'Have I got news for you'!
The challenges of news personalisation from an end user perspective

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Introduction
Today many media users are confronted with an overflow of audiovisual content and information on different platforms, making them feel overwhelmed. For end users it has become difficult to determine which news is relevant and trustworthy, as a lot of news circulating online can be categorized as 'fake news' and 'misinformation'. Furthermore, not every news consumer has the same level of knowledge on a topic, leading to a need for diversification. On the other hand, there is the danger of the so-called "filter bubble" which might lead to a biased and unnuanced view on important societal topics (Pariser, 2011)[1]. Traditional news organizations have been a trusted news source for media users over the past decades. In today's society where information has increased exponentially, there is an important role for these established media companies to offer relevant and trustworthy news to their audiences[2]. The covid-19 health crisis has stressed this need even more.

To address these challenges, **the European Horizon 2020 project CPN (Content Personalisation Network) aims to offer media consumers more relevant news, in the right format and at the right time**[3]. To achieve this aim, a personalized news application was developed with content from its media partners VRT (Belgium), Dias (Cyprus) and Deutsche Welle (Germany). The application offers personalized news in three languages: English (DW), Greek (Dias) and Dutch (VRT). This news application has been developed together with all relevant stakeholders via a user-centered design approach in a living lab setting. The application has been iteratively developed and tested in three pilot rounds. In the last round we applied an open pilot with over 4.000 participants divided over the three pilot countries (Belgium, Germany, Cyprus). The final pilot took place February-March 2020.

In this contribution we discuss the end user evaluation of the CPN-app, focusing on specific elements such as the user acceptance towards news personalisation, the issue of fear of missing out (FOMO), sustainability of the notion of filter bubble from an end user perspective and whether there is an increased level of the feeling of being informed after using the CPN application. The discussed results are based on a combination of quantitative data (logging and survey data) and qualitative data (interviews with test-users). The first two pilot rounds already provided us with relevant insights related to news personalisation. In pilot 3 we tested the CPN recommender on a larger scale.

Pilot 1
In 2018, almost 100 end-users tested the first prototype of the CPN news recommender platform for a period of ten days. This first prototype was a web-interface (Figure 1) which was tested by the participating end-users. In each pilot country, the recommender system contained news content from the local media partner (VRT, Deutsche Welle and DIAS). The web-interface was branded with the CPN project logo and not with the specific media brands.

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[1] Pariser, Eli (2011). *The Filter Bubble: What the Internet Is Hiding from You*, Penguin Press. ISBN 978-1-59420-300-8
[2] https://www.reuters.com/article/us-media-fakenews/fake-news-hurts-trust-in-media-mainstream-outlets-fare-better-poll-idUSKBN1D002S
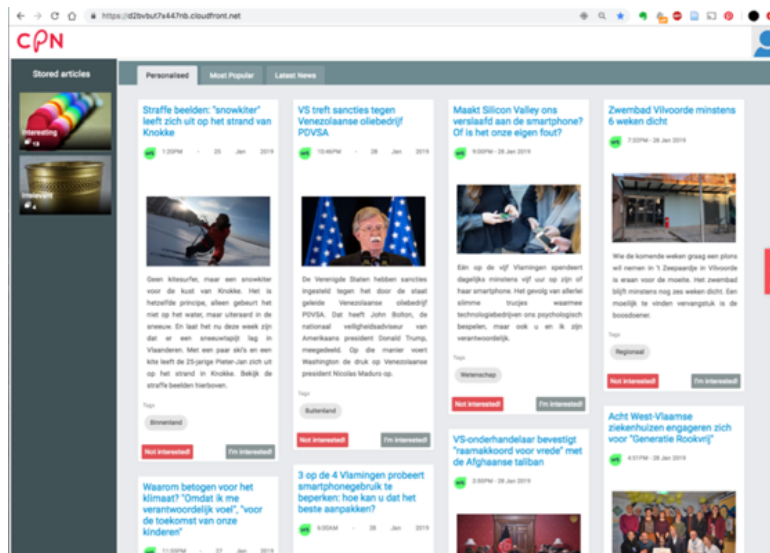[3] https://www.projectcpn.eu/

Figure 1: First CPN prototype

The **first CPN prototype** consisted of three news sections, presented in separate tabs:
- **Most popular** - the most-read content among the users of the particular news outlet;
- **Latest news** - all articles in chronological order, with the latest on top;
- **Personalised** - the most relevant content for the user.

