7	**The system should allow users to assign and change preferences (1-5) to categories themselves**	**H**
	When I open the CPN app, I am able to see a few personalized articles. These articles are based upon my preferred categories. But when I'm going to the setting-page, it's possible for me to change these preferences by ranking the categories myself. As a **CPN user** I can **assign and change preferences to categories myself** So that **I have control over which articles are presented (first) in my feed**	

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UR-UP3.1	**The system must allow the user to choose a preferred time frame or frames to consume content**	H
	CPN aggregates content for a given time and provides me with a summary when I choose to. I can set a time frame during which relevant news will be aggregated and a regular update time when I get my summery or pull content, by clicking on a button. I can set the system to give me content to fill a certain time slot. Like stories and videos to be consumed in 15 minutes. As a **CPN user** I can **choose my preferred time frame(s) to read articles** So that **I receive news updates when it's most convenient for me**	
UR-UP3.5	**The system must allow the user to postpone a time frame for a chosen amount of time**	O
	I can postpone the updates I receive. In that case more news items will be added to the summery, to be reviewed by me later. As a **CPN user** I can **postpone a time frame for a chosen amount of time** So that **I'm free to choose when I want to read news**	
UR-UP3.6	**The system must allow the user to ignore a time frame completely**	O
	As a CPN user, I can disable all personalisation settings individually. As a **CPN user** I can **choose to not have a specific time frame to read articles** So that **I'm free to choose when I want to read news**	
UR-AF3.4	**The system should be able to offer both news content and entertainment**	O

	I can receive a variety of content. News, opinion pieces and entertainment are labelled accordingly in the system. I can mute *hard* news for a while to only get lighter entertaining content. In that time the news articles will get aggregated so I can have an overview later. Different types of content can run in separate feeds. As a **CPN user** I can **receive both news content and entertainment** So that **I can switch between news and lighter content within one service**	
UR-AF3.5	The system should be able to offer both locally and globally relevant content	**O**
	When I open CPN, I can choose between local, global or national news or a mix of all, by I clicking on different icons. As a **CPN user** I can **read both locally and globally relevant content** So that **I am informed on both a local and global level**	
UR-UP2.7	The system should allow users to share content from the CPN system to social networks	**C**
	The system will provide the functionality to share content in social media. A share button will bring up a list of available social media networks. The user will select the preferred network, and after login (if not already available) will share the content in the selected platform. As a **CPN user** I can **share content from the CPN system to my social networks** So that **I can spread and discuss the news I've read with friends who might be interested in the same articles.**	
UR-AF4.2	The system should allow for additional content sources, outside the consortium	**C**

	While browsing the timeline a plus button at the upper right will give the user the opportunity to add RSS feeds from other trusted sources. By pressing the add function a screen will come up that will provide RSS feeds based on two factors. Proximity and the most prefered sources. As a **CPN user** I can **add additional content sources** So that **I'm better informed and I don't have the feeling I missed something from an external but interesting/trusted source.**	
UR-AF3.8	**The system should allow users to filter content by language**	**C**
	If there are feeds in more than one language then the user while browsing the timeline will have the opportunity to filter out languages by pressing a button that will bring up a list of preferred languages to select which he wants to see. As a **CPN user** I can **filter the content by language** So that **I can decide myself what language to read the news in**	
UR-AF1.5	**The system should allow users to choose favourite sources**	**C**
	The user will have pre-selected sources for his feed. However, in the settings section will also have the opportunity to select the most favourite and trusted in order for the system to prioritize them higher than others. The screen with the selected sources will also have a star selection that will add a specific source to favourites. As a **CPN user** I can **choose my favourite sources** So that **I receive news from my preferred and trusted sources first.**	

7.2 APPENDIX B: SCRIBBLES AND QUESTIONS USER TEST

Scribbles imec:
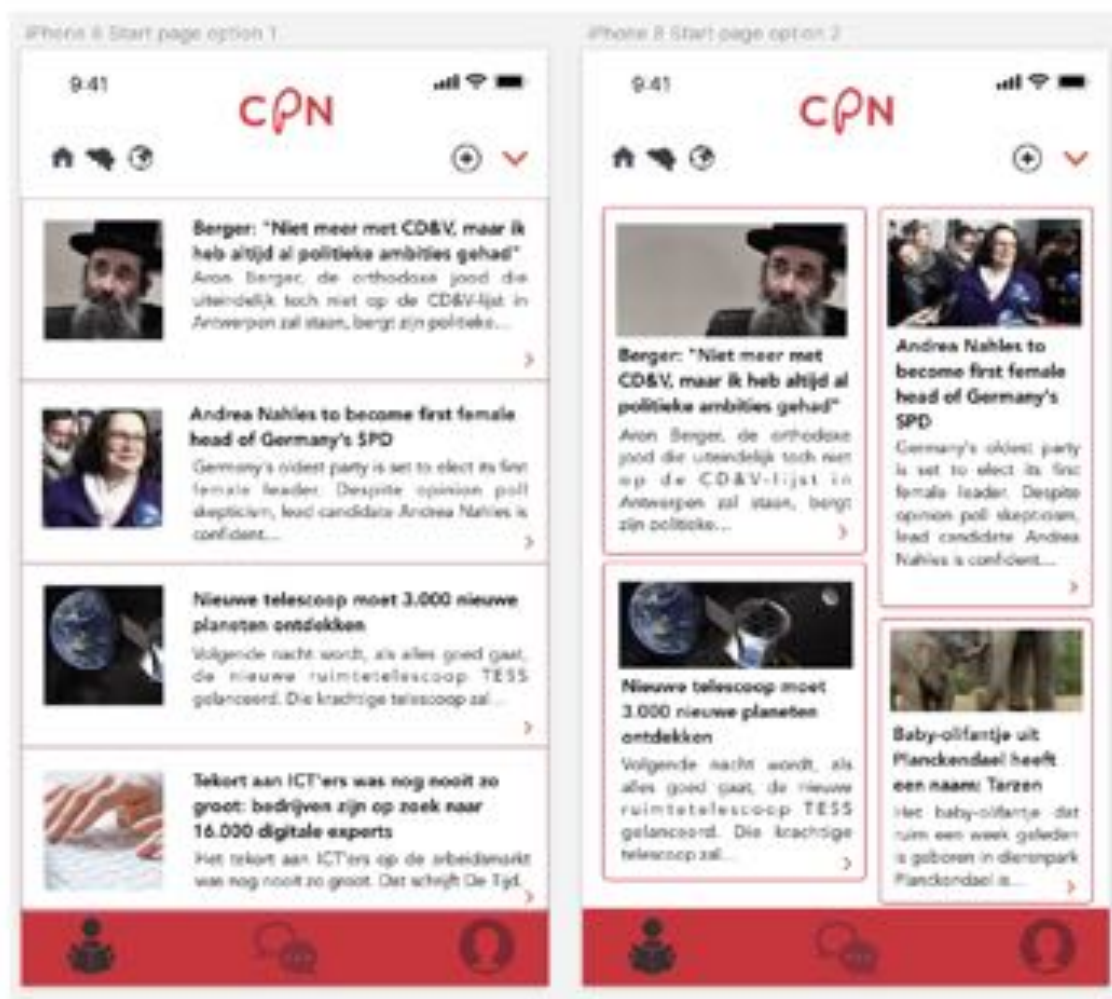
Scribbles DIAS:

Scribbles DW:

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Questions for the user test with scribbles from DW:

