

# Designing an Integration Concept of the PROVENANCE Verification Indicator Into Open Web Search Engines

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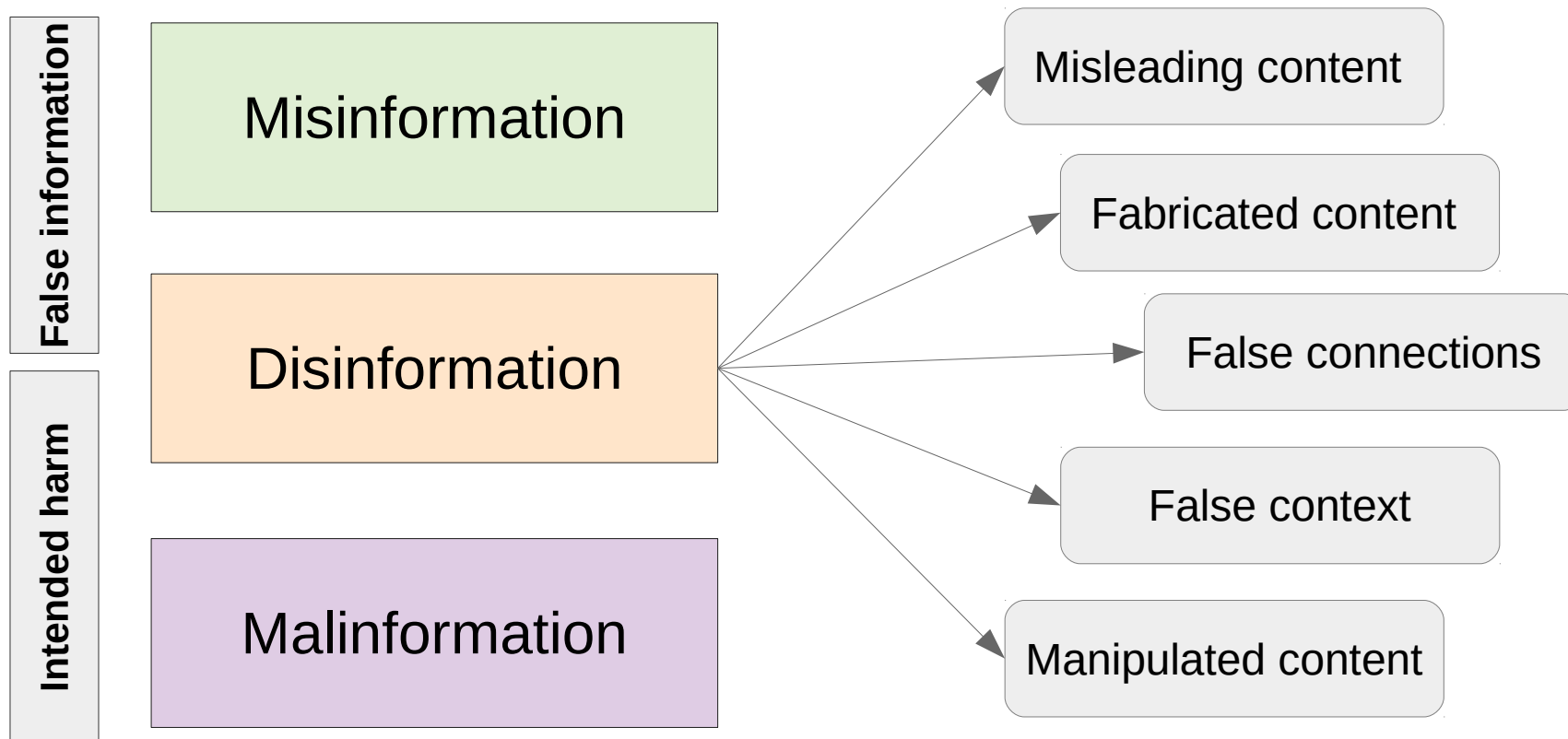


# Overview and Motivation

- Provenance Project developed a tool called Verification Indicator that helps people to better identify disinformation
- Idea how to apply this concept on web search

