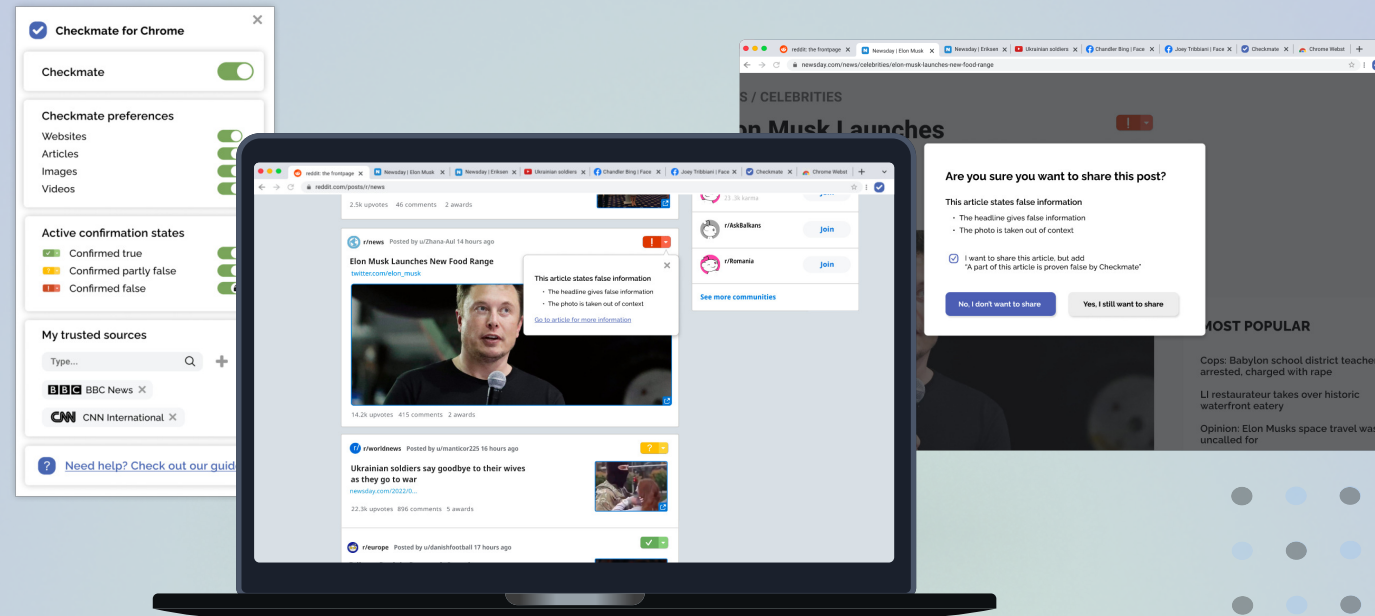


By:
Sigrid Bakås
Yara Mathisen
Kristin Forsberg Dahle
Vendel Eikemo
Susanne Ryland



Suggesting a fact checker interface for Nagra Kudelski

Introduction

This report presents our bachelor project in MIX250, and the process of developing a prototype in collaboration with Nagra Kudelski. The company is a world leader in the development and delivery of technologies for digital television and interactive applications across all network types. They provide secure, engaging and smart solutions that address the digital media ecosystem, and are currently developing a tool that verifies content to separate real and fake news. We got to contribute by researching user needs, and developing a concept and visual interface which answers to these.

The challenge

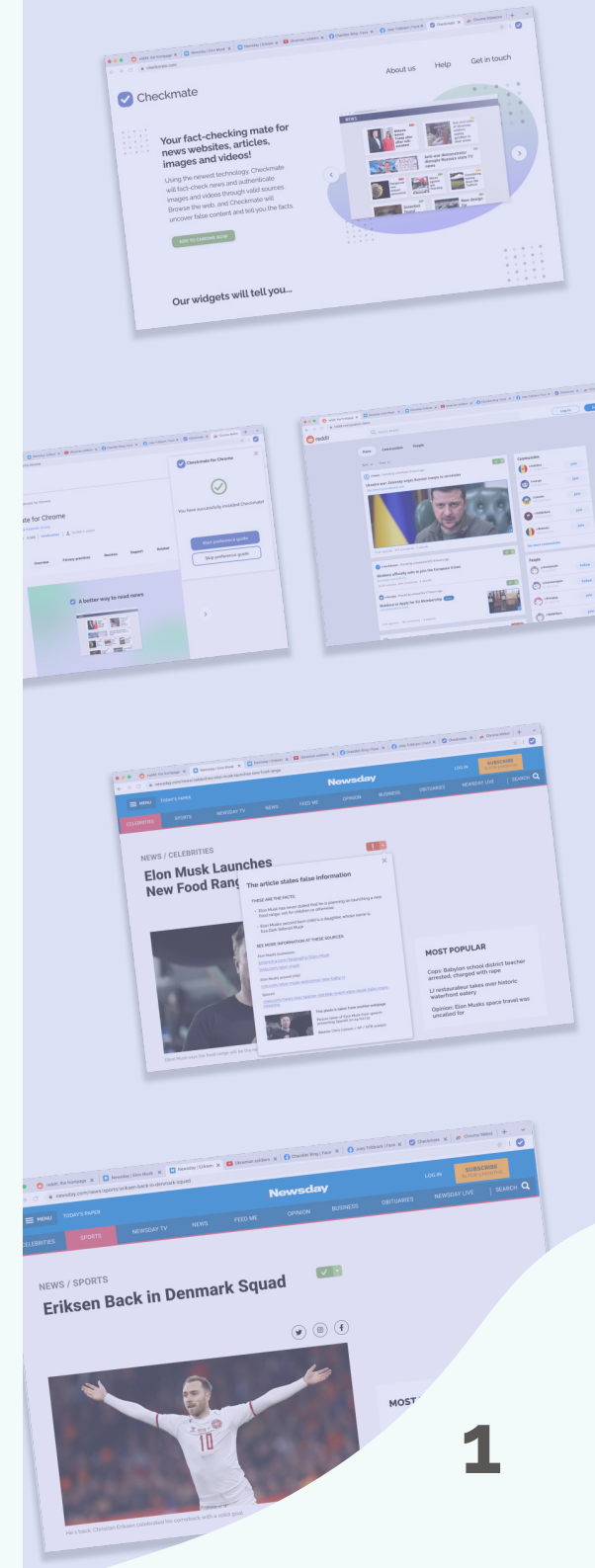
The project began with a challenge, which Nagra presented to us at the beginning of the semester, along with three hypotheses which worked as a catalyst for our gaining of insight regarding fake news and consumers' trust in media.