Questions in Dutch	Questions in English
Profiel respondent	**Profile respondent**
Voor de app te tonen	**Before showing the app**
• Wat verwacht de gebruiker van de app op vlak van persoonlijke info die gebruikt wordt? • Wat verwacht de gebruiker van de personalisatie? Op basis van welke info? • Op welke manier willen ze toestemming geven?	• What does the user expect from the app regarding the personal information that will be used? • What does the user expect from the personalisation? • What information does the user think will be used? • How would the user like to give (or not) consent?
Scribbles met notificaties overlopen: belangrijk om te melden dat wat nu volgt enkel is bij de eerste keer van het openen van de app!	**Scribbles with notifications: important to say that what the respondent is going to see now, will only be once (when the app will be opened for the very first time)**
Scribble page 2: (welcome)	
• Wat vind je van het welkomstscherm? • Zou je een welkomstscherm met een visual willen en daarna pas een scherm waarop toestemming gevraagd wordt? • Wil je telkens bij het opstarten van de app een welkomstscherm of is dit niet nodig?	• What do you think about the welcome screen? • How do you evaluate the welcome screen? • Do you want to see the welcome screen every time you open the app?
Scribble page 3: (notifications)	
• Vindt men dit een goede manier om toestemming te geven in de app? • Na hoeveel vragen zou de gebruiker stoppen en de vragen niet meer beantwoorden? 1-3; 4-6; 7 en meer? • Is een pagina met tekst ok? Hoeveel tekst is ok? Hoe lang mag dit zijn?	• Do people think this is a good way to give permission in the app? • When would they stop and break it off? 1-3; 4-6; 7 and more? • Is a page of text still ok? How much are they willing to read?
Scribble page 4: (location) → related to scribble 5	
Scribble page 5: (location in color) → related to scribble 4	
• Wordt de gebruiker beïnvloed door een gekleurde ja/nee-knop? • Liever een gekleurde knop of geen gekleurde ja/nee-knop? En welke kleuren?	• Do people feel influenced by a colored yes/no choice over a monochromatic one? • Does the user prefer a colored yes/no-button? Which colors?

Scribble page 6: (interests)	
• Welke data mogen wij van de gebruiker weten om een beter gepersonaliseerde app te kunnen maken? (in het algemeen)	• What would people in general allow us to use for a better personalised experience?
• Heeft de gebruiker problemen met het vrijgeven van bovenstaande informatie? • Zou de gebruiker liever een soort van 'dashboard' te zien krijgen waarbij ze een schuifknop op ja of nee kunnen zetten? Bv: mogen we gebruik maken van volgende informatie om uw gebruikerservaring te verbeteren? En dan een lijst met types van data, met eventueel een 'i' erbij voor meer info, waarom ze dit precies nodig hebben.	• Does the user have problems with giving above information? • Does the user prefer to see a dashboard where they have the typical iPhone-slide-button? So a list with all the information that will be gathered on one page and next to is slide-buttons to activate or inactivate that information. And as extra, the typical 'i' within a circle for if the user would like to have more information.
Voor de rest van de scribbles te laten zien	
• Hoe wilt de gebruiker navigeren doorheen de app? • Welke opties moeten zeker in de app zitten?	• How would the user navigate through the app? • Which options should be in the app?
Scribbles tonen: zeggen dat dit (tegenover de vorige scribbles) wel altijd zo zal te zien zijn	**Showing the scribbles and say that the following scribbles would be shown the next time the user opens the app**
Scribble page 7: (item overviews - filters)	
• Wat verwacht de gebruiker te kunnen doen op deze pagina qua navigatie? Wat wilt de gebruiker kunnen doen op een pagina? Welke functionaliteiten verwachten ze? **Rechter-knoppen bovenaan:** • Wat verwacht de gebruiker van de drie knoppen rechts bovenaan? Wat denken ze dat deze betekenen? • Wat denkt de gebruiker dat de 'plus'-knop inhoudt? • Hoe verwacht de gebruiker dat de 'sortering'-knop is? Wat verwacht hij daarmee te kunnen doen? En wat zouden de opties moeten zijn? • Hoe interpreteert de gebruiker de vlag? Wat betekent deze vlag? Is deze knop nodig?	• What does the user expect to do in this page (regarding the navigation)? What does the user want to do on this page? Which functionalities do they expect? **Buttons on the right:** • What would people expect from the block top right? *(languages - RSS feed - how article is shown)* • What would they expect behind the plus? • What Sorting would they expect? Would they expect it at all? What should the options be? • How to they interpret the flag and what behaviour would they expect? Would they expect that to be necessary?
Scribble page 8: (item overviews - details)	
Linker-knoppen bovenaan: • De linke sorteer-knoppen: verwacht de gebruiker dat deze 3 knoppen erin zitten? Begrijpen ze wat deze 3 knoppen inhouden?	**Buttons on the left:** • What would people expect from the house, EU and world icons? Do they understand the buttons?

• Hoe interpreteert de gebruiker de 'thuis'-knop? Betekent dit voor hen de locatie waar ze wonen, of de locatie waar ze op dat moment zijn? • Moet deze thuis-knop alleen gaan over nieuws uit de stad / het dorp waar de gebruiker woont of zouden ze bvb bij instellingen een aanpasbare straal (bvb: 10 km) kunnen willen instellen? • Zou hier nog een vierde knop moeten komen? Dus een knop voor 'locatie' zodat de gebruiker nieuws krijgt over de plaats waar hij/zij zich op dat moment bevindt?	• How does the user interprete the home-button? Does this mean: the location where they live or the location where they are? • Does the user want a extra button (a 'pin'-button) for the location being the location where the user is at that moment?
• Verwacht de gebruiker dat er al artikels zouden staan die ze gelezen zouden hebben? • Begrijpt de gebruiker waarom er al andere topics bij een artikel getoond worden? • Verwachten gebruikers gelinkt nieuws te zien over hetzelfde topic/ gelijkaardig topic? • Verwachten ze thematische indeling (bv. Politiek nieuws, showbizz,..) - dus hoe willen ze categoriseren?	• Do people expect to see what they have already read? • Do people expect to already see why something is shown here? • Does the reader expect to see related news about the same topic? • Does the user want to have a thematic division (example: politics, showbizz,...)?
Scribble page 9: (read all message)	
• Begrijpt de gebruiker waarom er een notificatie opduikt? • Is deze notificatie nodig? • Zou deze notificatie storen? Zou er dus automatisch nieuw nieuws moeten laden?	• Does the user understand why a notification is showing up? • Is the notification necessary? • Would the notification disturb the user? Or do they want to have automatic loaded news items?
Scribble page 10: (item detail view) → related to scribble page 11 & 12 & 13	
• Welke set-up zou de gebruiker willen? • Scrollen?	• Which setup would people prefer? • Scrolling?
Scribble page 11: (item detail view) → related to scribble page 10	
• Of pagina's?	• Which setup would people prefer? • Or pages?
Scribble page 12	
(zie vorige vraag)	(see previous question)
Scribble page 13	
(zie vorige vraag)	(see previous question)

Scribble page 14: (share buttons)	
• Waar verwacht de gebruiker de 'deel'-knoppen? • Vindt de gebruiker deze deel-knoppen nodig? • Welke deel-knoppen zijn voor de gebruiker belangrijk om in de app te hebben staan?	• Where would people expect the share buttons? • Are the share-buttons necessary? • Which share-buttons are important to have in the app?
Scribble page 15: (summary after article)	
• Heeft deze samenvatting zin voor de gebruiker? • Zou de gebruiker deze samenvatting graag willen zien of is dit overbodig? Zou de gebruiker (indien mening is dat het overbodig is) deze gegevens wel willen kunnen opvragen? • Zou de gebruiker dit meer grafisch willen kunnen zien?	• Does this kind of summary make sense for the users? • Would they prefer to see this all along the article? • Does the user want to see this in a more graphical way?
Scribble page 16: (feedback questions)	
• Vindt de gebruiker deze vragen oké om hun profiel meer te kunnen verfijnen? • Welke vragen zijn nuttig vindt de gebruiker? Zijn er nog andere vragen die zeker gesteld zouden moeten worden volgens de gebruiker? • Hoe vaak zouden ze het accepteren om zo'n vraag te krijgen? 1-3 keren de week; 1-3 keren per dag; 1-4 keren per maand	• Do people like these questions to refine their profile? • Which ones make sense for people? Which others could they imagine? • How often would they accept to see these? 1-3 times a week 1-3 times a day 1-4 times a month
Scribble page 17: (feedback questions)	
(zie vorige vraag)	(see previous question)
Scribble page 18: (feedback questions)	
(zie vorige vraag)	(see previous question)
Scribble page 19: (feedback questions)	
(zie vorige vraag)	(see previous question)
Scribble page 20: (profile/settings)	
• Hoe vindt de gebruiker de opdeling van data?	• How do users react to the separation of the data?
Scribble page 21: (profile/settings)	
• Is het duidelijk voor de gebruiker wat hij kan doen/zien hier?	• Is it clear to users, what they can do here?