The 'personalised' tab was the most read section in all three pilot countries. **While news personalisation itself was evaluated as positive, there was a fear of missing out (FOMO) when receiving personalised news articles**: the participants were afraid that through personalisation they might only get news content based on their interests, which could cause them to miss other relevant or important news. The CPN recommender was not available as a mobile application during the first pilot, which was a negative point among the testers. On the other hand, the participants generally thought the web interface was straightforward and easy to use, although some thought that more important articles could be made more prominent in the interface. Based on the feedback of the first pilot round, we created the second prototype.

Pilot 2
We tested the **second prototype** which had the form of an app in 2019. We evaluated whether users liked the CPN personalisation algorithm by asking them how informed they felt after using our prototype. VRT, DIAS and Deutsche Welle, the media partners in the project, invited users to download the (Android) app onto their mobile phones and follow the news through CPN for a test period of four weeks.

News articles in the new mobile app could be found under three different tabs:
- **My news** - personalised articles based on the profile of the user;
- **Headlines** - articles selected by the news department;
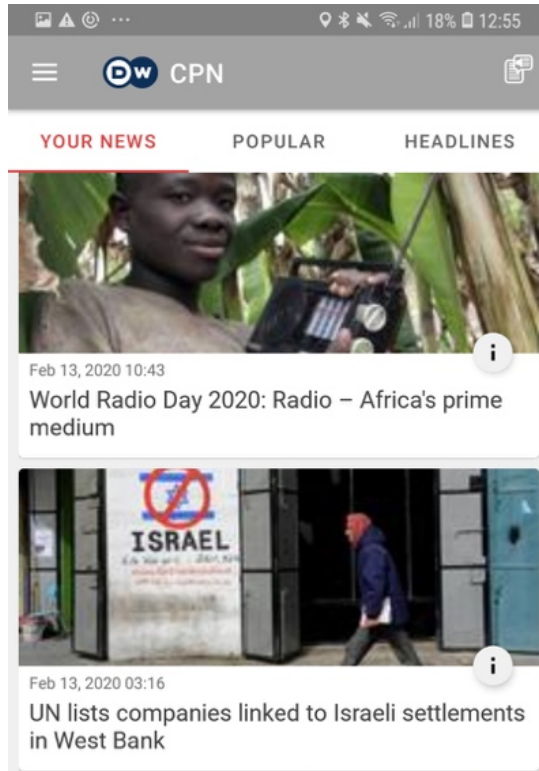- **Just in** - most recently published articles.

Figure 2: Second CPN prototype

We monitored and compared how users experienced both a personalised and non-personalised offer throughout the whole test. The users were split into two halves: one group started out with just a random selection of articles, while the other group received real personalized news recommendations. We switched the groups weekly and checked whether users could tell the difference between the two versions and which one they liked better. **People did appreciate the recommended results over the random results, felt more informed and gave us positive feedback on the application** - but overall, statistically the differences were too small to clearly say the CPN app fully convinced testers. That's why in the third and final pilot, the user-base for testing was increased.
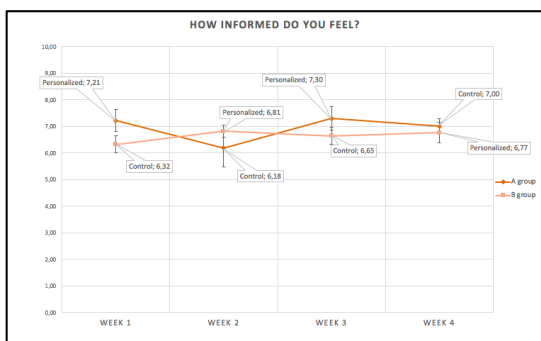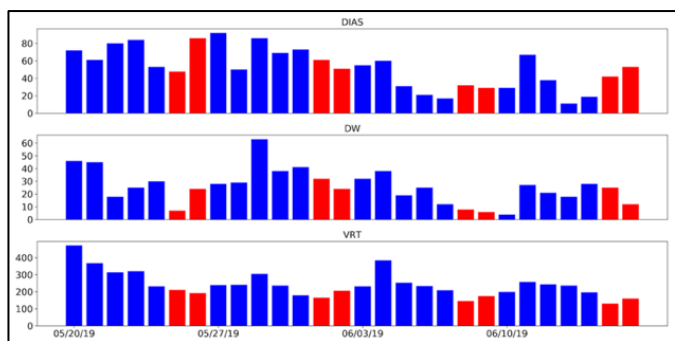

Figure 3: How informed did users feel?