the challenge

Consumers today unknowingly accept and share news, videos and articles that may not be true (misinformation)

- ▶ Consumers sometimes doubt news and/or facts they are presented with online
- ▶ Consumers will accept a trusted visual indication that a video clip is authentic and verified
- ▶ Consumers prefer content they share to have been fact checked by an authority they trust

the hypotheses



Pre Sprint: Research

To validate Nagras' hypotheses and find out if consumers even have a need for a tool to verify online content, we conducted four interviews with potential end users and a questionnaire with 51 respondents. We interviewed two people of the age 20-22 and two of the age 57-60. This let us compare the news habits and critical mindset of the two age groups to see if there were any considerable differences. We also did expert interviews with a journalist, two researchers on the topic of visual content verification, and an NFT/Blockchain expert from NTB.

Main findings from the interviews with potential end users:

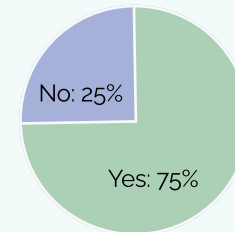
- ▶ The older group were uncritical of Norwegian news sources, while the younger group had a somewhat critical mindset
- ▶ They all expressed a need to confirm if content is true or false
- ▶ The process of confirming the authenticity of content is fairly tedious

Main findings from the expert interviews:

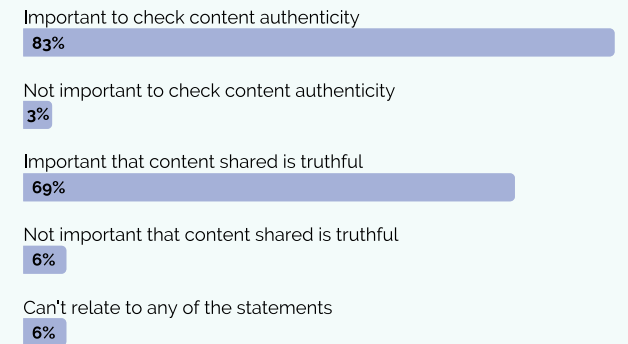
- ▶ Media content authentication is important and will become even more important in the future
- ▶ The trust in media in Norway is fairly high, so a fact-checking solution is a "nice-to-have" in Norway, but potentially needed internationally
- ▶ Implementing a single system for all media companies could prove to be problematic. It is more logical to look at potential solutions from a content consumer perspective.

main findings from the questionnaire

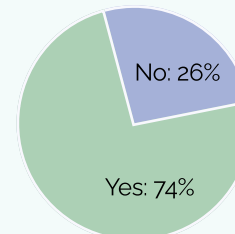
News sites



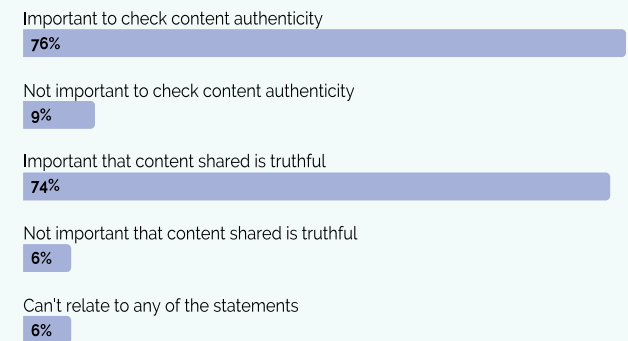
Have you come across a source on news sites that turned out to be false?



Social media



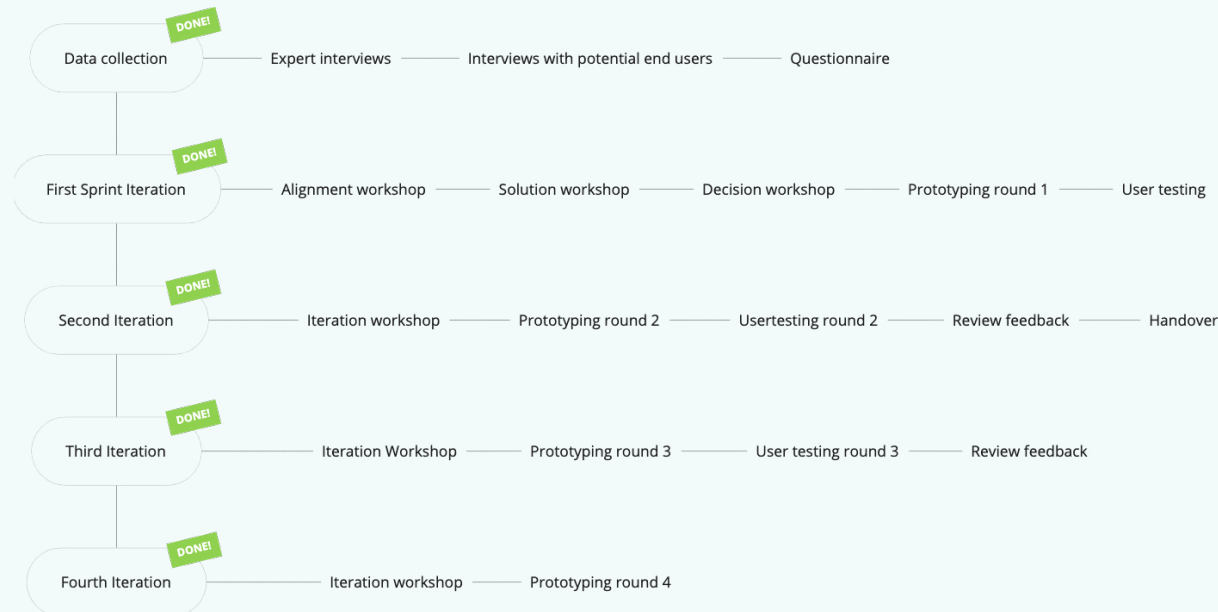
Have you come across a source in social media that turned out to be false?