• Mist er volgens de gebruiker een belangrijk item in dit overzicht?	• What are they missing from a profile overview?
Scribble page 22: (profile/settings)	
• Is het duidelijk voor de gebruiker wat hij hier kan zien/doen? • Heeft de gebruiker het gevoel dat er te veel data van hem gebruikt wordt? • Wilt de gebruiker meer transparantie met betrekking tot de data dat gedeeld wordt met deze sociale netwerken?	• Is it clear to users what this allows them to do? • Do they have the feeling that they are in control of the data? • Do they need more transparency towards the data being shared with these networks?
Scribble page 23: (profile/settings)	
• Is het duidelijk voor de gebruiker wat hij kan zien in dit overzicht? • Is het duidelijk waarom dit overzicht goed is voor de gebruiker?	• What to people see in this overview? • Is it clear to them, what this is good for?
Scribble page 24: (profile/settings)	
• Is het voor de gebruiker duidelijk wat hij kan doen door naar rechts te swipen? (opmerking: best een feedback-vraag hier)	• Do people understand what they can do by swiping right? *(It's supposed to clear all saved interests)* • Probably best with a feedback question here (Do you really want to clear all interests?)
Scribble page 25: (profile/settings)	
• Is het duidelijk voor de gebruiker wat er gebeurt als hij naar links swipet? • Wat verwacht de gebruiker dan te zien?	• Tapping or swiping left opens the category and allows for the overview. Is this clear? • What does the user expect to see?
Scribble page 26: (profile/settings)	
• Wat kan de gebruiker hieruit afleiden? • Is dit duidelijk voor de gebruiker?	• What do users read out of this, how do they understand this? • Is this clear for the user?
Algemene opmerkingen	**General remarks**
• Zijn er nog andere opmerkingen/verbeteringen die je zou willen melden? • Wat vind je van de app? (look & feel van de app) • Wat vindt de gebruiker van het kleurenschema van de app? Zou de gebruiker liever andere kleuren hebben? Welke?	• Are there other remarks the user want to share? • What is the first impression of the app (about the look & feel)? • What does the user find of the color scheme that is used? Does the user prefer other colors? Which ones?

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7.3 APPENDIX C: ZERO MEASUREMENT SURVEY

Start of Block: SOCIODEMOGRAFISCHE GEGEVENS

Q1

Completing this questionnaire takes about 13 minutes and the results will be processed anonymously. All collected data will be treated confidentially.

In the first part of the questionnaire, your socio-demographic data will be asked. Next, there are questions about your media and news use.

Q2 What is your first name?

_____

Q3 What is your last name?

_____

Q4 What is your gender?

○ Man (1)

○ Female (2)

○ X (3)

Q5 What is your postal code?

_____

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Q6 What is your highest level of education?

○ I'm currently studying (1)

○ Primary school (2)

○ Lower secondary school (3)

○ Higher secondary school (4)

○ Bachelor's degree (5)

○ Master's degree (6)

Skip To: Q8 If What is your highest level of education? != I'm currently studying
Skip To: Q7 If What is your highest level of education? = I'm currently studying

Q7 What is the highest level of education you expect to obtain?

○ I will not finish secondary school (1)

○ Secondary school (2)

○ Professional bachelor (3)

○ Academic bachelor (4)

○ Master (5)

○ Doctorate (6)

○ I don't know (7)

Display This Question:
    If What is your highest level of education? != I'm currently studying

Q8 What is your current job situation?

○ I work full-time (1)

○ I work part-time (2)

○ I am (temporarily) not working (3)

○ I am retired (4)

Display This Question:

If What is your current job situation? = I am (temporarily) not working

Q9 Which description suits you best?

○ I am a homemaker (1)

○ I am on temporary leave (illness or maternity leave, leave without salary / career break) (2)

○ I am incapacitated to work, long-term sick, disabled (3)

○ I am a job seeker (4)

Display This Question:

If What is your current job situation? = I work full-time

Or What is your current job situation? = I work part-time

Q10 What is your (main) profession?

○ I am a labourer (1)

○ I am an employee (2)

○ I am a public servant (3)

○ I am a teacher (4)

○ I practice a middle management position (eg team leader, team manager, ...) (5)

○ I practice a higher management position (eg CEO, CFO, CTO, ...) (6)

○ I am self-employed (7)

○ I am a freelancer (8)

○ My situation is other than the above, namely: (9)

_____

Display This Question:

If What is your current job situation? = I work full-time

Or What is your current job situation? = I work part-time

Q11 In which sector(s) are you active? Multiple answers possible.

- ☐ Recreation, culture and sports (1)

- ☐ Computer science, media and telecom (2)

- ☐ Financial services (3)

- ☐ Education (4)

- ☐ Tourism, food preparation and serving (5)

- ☐ Health care (6)

- ☐ Manufacturing/production (7)

- ☐ Transport (8)

- ☐ Wholesale and retail (9)

- ☐ Agriculture, forestry and fishing (10)

- ☐ Construction (11)

- ☐ Energy (12)

- ☐ Public administration and government (13)

- ☐ Office and administrative support occupation (14)

- ☐ Other, namely: (15)

_____

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Q12 What is your family situation? With whom do you currently live together at one address.

○ Living alone without children (1)

○ Living alone with children (2)

○ Married or living together with my partner without children (3)

○ Married or living together with my partner and children (4)

○ Living together with both parents (5)

○ Living together with one of my parents (6)

○ Alternately with one of my parents (7)

○ Living together with others (f.e. students) (8)

○ Other, namely: (9) _____

End of Block: SOCIODEMOGRAFISCHE GEGEVENS

Start of Block: INTERNET ALGEMEEN

Q13 For which of the following applications do you use internet (via any device, namely desktop, laptop, tablet or mobile phone)? Multiple answers possible.

- ☐ To search for information (1)

- ☐ To read or send e-mails (2)

- ☐ To visit a social network site (3)

- ☐ To play games/gaming (4)

- ☐ To watch video's, streaming,... (5)

- ☐ To listen to radio and/or music (6)

- ☐ To gather news (7)

- ☐ To use apps (8)

- ☐ Other, namely: (9)

Q14 How often do you consult the internet?

- ○ Daily (1)

- ○ Weekly (2)

- ○ Less than weekly (3)

Display This Question:

If How often do you consult the internet? = Daily

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Q15
You indicated you are surfing the internet daily. How often do you consult the internet exactly?

- ○ Once a day (1)

- ○ Between 2 and 5 times a day (2)

- ○ Between 6 and 10 times a day (3)

- ○ More than 10 times a day (4)

Display This Question:

If How often do you consult the internet? = Weekly

Q16 You indicated you are surfing the internet weekly. How often do you consult the internet exactly?