Figure 4: How often did users click on articles during the evaluation?

Pilot 3

The third pilot took place in February and March 2020. In this pilot, we tested the CPN recommender on Dias' Sigmalive website and via three dedicated apps (Dutch content – VRT nws, English content – DW, and Greek content – Dias).
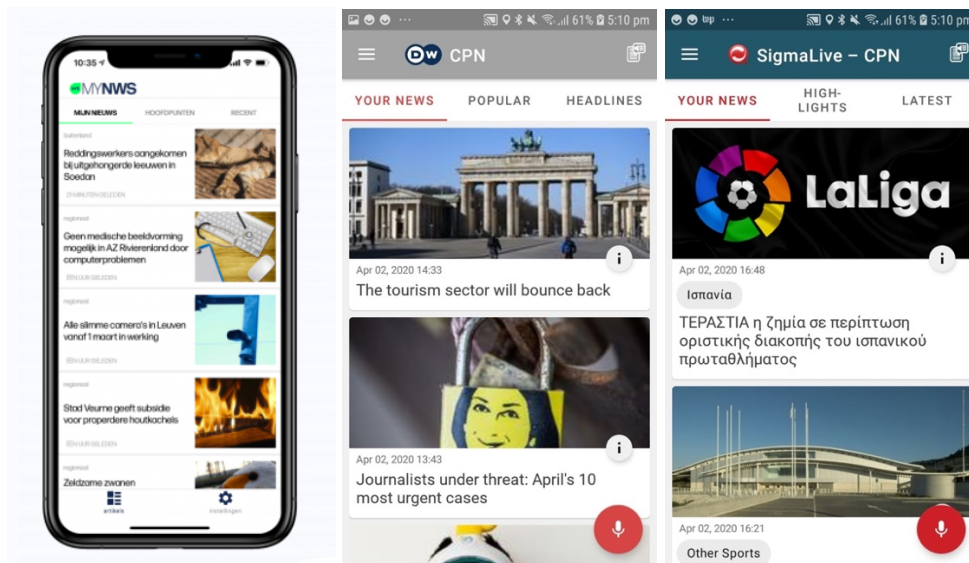

Figure 5: Pilot 3 prototypes

The categories we used for the news classification were similar to pilot 2:
- **Your news** - personalized news for the end-user;
- **Popular/ highlights** - most-read news;
- **Latest/headlines** - most recent news.

Important in this third pilot is that we also clearly branded the news source, as we learned that this is important for users. When we only used the unknown label (CPN), many users were not convinced that this news source was trustworthy. Correspondingly, we again worked with a control and a personalized group for VRT and DIAS. The control group received most popular articles in the 'your news' stream, the personalised group received personalized news. For the Dias website, all participants received only personalized news. Feedback was collected via in-app surveys, logging data and a final survey.

A first focus of our analysis was on the usage of the personalized stream. Did users read more from the personalized stream when their news was actually personalized? From the analysis of the click data, we clearly see an **increment of the personalized group over the control group** when we look into the DW + DIAS data (41% increment over the baseline of the number of clicks (p-value 0.052). For the VRT app we furthermore noticed that **users in the hybrid CPN recommender group read more from the personalized stream**.

Three other questions that were central in this third and final pilot were more subjective questions, focusing on the perception of the users:
1) What is the influence of personalisation on the users' **feeling of being informed**?
2) What is the influence of personalisation on the users' **fear of missing out** (FOMO)?
3) What is the influence of personalisation on the users' feeling of being isolated in a **filter bubble**?

Main learnings

In these main learnings, we focus on the perception of the test-users in relation to the overall CPN concept and the identified topics of feeling informed, FOMO and filter bubble:

- **Personalised news** as a concept is valued by end-users. Users like the idea of getting news that fits their interests and user profile;
- When offering a news app, the **source of the news** is important for the user. There needs to be a clear identification of the source for the user to be able to assess its trustworthiness;
- The three streams proved to be very valuable in the users' overall feeling of informedness and to reduce the **fear of missing out**. By having the option offered to also explore the other streams, their FOMO was minimal. This would be different if they only had the option of personalized news;
- Users did not experience a **filter bubble**. Our findings suggest that it is often more a concern of the newsroom, than an actual perceivable issue.