The Sprint Process

Working with the challenge of misinformation has seemed scary, as it leaves open questions which we do not have the answer to. Questions regarding ethical implications and technical feasibility. While the competent team from Nagra has helped us navigate such challenges through sprint workshops, it has been important for us to focus on creating a product which answers to user needs. Using the Google Sprint Method has ensured disciplined and effective collaboration, idea testing and problem solving.

The sprint consisted of four workshops, each having its own goal and focus. The representatives from Nagra participated in all four workshops, while we as a group prototyped and user-tested outside of the sprint workshops.



tools used in the project

-  Figma: wireframing and prototyping
-  Zoom: collaborating remotely within the group
-  Google drive: writing and collaboration
-  Teams: meetings and collaboration with Nagra Kudelski
-  Loom: video presentation for Nagra Kudelski
-  iMovie: video editing of the presentation
-  Miro: sprint workshops and collaboration
-  UserZoomGO: user testing for unmoderated user tests

overview of the iterations and workshops

Workshop 1: Alignment

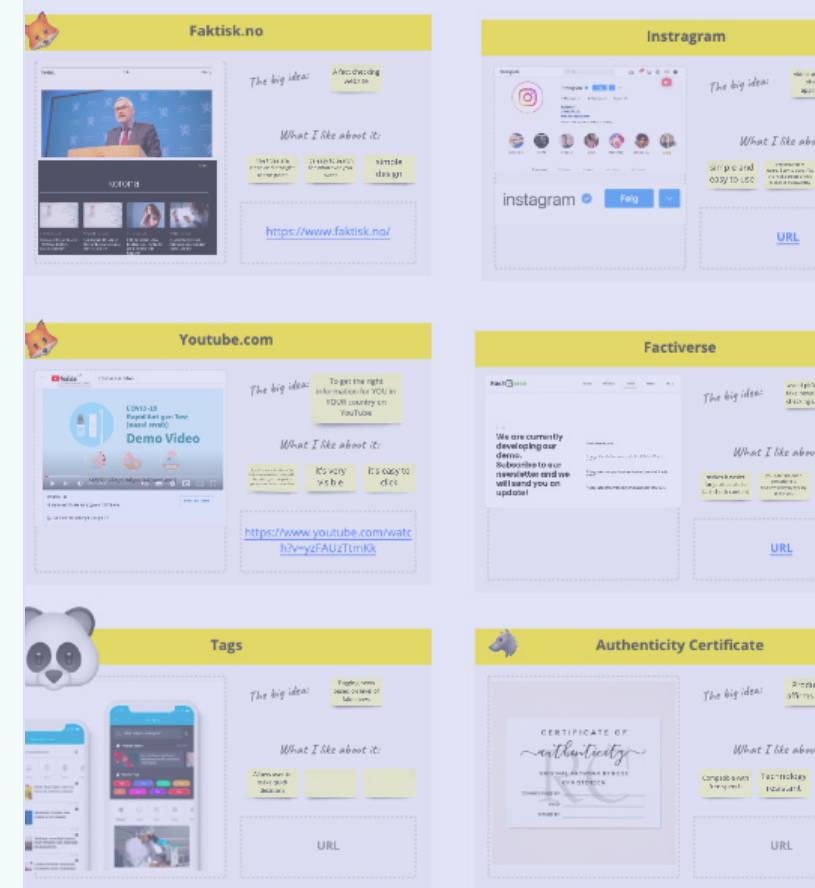
The main goal of this workshop was to explore the problem space and align on the challenges that we wanted to solve. Based on our research, we made the decision to focus on the end consumer, as their needs seemed quite clear. From there, we created our two-year goal and the sprint questions which guided us with our solutions and decisions throughout the sprint. We also created "Lightning Demos" which served as inspiration before we were to generate our own ideas in Workshop 2.