- ○ Once a week (1)

- ○ 2-3 days per week (2)

- ○ 4-6 days per week (3)

Q17 Which of the following social network sites do you use?

	Yes (1)	No (2)	I don't know (3)
Facebook (1)	○	○	○
Twitter (2)	○	○	○
LinkedIn (3)	○	○	○
Instagram (4)	○	○	○
Youtube (5)	○	○	○
Reddit (6)	○	○	○
Vine (7)	○	○	○
Snapchat (8)	○	○	○
Foursquare (9)	○	○	○
Google+ (10)	○	○	○
Tumblr (11)	○	○	○
Swarm (12)	○	○	○
Ello (13)	○	○	○
Other: (14)	○	○	○

End of Block: INTERNET ALGEMEEN

Start of Block: DEVICES + NEWS-DEVICES

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Q18
Which of the following devices, which you can connect to the internet, do you use (for any purpose)? Please indicate all the answer that apply.

☐   Phone (1)

☐   GSM (10)

☐   Smartphone (2)

☐   Laptop or desktop computer (3)

☐   Tablet (4)

☐   E-book reader (Amazon Kindle, Tolino,...) (5)

☐   Television (6)

☐   Smartwatch or wristband (Apple Watch, Fitbit,...) (7)

☐   ⊗None of these (8)

☐   ⊗I don't know (9)

> *Display This Question:*
>
> *If Which of the following devices, which you can connect to the internet, do you use (for any purpos... = Smartphone*

Q19 By which producer was your smartphone made?

○ Apple (1)

○ Other, namely: (2) _____

○ I don't know (3)

Q20 When was the last time you used a news app (such as Apple News, DW News,...) via your smartphone?

○ In the last day (1)

○ In the last week (2)

○ In the last month (3)

○ In the last year (4)

○ More than a year ago (5)

○ I never used a news app (6)

Q21 By which producer was your tablet made?

○ Apple (1)

○ Other, namely: (2) _____

○ I don't know (3)

Q22 When was the last time you used a news app (such as Apple News, DW News,...) via your tablet?

○ In the last day (1)

○ In the last week (2)

○ In the last month (3)

○ In the last year (4)

○ More than a year ago (5)

○ I never used a news app (6)

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Q23 How often do you use the sources or devices mentioned below to follow the news?

	Never (1)	Rarely (2)	Monthly (3)	Weekly (4)	Daily (5)
Printed newspaper (1)	○	○	○	○	○
Printed magazine (2)	○	○	○	○	○
Television (3)	○	○	○	○	○
Smart tv (a smart tv is a television which you can connect to the internet) (4)	○	○	○	○	○
Computer (desktop/laptop) (5)	○	○	○	○	○
Tablet (6)	○	○	○	○	○
Smartphone (7)	○	○	○	○	○
Smartwatch (8)	○	○	○	○	○
Radio (9)	○	○	○	○	○

✳

Q24
Which way do you prefer to follow the news? Rank the options from 1 to 9, with 1 = most preferred and 9 = the least preferred. When you don't use a certain way to follow the news,

please don't rank this option.

_____ Via printed newspaper (1)
_____ Via printed magazine (2)
_____ Via television (3)
_____ Via smart tv (a smart tv is a television which can connect to the internet) (4)
_____ Via computer (desktop/laptop) (5)
_____ Via tablet (6)
_____ Via smartphone (7)
_____ Via smartwatch (a smartwatch is a watch which can connect to the internet) (8)
_____ Via radio (9)

End of Block: DEVICES + NEWS-DEVICES

Start of Block: NEWSPAPERS

Display This Question:

If How often do you use the sources or devices mentioned below to follow the news? != Printed newspaper [Never]

Q25
Did you buy or read a printed newspaper in the last week? Indicate what applies.

☐ Yes, via a kiosk of shop (1)

☐ Yes, the newspaper is delivered at home (for one or more days per week) (2)

☐ Yes, via another source, namely: (3)

_____

☐ No, I did not buy a paper newspaper (4)

Q26
Did you pay for online news or have access to a paying online news service in the past year?
This can be a digital subscription, a combined digital/printed subscription, or a payment for an

article or app or online edition.

○ Yes (1)

○ No (2)

○ I don't know (3)

Q27 For which online news services or app(s) did you pay?

_____

Q28 How do you mostly read a newspaper?

○ I read the newspaper completely from front to back (1)

○ I go through the pages and read the articles that interest me (2)

○ I read the main page and then some sections that interest me (3)

○ I immediately go to a specific section, namely: (4)

_____

○ Other, namely: (5) _____

○ Does not apply (6)

Q29 Which statement is most applicable to you?

☐   I read the newspaper in one go, at one specific moment (1)

☐   I read the newspaper in pieces, at different times throughout the day (2)

- -

Q30 Which statements are most applicable to you?

○ I am the only one who reads the copy of the newspaper (1)

○ The copy of the newspaper is also read by other family members (2)

○ The copy of the newspaper is also read by other people at work or on the train (3)

- -

Page Break ———————————————————————————

Q31 Which manner do you prefer to get online news?

○ Via a computer or laptop (1)

○ Via a smartphone (2)

○ Via a tablet (3)

- -

Q32
Do you sometimes share news with others?

○ Yes (1)

○ No (2)

- -

Display This Question:

    If Do you sometimes share news with others? = Yes

Q33 When you share news with others, how does that mostly happen?

○ By talking to them personally (1)

○ Via telephone (2)

○ Via e-mail (3)

○ Via SMS, Whatsapp,... (4)

○ Through social networking sites (such as Facebook, Twitter,...) (5)

○ On paper (6)

○ Other, namely: (7) _____

End of Block: NEWSPAPERS

Start of Block: NEWS

Q34 How interested are you in news?

○ Not interested (1)

○ Not very interested (2)

○ Somewhat interested (3)

○ Very interested (4)

○ Extremely interested (5)

✳

Q35 What is the main reason for you to follow the news? Rank the options from 1 to 5, with 1 = the most important reason and 5 = the least important reason.

_____ To stay informed about what is happening in the world (1)
_____ To stay informed about what is happening in Germany (2)
_____ To stay informed about what is happening nearby (3)
_____ To stay informed about specific topics such as sport, politics, showbizz,... (4)
_____ Other, namely: (5)

Page Break ——————————————————————————————

Q36 How interested are you in the following news topics?

	Not interested (1)	Not very interested (2)	Somewhat interested (3)	Very interested (4)	Extremely interested (5)	I don't know (6)
general national news (1)	○	○	○	○	○	○
general foreign news (2)	○	○	○	○	○	○
business and finance (3)	○	○	○	○	○	○
science and technology (4)	○	○	○	○	○	○
sports (5)	○	○	○	○	○	○
entertainment and media (6)	○	○	○	○	○	○
crime and judicial news (7)	○	○	○	○	○	○
health (8)	○	○	○	○	○	○
government and politics (9)	○	○	○	○	○	○
news and events from your own city (10)	○	○	○	○	○	○
news and events from your region (11)	○	○	○	○	○	○

Q37 How do you rate your news consumption in terms of its... (1 star = not at all, 5 = extremely)

diversity (= the variation in offer) (1)	☆	☆	☆	☆	☆
objectivity (= based on facts) (2)	☆	☆	☆	☆	☆
correctness (3)	☆	☆	☆	☆	☆
completeness (4)	☆	☆	☆	☆	☆

End of Block: NEWS

Start of Block: NEWS SOURCES

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Q38 Which of the following sources (both on paper as digital) did you use as a news source in the past week? Select all the answers that apply.