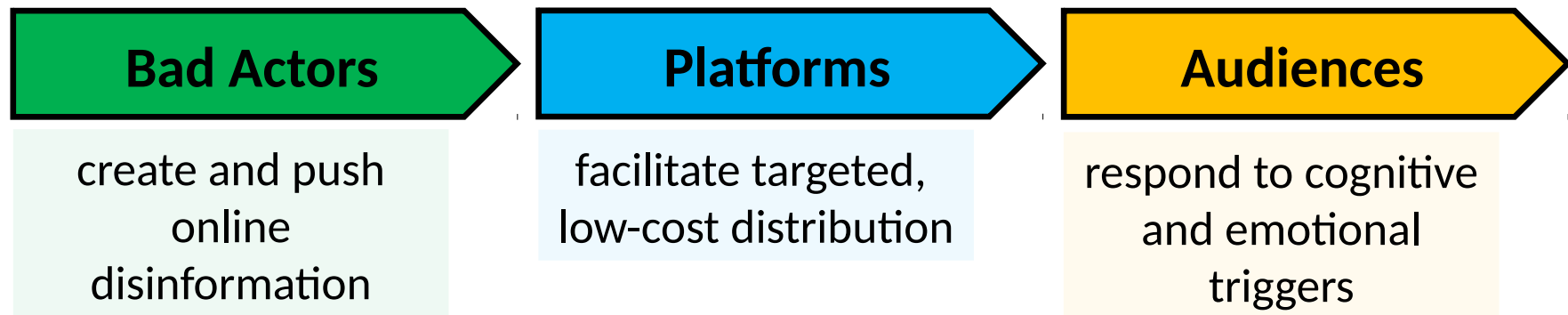
# Disinformation

- Using dimensions of falseness and harm, the concept of misinformation, disinformation, and malinformation can be established (Wardle & Derakhshan, 2017)



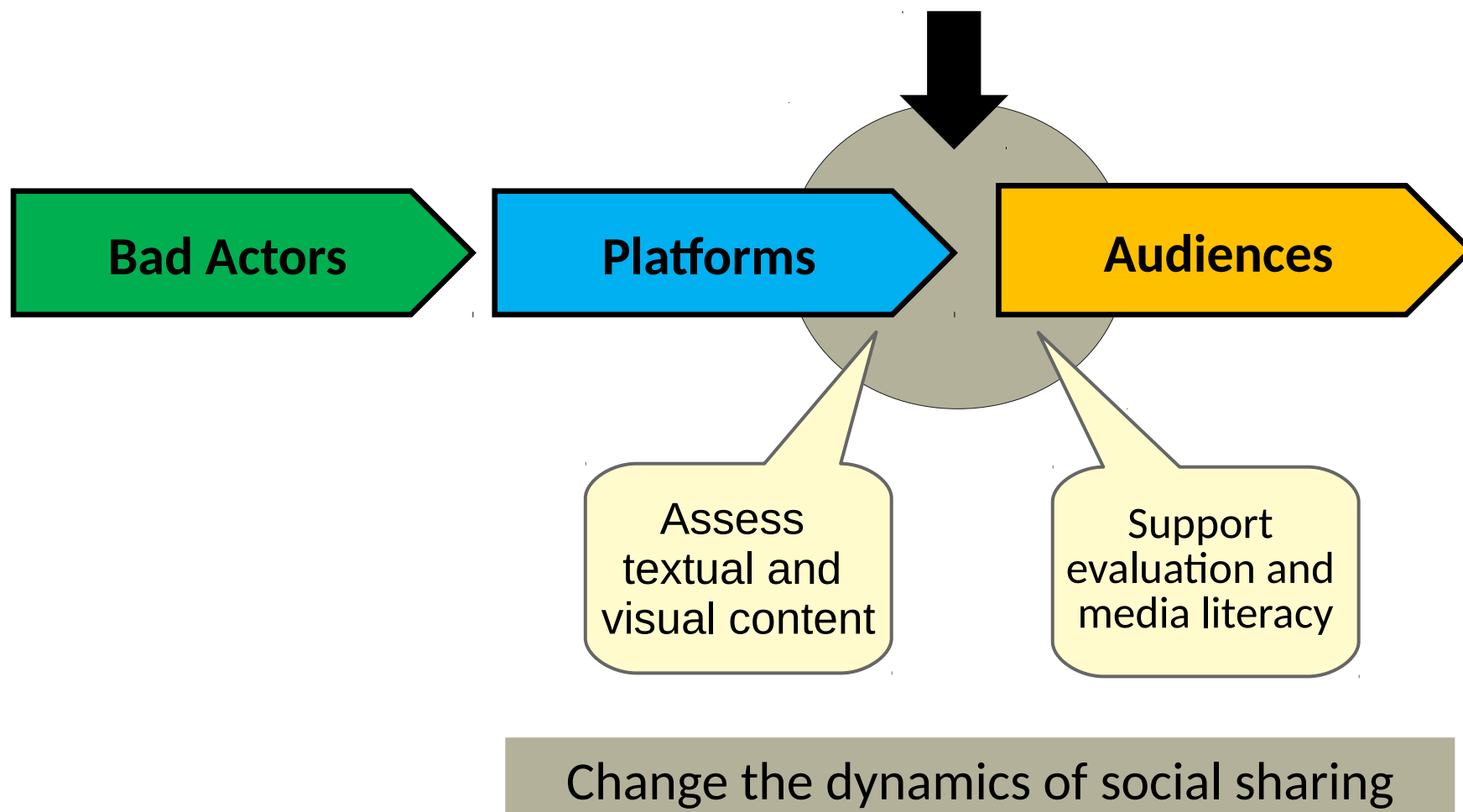
# Disinformation

- Disinformation is not new, but reinforced through digital platforms
- Understanding Disinformation as a Process