In 2 years, fake news and media is very easy to spot	Can we spot fake news when technology is making it easier to produce "false" realistic content?	Can we help people develop a critical mindset?	Can we technically implement it?
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two year goal

sprint questions

lightning demos

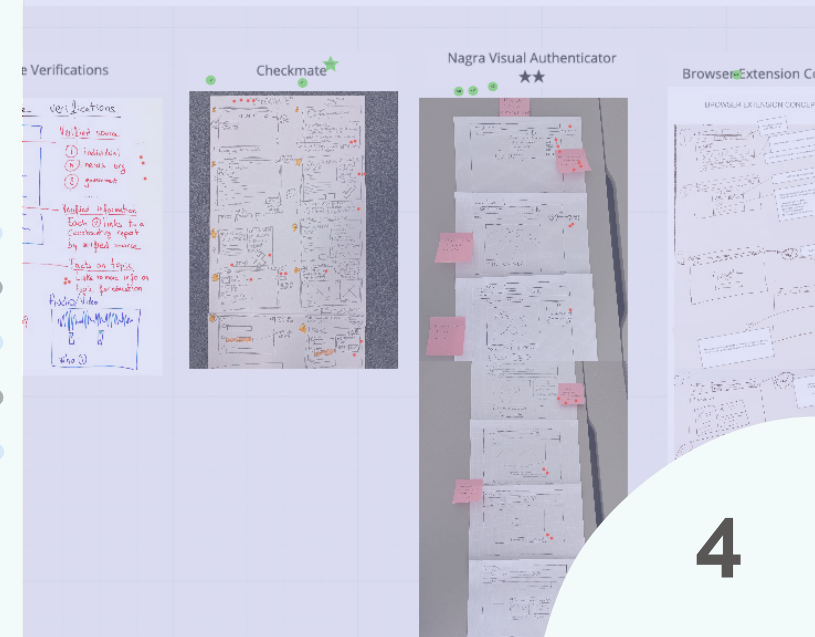


Workshop 2: Solution

The second workshop was all about finding inspiration and starting to create some solutions. We did this by looking back at our previously made "Lightning demos", voting on the most inspiring ones, taking notes, sketching, and doodling on our own.

After these preparations, we did a round of "Crazy 8's" to create a good creative flow for everyone. Afterward, everyone created a "Solution sketch" as a functioning pitch deck for their idea for a solution.

solution sketches



Workshop 3: Decision

The third workshop started off with the solution sketches from the previous workshop. Elements from the different sketches got votes, and then user test flows were made based on this. Then all of the sprint participants collaborated on a storyboard of the user test flow. This became the foundation for the first round of prototyping.

Workshop 4 & 5: Iteration

Before the iteration workshops, we prepared "The sailboat", which is a user feedback summary structured and visualized to categorize feedback (see next page). Based on this, we voted and picked the top challenges to focus on. The top challenges were then used to create "Can we validate that..."- questions that would create the focus for the sprints. The sprint ended with choosing a user test flow to focus on for the next round of user testing and prototyping.

Can we validate that...the 3 states of the verification are clear and defined so that the user can easily understand

Can we validate that solution is trustworthy (through a landing page)

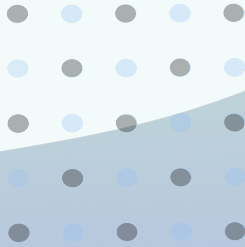
Can we validate that users would revise sharing an article that otherwise support/confirm their point of view? (i.e. an article they want to share)



Storyboard based on the user test flow



These questions led us through the sprint, and guided our concept solution sketches



User Testing

By using UserZoomGO, which was Nagra's preferred tool for remote, digital user testing, we were able to test our prototype on our international target group with the age span 18-60. This let us run unmoderated user testing sessions by preparing questions and tasks for the respondents to answer while stating their thoughts out loud and sharing their screens. Through two rounds of remote and unmoderated user testing of in total 13 participants, we gathered insight about news habits, their first impression of the Checkmate concept, how easy they found the process of downloading the Chrome extension and overall usability.

For the third iteration, we ran moderated user testing with seven Norwegian participants to test our latest changes. We noticed how participants were more emotionally engaged when we were able to interact with them, and this gave us new and valuable input for further improvements.

- ▶ The landing page (mostly)
- ▶ The preference guide
- ▶ Information boxes
- ▶ Warning message before sharing



What went well

- ▶ Users thought Checkmate seemed trustworthy
- ▶ Extension easy to download
- ▶ The widget interaction

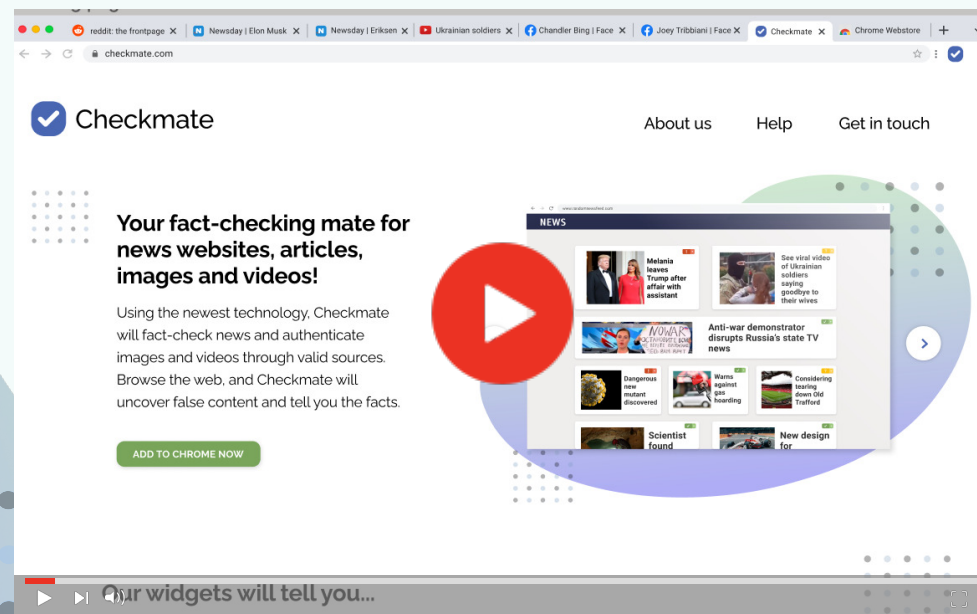
What didn't go well

- ▶ When something has been confirmed true - give more information
- ▶ Language in information boxes
- ▶ Unnecessary scrolling
- ▶ The landing page details
- ▶ Language, lack of pictures and sub header
- ▶ Red widget design

Final Prototype

Checkmate: your fact-checking mate for news websites, articles, images and videos!