- ☐ FAZ Frankfurter Allgemeine Zeitung (1)

- ☐ Süddeutsche Zeitung (2)

- ☐ Tageszeitung Taz (3)

- ☐ Die Welt (4)

- ☐ die Zeit (5)

- ☐ Berliner Morgen Post (6)

- ☐ Berliner Zeitung (7)

- ☐ The European (8)

- ☐ Zeit Wissen (9)

- ☐ Neon (10)

- ☐ Focus (11)

- ☐ Spiegel (12)

- ☐ Radio news, namely: (13)
  _____

- ☐ Television news, namely: (14)
  _____

- ☐ Other, namely: (15)
  _____

*

Q39 Which news source is your most consulted news source? Rank your top 3 from most consulted news sources.

_____ FAZ Frankfurter Allgemeine Zeitung (1)
_____ Süddeutsche Zeitung (2)
_____ Tageszeitung Taz (3)
_____ Die Welt (4)
_____ die Zeit (5)
_____ Berliner Morgen Post (6)
_____ Berliner Zeitung (7)
_____ The European (8)
_____ Zeit Wissen (9)
_____ Neon (10)
_____ Focus (11)
_____ Spiegel (12)
_____ Radio news, namely: (13)
_____ Television news, namely: (14)
_____ Other, namely: (15)

Q40 Do you also consult foreign language news?

○ Yes, namely: (1) _____

○ No (2)

End of Block: NEWS SOURCES

Start of Block: REGULARITY CONSULTING NEWS

Q41 How often do you consult news in general? By news we mean national, international, regional/local news and other actuality that you consult via any possible platform (radio, TV, newspaper or online).

○ Daily (1)

○ Weekly (2)

○ Monthly (3)

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Q42
You said you consult news daily. How many times a day do you consult news?

○ More than 10 times a day (1)

○ Between 6 and 10 times a day (2)

○ Between 2 and 5 times a day (3)

○ Once a day (4)

- -

Q43 You said you consult news weekly. How many times a week do you consult news?

○ 4-6 days per week (1)

○ 2-3 days per week (2)

○ Once a week (3)

- -

Q44 How often...

	More than 10 times a day (1)	Between 6 and 10 times a day (2)	Between 2 and 5 times a day (3)	Once a day (4)	4-6 days per week (5)	2-3 days per week (6)	Once a week (7)	Less than one time a week (8)	Less than one time a month (9)	Never (10)	I don't know (11)
do you read the printed newspaper? (1)	○	○	○	○	○	○	○	○	○	○	○
do you read the digital newspaper? (2)	○	○	○	○	○	○	○	○	○	○	○
do you listen to the news on the radio? (3)	○	○	○	○	○	○	○	○	○	○	○
do you watch news on the regional television? (4)	○	○	○	○	○	○	○	○	○	○	○
do you watch news on the national television? (5)	○	○	○	○	○	○	○	○	○	○	○
do you watch news on the international television? (6)	○	○	○	○	○	○	○	○	○	○	○

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do you watch news via a social network site (such as Facebook, Twitter,...) ? (7)	○	○	○	○	○	○	○	○	○	○
do you read news via a news app? (8)	○	○	○	○	○	○	○	○	○	○

> **Display This Question:**
>
> If How often... = do you read the printed newspaper? [More than 10 times a day]
>
> Or How often... = do you read the printed newspaper? [Between 6 and 10 times a day]
>
> Or How often... = do you read the printed newspaper? [Between 2 and 5 times a day]
>
> Or How often... = do you read the printed newspaper? [Once a day]

Q45 How much time do you spend (on average) with reading a printed newspaper?

	no time (1)	less than half an hour (2)	0,5 - 1 hour (3)	1 - 2 hours (4)	2 - 3 hours (5)	3 - 4 hours (6)	4 - 5 hours (7)	more than 5 hours (8)
On a weekday? (1)	○	○	○	○	○	○	○	○
On a weekendday? (2)	○	○	○	○	○	○	○	○

> **Display This Question:**
>
> If How often... = do you read the digital newspaper? [More than 10 times a day]
>
> Or How often... = do you read the digital newspaper? [Between 6 and 10 times a day]
>
> Or How often... = do you read the digital newspaper? [Between 2 and 5 times a day]
>
> Or How often... = do you read the digital newspaper? [Once a day]

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Q46 How much time do you spend (on average) with reading a digital newspaper? With a digital newspaper, the digital version of a printed newspaper is meant, with the same lay-out as a printed newspaper.

	no time (1)	less than half an hour (2)	0,5 - 1 hour (3)	1 - 2 hours (4)	2 - 3 hours (5)	3 - 4 hours (6)	4 - 5 hours (7)	more than 5 hours (8)
On a weekday? (1)	○	○	○	○	○	○	○	○
On a weekendday? (2)	○	○	○	○	○	○	○	○

Display This Question:

If How often… = do you watch news via a social network site (such as Facebook, Twitter,…)? [More than 10 times a day]

Or How often… = do you watch news via a social network site (such as Facebook, Twitter,…)? [Between 6 and 10 times a day]

Or How often… = do you watch news via a social network site (such as Facebook, Twitter,…)? [Between 2 and 5 times a day]

Or How often… = do you watch news via a social network site (such as Facebook, Twitter,…)? [Once a day]

Or How often… = do you read news via a news app? [More than 10 times a day]

Or How often… = do you read news via a news app? [Between 6 and 10 times a day]

Or How often… = do you read news via a news app? [Between 2 and 5 times a day]

Or How often… = do you read news via a news app? [Once a day]

Q47
How much time do you spend (on average) with consulting news via an app or social networksite?

	no time (1)	less than half an hour (2)	0,5 - 1 hour (3)	1 - 2 hours (4)	2 - 3 hours (5)	3 - 4 hours (6)	4 - 5 hours (7)	more than 5 hours (8)
On a weekday? (1)	○	○	○	○	○	○	○	○
On a weekendday? (2)	○	○	○	○	○	○	○	○

Q48 When do you usually consult the news? Multiple answers possible.

	Before 9h (1)	Between 9h and 12h (2)	Between 12h and 14h (3)	Between 14h and 18h (4)	Between 18h and 20h (5)	After 20h (6)	When I have time (so usually differs) (7)
On a weekday (1)	☐	☐	☐	☐	☐	☐	☐
On a weekendday (2)	☐	☐	☐	☐	☐	☐	☐

End of Block: REGULARITY CONSULTING NEWS

Start of Block: WHERE CONSULTING NEWS

Q49 Where do you mostly consult the news on a weekday?

○ At home (1)

○ In a train/tram/bus/car (2)

○ At work (3)

○ The place differs, depending on when I have time (4)

○ Other: (5) _____

Q50 Where do you mostly consult the news on a weekendday?

○ At home (1)

○ In a train/tram/bus/car (2)

○ At work (3)

○ The place differs, depending on when I have time (4)

○ Other: (5) _____

End of Block: WHERE CONSULTING NEWS

Start of Block: INFORMEDNESS & DIVERSITY

Q51 How informed do you feel when you read the news online?

○ 0 (0)

○ 1 (1)

○ 2 (2)

○ 3 (3)

○ 4 (4)

○ 5 (5)

○ 6 (6)

○ 7 (7)

○ 8 (8)

○ 9 (9)

○ 10 (10)

Q52 To what extent do you agree with the following statements?

	Completely disagree (1)	Disagree (2)	Nor agree, nor disagree (3)	Agree (4)	Completely agree (5)
I think it's important to follow the news (1)	○	○	○	○	○
I just want to follow the news about the topics that interest me (2)	○	○	○	○	○
I am worried about the impact of fake news reports on society (3)	○	○	○	○	○
I am concerned about the impact of fake news reports on myself (4)	○	○	○	○	○

Page Break

Q53 How precisely is, according to you, the news that is posted online by news organisations?