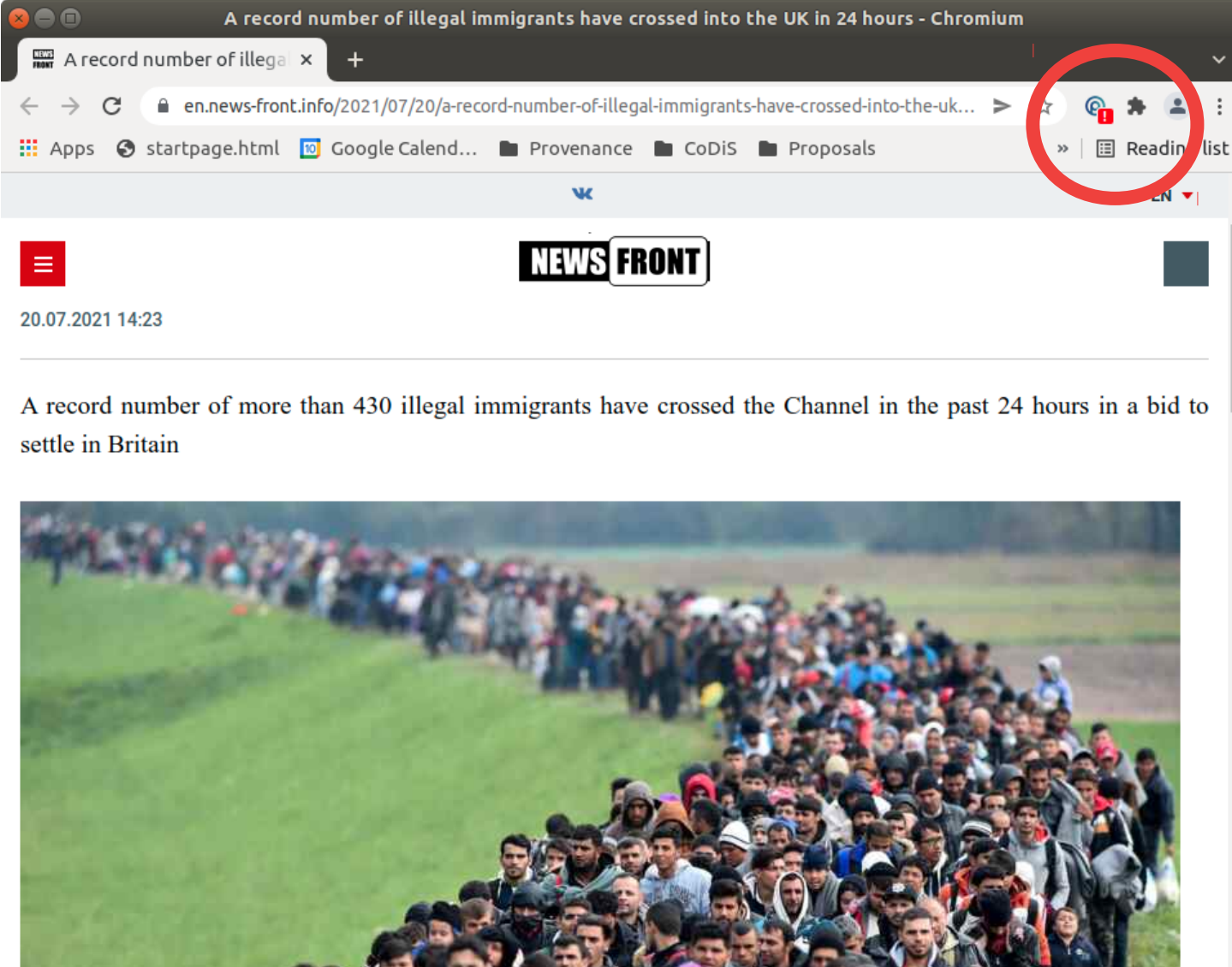


# Provenance Approach to Combat Disinformation

Key Objective:  
discourage sharing of low-quality content



# Verification Indicator Tool



A record number of illegal immigrants have crossed into the UK in 24 hours - Chromium


en.news-front.info/2021/07/20/a-record-number-of-illegal-immigrants-have-crossed-into-the-uk...