Our prototype presents a user flow where the user starts by downloading the Checkmate extension to their Google Chrome and goes through a user guide that presents the concept in a very easy way. From here, the user continues to the webpage Reddit.com, and checks out the widgets and functions that Checkmate offers.



Demo video of the user flow



Links to prototype in Figma

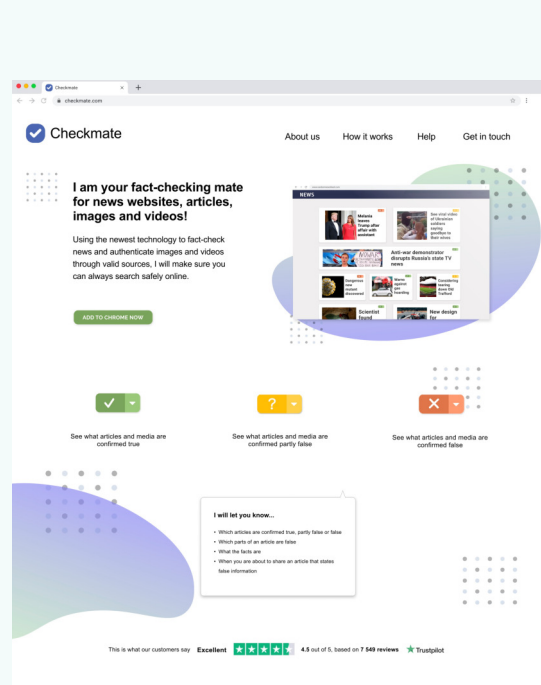


OPEN DEMO

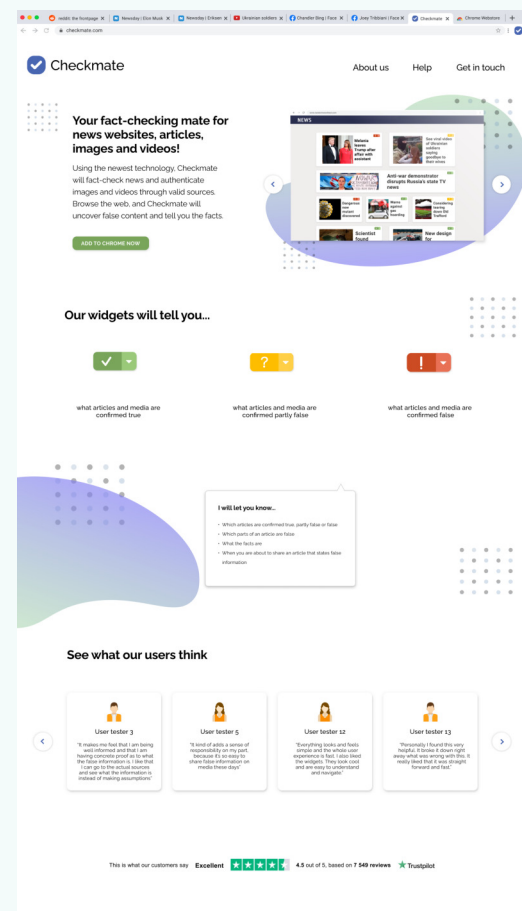
OPEN DESIGN FILE

The Landing Page

In the first iteration the users did not have a lot of trust in Checkmate, and needed more general information about Checkmate and Nagra as a distributor of the product. We solved this by creating a landing page. The landing page is there to provide information about Checkmate: what it is and what it does. In the second round of user testing we received feedback that there were some issues with the language, and a wish for more illustrations to better convey the concept.

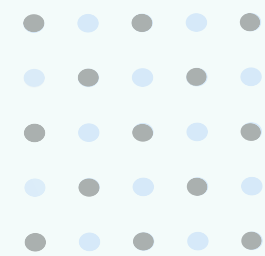


the first version of the landing page



the final version of the landing page

We solved the user feedback from the second round of user testing by adding an image carousel to illustrate how Checkmate works. In addition to this, we clarified the language and simplified the top menu to make navigation easier on the site. Finally, we added user reviews at the bottom of the page in addition to Trustpilot. Our main goal was to increase the trustworthiness of Checkmate, and ensure that the users felt well informed.



The Preference Guide

The preference guide helps onboard the users to Checkmate and their options in the preferences. The guide is split into five different parts, where the first four takes the users through the preferences and the last step ends the guide. This was to ensure a quick and seamless introduction for the users. We did not have the guide in the first iteration, but decided to add one to avoid any confusion.

the final version of the preference guide



Choose which confirmation states Checkmate should show ✕

Confirmed true
See what articles and media are confirmed true

Confirmed partly false
See what articles and media are confirmed partly false.

Confirmed false
See what articles and media are confirmed false.

< 1 — 2 — 3 — 4 >

Active confirmation states

✓ Confirmed true

? Confirmed partly false

! Confirmed false

Choose which confirmation states Checkmate should show ✕

Confirmed true
See what articles and media are confirmed true

Confirmed partly false
See what articles and media are confirmed partly false. This could be content that is taken out of context or where a part of the information is inaccurate.

Confirmed false
See what articles and media are confirmed false. **This will always be on**, as we believe it to be our responsibility to inform you when content is proven false.