○ Not precise (1)

○ Not very precise (2)

○ Nor precise, nor not precise (3)

○ Precise (4)

○ Very precise (5)

Q54
News can be found in many different ways, for example via search engines (e.g. Google) and social media (e.g. Facebook, Twitter,...). Please indicate on this basis to what extent you agree with the following statements.

	Strongly disagree (1)	Rather disagree (2)	Do not agree and do not disagree (3)	Rather agree (4)	Strongly agree (5)
I think that I can usually trust news via social media (1)	○	○	○	○	○
I think that I can usually trust news via search engines (2)	○	○	○	○	○

End of Block: INFORMEDNESS & DIVERSITY

Start of Block: PERSONALISATION

Q55 The last part of the questionnaire is about news personalisation. With news personalisation, news relevant for you is offered.

Q56 I think that news personalisation...

○ 0 (0)

○ 1 (1)

○ 2 (2)

○ 3 (3)

○ 4 (4)

○ 5 (5)

○ 6 (6)

○ 7 (7)

○ 8 (8)

○ 9 (9)

○ 10 (10)

- -

Q57 What type of news personalisation do you prefer? News personalization based on...

○ your sociodemographic data (1)

○ your current news consumption (2)

○ your personal interests (3)

○ your professional interests (4)

○ categories you chose (5)

○ other, namely: (6) _____

End of Block: PERSONALISATION

Start of Block: Bedankt!

Q58 Thank you for completing this questionnaire!

End of Block: Bedankt!

7.4 APPENDIX D: RECRUITMENT PAPER BELGIUM

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7.5 APPENDIX E: POST MEASUREMENT SURVEY

Q1
Thanks for taking the time to test our application!

The test is finished now. To finalize this study, we would like ask you some further questions about the your experiences with the CPN website.

Completing this questionnaire takes about 10 minutes and the results will be processed anonymously. All collected data will be treated confidentially.

- -

Page Break

Q2 What is your first name?

_____

Q3 What is your last name?

_____

Q4 What is your email?

_____

End of Block: INTRO

Start of Block: GEBRUIK CPN WEBSITE

Q5 How often did you consult the CPN website?

○ More than 5 times a day (1)

○ In between 2 and 5 times a day (2)

○ Once a day (3)

○ Less then once a day (4)

Page Break

Q6 How often did you while using CPN website also:

	More than 10 times a day (1)	Between 6 and 10 times a day (2)	Between 2 and 5 times a day (3)	Once a day (4)	4-6 days per week (5)	2-3 days per week (6)	Once a week (7)	Less than one time a week (8)	Less than one time a month (9)	Never (10)	I don't know (11)
Read a printed newspaper? (1)	C	O	O	C	C	C	C	C	O	C	C
Read the digital newspaper? (2)	C	O	O	C	C	C	C	C	O	C	C
Listen to the news on the radio? (3)	C	O	O	C	C	C	C	C	O	C	C
Watch news on the regional television? (4)	C	O	O	C	C	C	C	C	O	C	C
Watch news on the national television? (5)	C	O	O	C	C	C	C	C	O	C	C
Watch news on the international television? (6)	C	O	O	C	C	C	C	C	O	C	C

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Watch news via a social network site (such as Facebook, Twitter,...) ? (7)	○	○	○	○	○	○	○	○	○	○
Read news via a news app? (8)	○	○	○	○	○	○	○	○	○	○

Page Break ───────────────────────────────────

Q7 Where did you mostly consult the CPN website?

○ At home (1)

○ At work (3)

○ The place differs, depending on when I have time (4)

○ Other: (5) _____

- -

Page Break ———————————————————————————————————

Q8 What was the average duration of a visit to the CPN website?

    ○ Longer than 40 minutes (1)

    ○ In between 31 and 40 minutes (6)

    ○ In between 21 and 30 minutes (2)

    ○ In between 11 and 20 minutes (3)

    ○ In between 5 and 10 minutes (4)

    ○ Less than 5 minutes (5)

Page Break ───────────────────────────────────

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Q9 You could share news articles via social media (Facebook, Twitter, Linkedin and Google+). Did you do this?

○ I shared multiple articles (1)

○ I shared one article (2)

○ I didn't share articles, but I knew this was possible (3)

○ I didn't share articles and I didn't know this was possible (4)

- -

Page Break ————————————————————————————

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Q10 Did the website work properly during the test?

○ Yes (1)

○ No (2)

Display This Question:

   If Did the website work properly during the test? = No

Q11 You said not everything was working properly. Can you explain what went wrong?

_____

_____

_____

_____

_____

End of Block: GEBRUIK CPN WEBSITE

Start of Block: EVALUATIE CPN WEBSITE

Page Break

Q12 How did you experience the overall use of the CPN website?

○ Very bad (2)

○ Bad (3)

○ Neutral (4)

○ Good (5)

○ Very good (6)

- -

Page Break ————————————————————————————————

Q13 How would you describe the CPN website?

	-2	-1	0	+1	+2	
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	
Useless	○	○	○	○	○	Useful
Very boring	○	○	○	○	○	Very fun
Very cumbersome to work with	○	○	○	○	○	Very easy to work with
Not at all informative	○	○	○	○	○	Very informative
Not at all trustworthy	○	○	○	○	○	Very trustworthy

- -

Page Break

Q14 How do you evaluate the diversity (=the variety in offer) of the articles on the CPN website?

○ Not at all varried (1)

○ Not very varried (2)

○ Neutral (6)

○ A little varried (3)

○ Very varried (4)

Page Break

Q15 On the CPN website you could choose between 3 streams or tabs: 'Personalized', 'Most popular' and 'Latest news'. In what stream did you most often read articles?

○ 'Personalised' stream (1)

○ 'Most popular' stream (2)

○ 'Latest news' stream (3)

○ I don't know (4)

Page Break

Display This Question:

If On the CPN website you could choose between 3 streams or tabs: 'Personalized', 'Most popular' and... = 'Personalised' stream

Q16 Why did you most often read articles in the personalized stream?

_____

Display This Question:

If On the CPN website you could choose between 3 streams or tabs: 'Personalized', 'Most popular' and... = 'Most popular' stream

Q17 Why did you most often read articles in the 'Most popular' stream?

_____

Display This Question:

If On the CPN website you could choose between 3 streams or tabs: 'Personalized', 'Most popular' and... = 'Latest news' stream

Q18 Why did you most often read articles in the 'Latest news' stream?

_____

Page Break

Q19 How satisfied were you with the relevance of the articles that appeared in every stream?

	Not at all satisfied (1)	Not very satisfied (2)	Neutral (3)	A little satisfied (4)	Very satisfied (5)
'Personalized' stream (1)	○	○	○	○	○
'Most popular' stream (2)	○	○	○	○	○
'Latest news' stream (3)	○	○	○	○	○

Page Break

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Q20 Would you still want to use the CPN website in the future?

○ Definitely not (1)

○ I don't think so (2)

○ Maybe yes/maybe no (3)

○ I think so (4)

○ Definitely yes (5)

End of Block: EVALUATIE CPN WEBSITE

Start of Block: GEÏNFORMEERDHEID EN DIVERSITEIT

Q21 How informed did you feel after reading the news on the CPN website?

○ 0 (0)

○ 1 (1)

○ 2 (2)

○ 3 (3)

○ 4 (4)

○ 5 (5)

○ 6 (6)

○ 7 (7)

○ 8 (8)

○ 9 (9)

○ 10 (10)

Page Break

Start of Block: PERSONALISATIE

Q22 The second last part of the questionnaire is about news personalisation. With news personalisation, news relevant for you is offered. After using the CPN website, how do you feel about news personalisation?

- -

Q23 I think that news personalisation...

○ 0 (0)

○ 1 (1)

○ 2 (2)

○ 3 (3)

○ 4 (4)

○ 5 (5)

○ 6 (6)

○ 7 (7)

○ 8 (8)

○ 9 (9)

○ 10 (10)

- -

Q24 What type of news personalisation do you prefer? News personalization based on...

○ your sociodemographic data (1)

○ your current news consumption (2)

○ your personal interests (3)

○ your professional interests (4)

○ categories you chose (5)

○ other, namely: (6) _____

End of Block: PERSONALISATIE

Start of Block: Questions Jaco

Q25 This is the last part of the survey.

Q26 Are you currently getting mobile alerts of breaking news on your phone?

○ Yes (1)

○ No (2)

Display This Question:

If Are you currently getting mobile alerts of breaking news on your phone? = No

Q27 Would you want to get mobile alerts of breaking news on your phone?

○ Yes (1)

○ No (2)

Page Break

Q96 How much do you typically spent in a month on news?

○ Nothing (1)

○ 1-5 euro (2)

○ 6-10 euro (3)

○ 11-20 euro (4)

○ 21-30 euro (5)

End of Block: Questions Jaco

Start of Block: Bedankt!

Q28 To finish, we have one final question.

- -

Q29 In the coming months, we will use your feedback to further develop the CPN website. In the first half of next year, the CPN mobile application will be ready. Also here, we would like a group of users to test the application. Or you willing to be a test user of the mobile application as well?

○ Yes (1)

○ No (2)

- -

Q30 Thank you for completing this questionnaire!

End of Block: Bedankt!

7.6 APPENDIX F: INTERVIEW TOPIC LIST

FOCUSGROUP PILOT 1

Duration: Max. 2 hours

Structure workshop:

1. Evaluation CPN website
   - General discussion
   - Discussion on personalisation, cold start problem, FOMO, …
2. Wireframes
   - General discussion
   - Further deeper discussion on cold start problem, FOMO, …

→ Before start focusgroup, have a look at the logging data of each participant. Who was a 'heavy user' of the CPN platform and who not? This is useful background info on the participants.

To bring:

- Camera or voice recorder
- Post-its
- Ball pens
- Incentives
- To print:
  - Informed consent
  - Incentive receipt
  - Name tags
  - Screenshots wireframes
  - Screenshots CPN website
  - Topic list

Welcome 10 min

→ While people arrive and wait for the start: read and sign **informed consent**

- Short explanation what the CPN project is about
- Explain goal focus group:
  - Gather feedback on the tested CPN website
  - Brainstorm on how the website could be better
  - Gather feedback on the wireframes of the mobile app
- Explain course focus group:
  - We will ask you questions, you can give you honest opinion, there are no stupid or wrong answers
- Roundtable: everybody shortly introduces himself or herself (name, age, profession, daily news consumption (what, which device, when).

Evaluation CPN website

- What were your **first impressions** on the website? **15 min**
  - o Where did you use the app mostly? Where do you normally consume news?
  - o Did you use other news sources during the test? Which ones? Why (not)?
  - o Can this app replace existing news sources for you? Why (not)?
  - o Is there another app with which you can compare the CPN app?

→ *Control group: Mention here that they were the control group and the articles were not personalised.*

- EXERCISE: **15 min**
  General evaluation of the application. Everybody evaluates the app individually and fills in the following post-its:
  - Green post it: **What did you like** about the app?
  - Pink post-it: **What did you not like** about the app?
  - Yellow post-it: **What was missing** in the app?
  In the meantime, we check what is written on the post-its and maybe group them together. Everybody says what they wrote down. Discussion on this. We ask extra questions if necessary.

15 min
- When did you click on **'I'm interested' and 'I'm not interested'**?
  - o What did you think of this feature?
  - o By clicking 'I'm interested', you could save articles to read at a later moment. Did you do this?
- During the test, you could **rate an article** on a scale from 1 to 5 after reading it to indicate how relevant this article was for you. What did you think of this?
  - o Are you willing to **give feedback** after reading an article in order to make the personalization algorithm better?
  - o What would be the best way to do this? (ratings, interested vs not intersted, …)
  - o How often are you willing to give feedback on the relevance of articles? (*What is the breaking point?*)
  - o Are there articles which you indicated 'I'm interested' first and then gave a low rating? Why?
- **Cold start vs categories:** When starting to use a personalized news app, the app needs to learn about your news preferences. This can happen in multiple ways, e.g. (1) you start with getting non-personalized articles when starting to use a personalized app (and then getting more and more personalized while using) or (2) select categories when first opening the app and based on that, you would receive personalized articles.
  - o What method do you prefer? Why?
  - o How extended should the list with categories be? General categories (e.g. politics) or subcategories as well (e.g. local politics, national pilotics, European…)?
- In every stream there were a limited number of articles. Was this enough? Do you want more/less?

Personalisation: **15 min**

- On the home page, there were **3 streams:** 'personalized', 'most popular' and 'latest news'.
    - What did you think of these 3 streams?
    - Which stream did you look at the most? Why?
- What do you think of the news in the **personalized stream**?
    - Did the news become more personalized during the course of the test period?
    - Do you feel like the personalization made you better informed?
- What do you think about news personalisation in general? Would you use a personalized application for reading news?
- How does the CPN website fits into your overall news consumption?
    - Complimentary or replacing? And why?
    - Under what conditions could this become your only news source?

Fomo: **5 min**

- Receiving news 24/7 can be hard to keep a good overview on what is going on. Do you prefer to receive just news summaries with the headlines of the day or more information (background info) on topics you like to read about?
    - How do you think the CPN website can deal with this?

Wireframes evaluation

https://sketch.cloud/s/4g1gm

Show the wireframes to the participants on a big screen. If they want, they can also open them with their smartphone. (bit.ly/CPNUI). Encourage the participants to ask questions, give remarks… while showing the wireframes - **25 min**

→ *Print some screens and put them on the table*

Intro

- Say this is a first testversion of the CPN mobile app for news personalisation. Very basic design and abstract lay-out → goal is to test the functionality of the app. All feedback welcome.
- The wireframes don't really work. If you tap the screen, you can see which elements you can use.

Go through the different scenarios:

- Scenario 1: Registration
    - Choose "First time user", Version 1
    - Register
    - Show the steps: is this clear? Are there enough/too much steps? …
    - During registration, you can give permission to the app to track your **location**, your **interests** (which topics do you read?) and **time** (on what moments of the day do you mainly read?) to better personalise the news.
        - What do you think of this?
        - Are you willing to give these permissions for a better personalisation?
        - What does 'location'-based news mean for you? (location where you are at that moment, home-location,...)
    - Open version 2 en show the flow: better than version 1?

- Scenario 2: Personalized feed
  - (you arrive here after registration in previous step - or go to 'regular user', version 1)
  - Focus on the 3 tabs: right order?
  - Explain: first article is not personalized, but the news editor put it there because it's an important news item. Is this okay or not? (conversation will probably be about filter bubble, FOMO …)
  - Scroll down: "all caught up": is this a good idea? What would you do after seeing this message?
- Scenario 3: User profile
  - Menu > Your Account > Data Collection?
    - Transparent enough?
  - Menu > Your News Profile > My Interests?
    - What do you think of this?
- Scenario 4: article details + categories
  - Click on a personalize article + scroll down + show the tags
  - Transparent?

General: **15 min**

- What are your first impressions?
- What do you (don't) like about them?
- What was missing?
- Where are the differences for you compared to the CPN website?
  - Cold-start vs categories
  - FOMO
  - Giving feedback on algorithm
- Do you like the design, the look & feel?