< 1 — 2 — 3 — 4 — 5 >

Active confirmation states

✓ Confirmed true

? Confirmed partly false

! Confirmed false

we added more information that users missed from the first preference guide and changed the button navigation



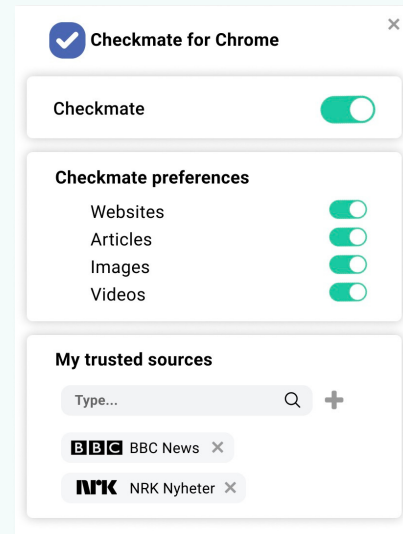
the first version of the preference guide



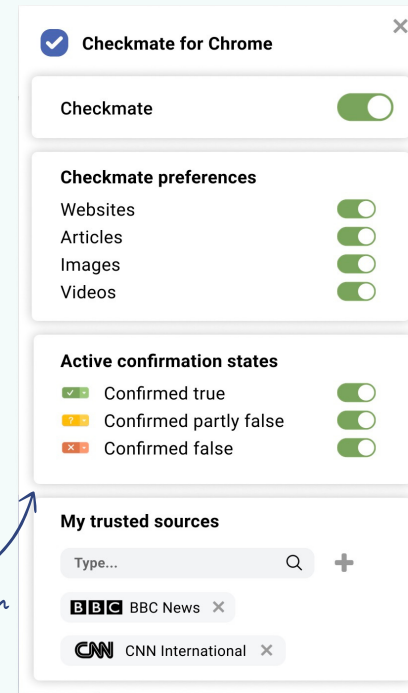
Preferences

- ▶ In the first iteration we did not allow users to decide which activation states Checkmate would show. This was because our widgets at the time only marked the content that was “confirmed false”.
- ▶ In the second iteration we had three different states of confirmation, so that the future users of Checkmate would be able to decide whether or not they wanted all of the widgets or just some of the widgets to appear.
- ▶ In the third iteration we decided that we did not want users to have an option to hide the widgets that mark the “confirmed false” articles, images and videos. This was because we wanted to enlighten our potential users about the fake content out there. We also added an easy access to the “Preference guide”, if the user should need it again.

first iteration

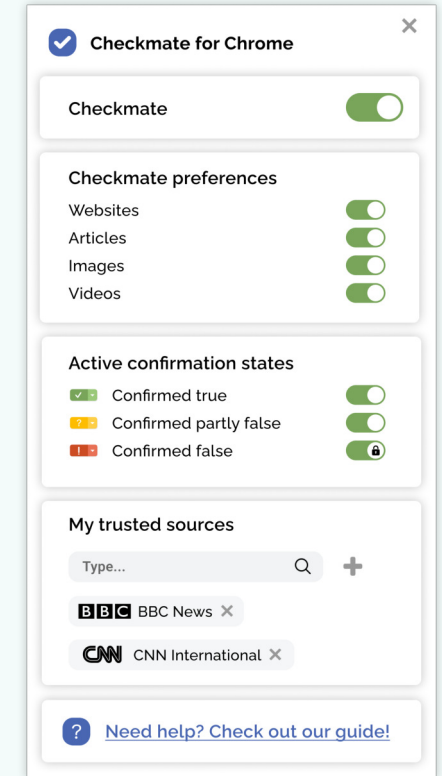


second iteration



added active confirmation states

third and fourth iteration

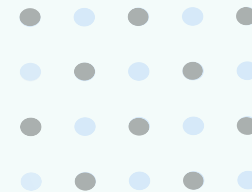
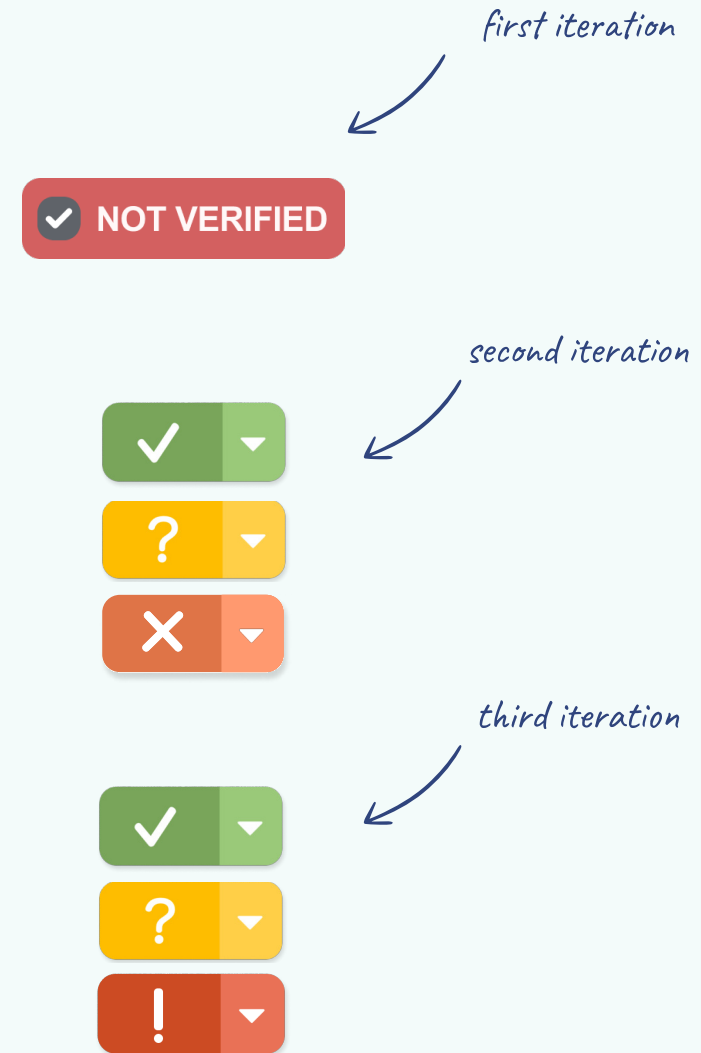