Willingness to pay: **5 min**

- What are for you the unique aspects of the application?
- Would you in the future be willing to pay for a personalised news app like this? How do you see this? (pay only once/monthly subscription + price range)

Thank you + incentives **5 min**

- Thank you for participating
- Do you want to participate in the next phases of the project? (test mobile app first half of 2019)
- Give incentives

7.7 APPENDIX G: SCRIBBLES MOBILE APP

See: https://sketch.cloud/s/4g1gm

Your news / Regular / The e... · ● 3

Your news / Regular / The end v3 ...

Breaking news v1 / Headlines onl...

Breaking news v3 / General (over...

Breaking news v3 + follow

Breaking news v1 / real content

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CPN
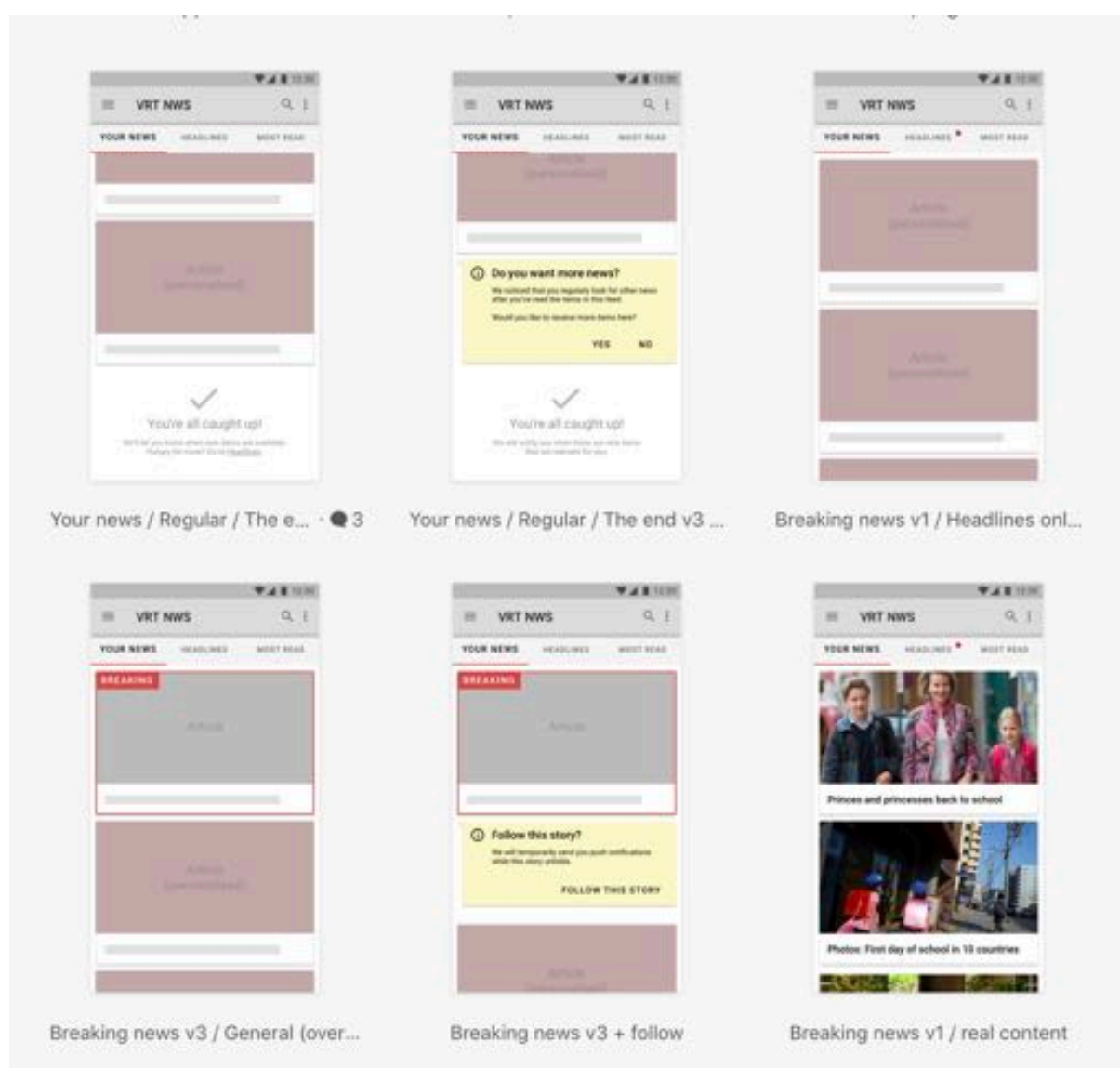
7.8 APPENDIX H: OUTPUTS STATISTICAL ANALYSIS

SPSS STATISTICS OUTPUT 1 (EVALUATION STREAMS): MANN-WHITNEY TEST

Ranks

	Group	N	Mean Rank	Sum of Ranks
Hoe tevreden was je over de relevantie van de artikels die verschenen in elke stream? - **'Personalized' stream**	Intervention group	18	18,42	331,50
	Control group	20	20,48	409,50
	Total	38		
Hoe tevreden was je over de relevantie van de artikels die verschenen in elke stream? - **'Most popular' stream**	Intervention group	18	18,00	324,00
	Control group	20	20,85	417,00
	Total	38		
Hoe tevreden was je over de relevantie van de artikels die verschenen in elke stream? **- 'Latest news' stream**	Intervention group	18	18,44	332,00
	Control group	20	20,45	409,00
	Total	38		

Test Statistics[a]

	Hoe tevreden was je over de relevantie van de artikels die verschenen in elke stream? - 'Personalized' stream	Hoe tevreden was je over de relevantie van de artikels die verschenen in elke stream? - 'Most popular' stream	Hoe tevreden was je over de relevantie van de artikels die verschenen in elke stream? - 'Latest news' stream

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Mann-Whitney U	160,500	153,000	161,000
Wilcoxon W	331,500	324,000	332,000
Z	-,616	-,902	-,600
Asymp. Sig. (2-tailed)	,538	,367	,548
Exact Sig. [2*(1-tailed Sig.)]	**,573**[b]	**,443**[b]	**,593**[b]

a. Grouping Variable: Group

b. Not corrected for ties.

SPSS STATISTICS OUTPUT 2 AND 3 (INFORMEDNESS - PERSONALISATION): T-TEST

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Hoe geïnformeerd voelde je jou na het lezen van het nieuws op de CPN website?	Intervention group	18	5,28	2,052	,484
	Control group	20	6,60	1,569	,351
Duid aan. Ik denk dat nieuwspersonalisatie...	Intervention group	18	6,56	1,917	,452
	Control group	20	7,05	1,791	,400

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
Hoe geïnformeerd voelde je jou na het lezen van het nieuws op de CPN website?	Equal variances assumed	2,040	**,162**	-2,244	36
	Equal variances not assumed			-2,212	31,737

Duid aan. Ik denk dat nieuwspersonalisatie...	Equal variances assumed	,027	**,871**	-,822	36
	Equal variances not assumed			-,819	34,923

Independent Samples Test

		t-test for Equality of Means			95% Confidence Interval of the Difference
		Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower
Hoe geïnformeerd voelde je jou na het lezen van het nieuws op de CPN website?	Equal variances assumed	**,031**	-1,322	,589	-2,517
	Equal variances not assumed	,034	-1,322	,598	-2,540
Duid aan. Ik denk dat nieuwspersonalisatie...	Equal variances assumed	**,416**	-,494	,602	-1,714
	Equal variances not assumed	,418	-,494	,604	-1,720

Independent Samples Test

	t-test for Equality of Means 95% Confidence Interval of the Difference Upper

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Hoe geïnformeerd voelde je jou na het lezen van het nieuws op de CPN website?	Equal variances assumed	-,127
	Equal variances not assumed	-,104
Duid aan. Ik denk dat nieuwspersonalisatie...	Equal variances assumed	,725
	Equal variances not assumed	,731

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