users can access the guide from preferences



Widgets

- ▶ The widgets are marked on articles in a news feed, and these inform the user of misinformation. In the first prototype, we marked only the articles containing false information with this widget, saying "Not verified". When the user clicked on it, an information box would appear, presenting what parts of the article were false.
- ▶ In the second iteration we got feedback from users saying they would like to know more about the different states of verification, that there should be more than one. Users also expressed confusion about clicking it to get more information as it did not look like a button, and our use of the word "verified", could be misleading. This was the basis for a new traffic light inspired widget-concept. Using colors and iconography, the widgets present three states of confirmation: "confirmed true", "confirmed partly false" and "confirmed false".
- ▶ In the third iteration, some users pointed out that the "X" icon on the red widget reminded them of exiting something. We also got feedback that the color seemed more orange than red, and that it should be even more alarming. We therefore switched out the icon to an exclamation point, and adjusted the color to a brighter and darker red.



Information Boxes

The information boxes provide information to the users on what the facts are, sources used, and what is false. The smaller ones provide a summary of what parts of the article are false, and a link to the full article where you can get more information.

This information will pop up in the bigger boxes.

first version

This article states false information

- ▶ The headline gives false information
- ▶ The photo is taken out of context

[Go to article for more information](#)

final version

This article states false information

- The headline gives false information
- The photo is taken out of context

[Go to article for more information](#)



The article states false information

THESE ARE THE FACTS:

- The United States and Russia are parties to the Chemical Weapons Convention, in accordance with its obligations under that international agreement, The United States do not use chemical weapons.
- The Russian government has twice used chemical weapons in recent years to attack and attempt assassinate opponents
- Russia is using statements from high-level officials as well as disinformation and propaganda to attempt to create a pretext for military action.

See more information at:
[state.gov/fact-vs-fiction-russian-disinformation-on-ukraine](#)

This photo is taken from another webpage
Picture taken of Joe Biden from speech presenting sanctions against Russia on 24/02/22
Source: Alex Brandon/AP Photo

first iteration

In the first iteration, these boxes contained information about what the facts were, where the images came from, and one link to the source. We received feedback that having more than just one link would be useful.



Second and third iteration

We added more sources in the second iteration, but afterwards we received a question about whether all the sources answered for all of the facts or just some of them.



The article states false information

THESE ARE THE FACTS:

- Elon Musk has never stated that he is planning on launching a new food range, not for children or otherwise.
- Elon Musks second born child is a daughter, whose name is Exa Dark Sideræt Musk

SEE MORE INFORMATION AT THESE SOURCES:

Elon Musk's businesses:
[britannica.com/biography/Elon-Musk](#)
[tesla.com/elon-musk](#)

Elon Musk's second child:
[cnn.com/elon-musk-welcomes-new-baby-rr](#)

Spocex:
[cnet.com/news-live/spacex-starship-event-elon-musk-talks-mars-missions](#)

This photo is taken from another webpage
Picture taken of Elon Musk from speech presenting SpaceX on 24/02/22
Source: Chris Carlson / AP / NTB scanpix



The article states false information

THESE ARE THE FACTS:

- Elon Musk has never stated that he is planning on launching a new food range, not for children or otherwise.
- Elon Musks second born child is a daughter, whose name is Exa Dark Sideræt Musk

SEE MORE INFORMATION AT THESE SOURCES:
[britannica.com/biography/Elon-Musk](#)
[tesla.com/elon-musk](#)
[cnn.com/elon-musk-welcomes-new-baby-rr](#)

This photo is taken from another webpage
Picture taken of Elon Musk from speech presenting SpaceX on 24/02/22
Source: Chris Carlson / AP / NTB scanpix

Fourth iteration

We solved the issue of the sources not being clearly structured by adding subheaders to the sources in the fourth iteration.



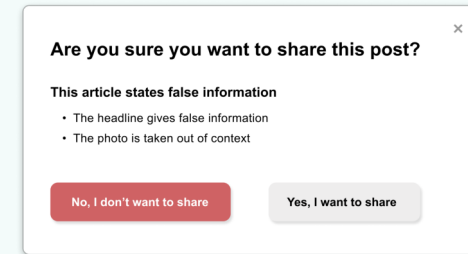
The Warning Message

The warning message pops up when the user shares an article. It makes the user aware of what they are sharing and if it contains false information. In the first prototype we only had a warning message for articles that contained false information.

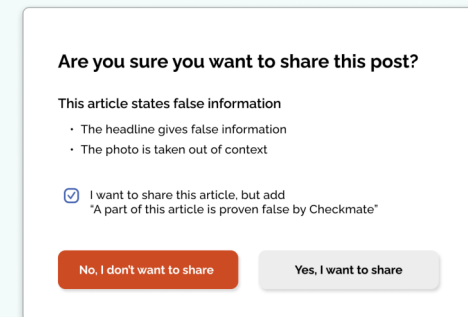
In the second iteration we added the checkbox "I want to share this article, but add "A part of this article is proven false by Checkmate"" which is marked by default in case the user for some reason wants to share an article that contains false information.

In the third iteration we changed the color on the "I don't want to share"-button from red to purple, because one of the users pointed out that red is often associated with something you should not click on. We also changed the right button to "Yes, I still want to share" to emphasize the consequences of sharing and enhance the critical mindset that we wished to instill in users. We also made a pop up message for articles that contained no false information stating this.

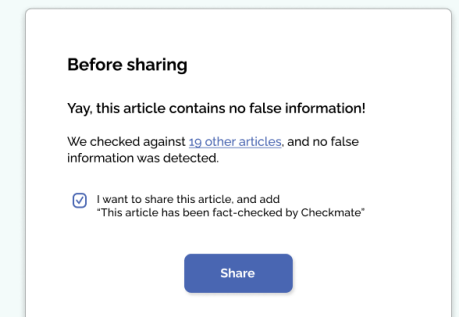
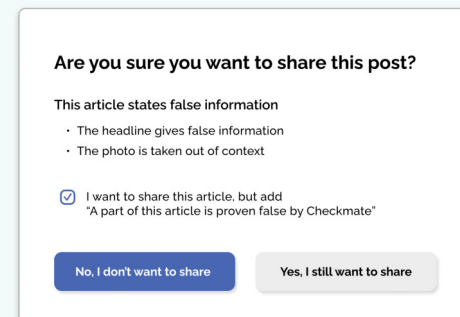
first version



second version



third version



Our Main Learnings

“It made me realize that, shit, this is something we really need. Although I would still question how credible it is, the user experience and concept in itself made me want to download it right away”

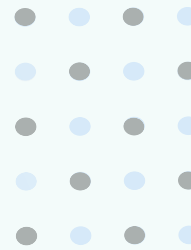
-user test participant nr 2, round 3



Working digitally in a cross functional team

Through this process, we have experienced how much good communication means in a project, and we witnessed that the communication was not compromised by working digitally. By planning and executing well structured sprint workshops, we ensured effective discussions with room for everyone to participate equally. This structure helped drive forward the process of the project, and avoid roundabout discussions.

Something happens when you mix people with different expertise in a cross functional team. We got to experience how this creates a synergy and helped elevate all members of the team, by exchanging knowledge, energies and ideas.



People are interested in this solution to better understand what misinformation is

The end users' preferences are governing. If people don't want it, what's the point?

Misinformation is a topic that is highly relevant today, and both the primary and secondary data shows a growing interest and need for a good solution to this problem. We have also experienced this through user testing, as several of the users expressed a need to download this solution right away, which confirms that this is something worth pursuing.



"I think the warning message is a really powerful tool. It helps to stop the spread of misinformation, and I think I'm impressed by that overall"

-user test participant nr 1, round 2



The warning message before sharing instills a critical mindset in users

One of our sprint questions from the first iteration was:

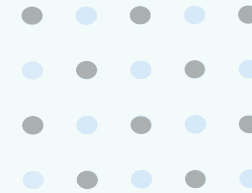
"Can we help people develop a critical mindset?"

Several of the users reported back that seeing the warning message pop up before sharing on Facebook, made them think. This was one of the features we got the most positive feedback on during the user tests. It gave them a moment to pause and reflect on whether or not they really wanted to share. This moment can be crucial in helping people make more reflected choices online.

"Nice-to-have" in Norway, actually useful internationally

With the data from our primary and secondary sources we learned that Norwegian people generally trust the media of their country, so Checkmate isn't something that is necessarily needed, but still during the interviews and national user tests, we could see an interest in a solution like this.

We did however based on the expert interviews from the primary data see a need internationally.



"There is no pain point, business wise, right now, in Norway. A solution would probably be nice to have, but it is not necessary".

Expert on visual content verification,
quote from interview



What could we have done differently?

Our first two rounds of user testing were held digitally and unmoderated with international users to test the concept. The downside of doing unmoderated tests was the inability to ask follow-up questions that differed from the already planned ones.

Because the third round of user testing was moderated we could easily see the opportunities this brought us in allowing us to ask followup questions, and interact with the subjects.

When analyzing this feedback, we saw a clear distinction between the two ways of testing as we suddenly got way more constructive and detailed feedback, pointing out small ways to make the prototype more user friendly. If we had done the moderated user test earlier in the project, this could possibly have turned out to have a totally different outcome.

"That popup warning would be very reasonable for many to have in many places online, preferably in even larger letters too ... then you can share it as a warning to your friends that this is fake news going around to friends who don't have an app like this. Not stupid at all."

-user test participant nr 3, round 3

Balancing conflicting feedback

The feedback on the warning message was positive in general, and many pointed out the option to still share, even when the article contained false information. Some pointed out that this was important as it kept the user's freedom of speech.

However, others felt that this could cause trouble. We decided to keep the option to still share as freedom of speech is an important value in our concept and goal.



Next Steps for the Checkmate Project

We have been in close contact with Nagra even after presenting our prototype handover in the final workshop. As this project has been engaging for both the company and our group, we were happy to hold several internal presentations about our prototype and findings for Nagra. We even got invited to their office in Oslo to present at a general meeting. This gave us the opportunity to meet some of the people we collaborated with in person, and discuss the further development of the project which will be tackled by Nagras feasibility and viability team. As this implies that several technical and ethical factors need to be carefully considered, our contribution to Nagra is probably the first of many steps toward a real solution to the challenge of misinformation. However, we believe that Checkmate is a valuable suggestion of a user-centered product, and we want to leave Nagra with the following recommendations:

- ▶ Ensure that the technology behind Checkmate can refer to multiple valid sources
- ▶ That you keep Checkmate simple and non-intrusive
- ▶ Consider whether "My trusted sources" in Checkmate preferences could be biased?
- ▶ Look into the language of the information boxes

we met with Nagra's innovation manager in Oslo to discuss the further development of Checkmate



we presented the prototype and our findings at Nagra's general meeting at their Oslo offices