Apps startpage.html Google Calend... Provenance CoDiS Proposals

NEWS FRONT

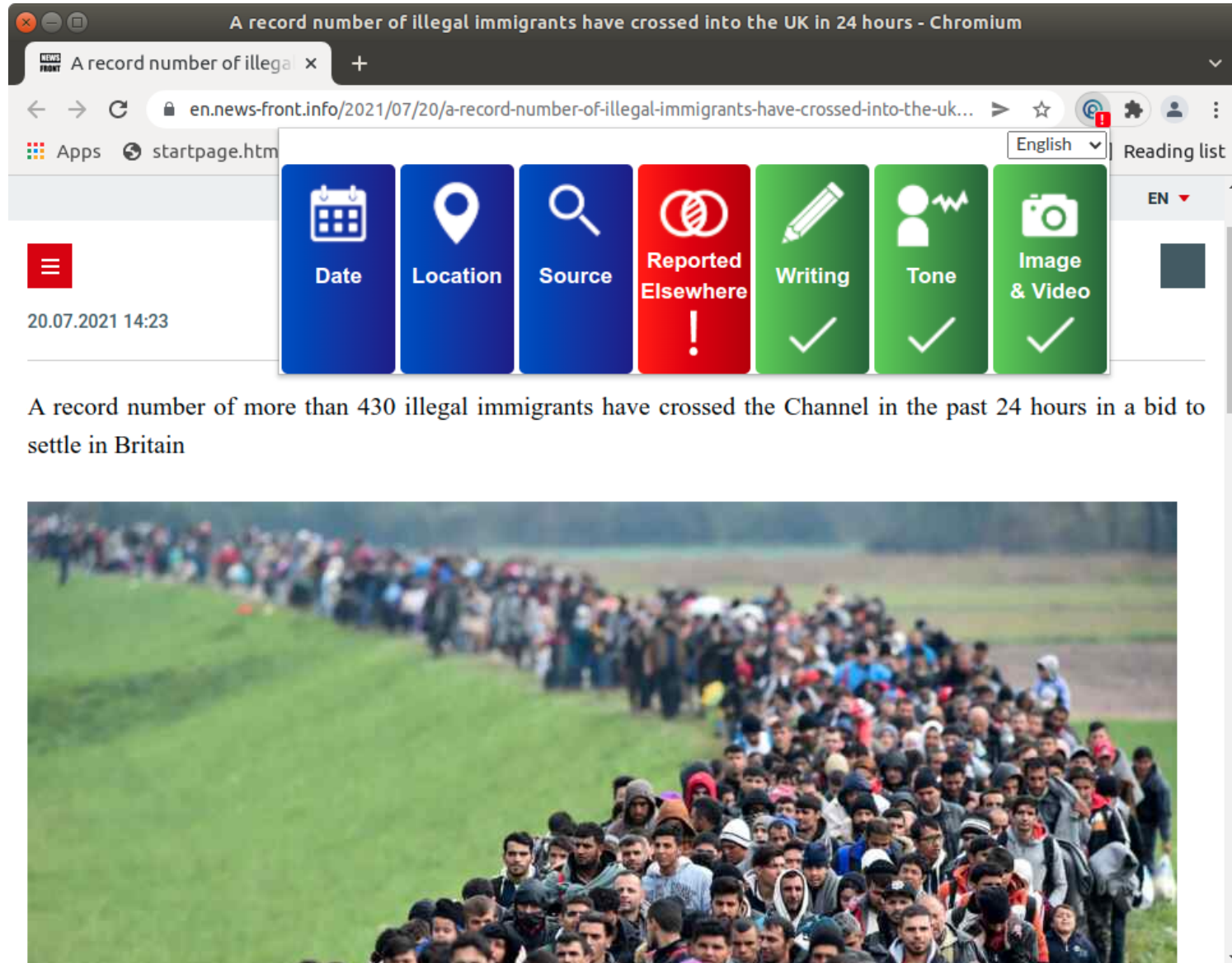
20.07.2021 14:23

A record number of more than 430 illegal immigrants have crossed the Channel in the past 24 hours in a bid to settle in Britain



Chrome  
Plugin

# Verification Indicator Tool



The screenshot shows a Chromium browser window with the title "A record number of illegal immigrants have crossed into the UK in 24 hours - Chromium". The address bar displays the URL "en.news-front.info/2021/07/20/a-record-number-of-illegal-immigrants-have-crossed-into-the-uk...". A verification tool overlay is positioned over the article content, featuring seven colored buttons: "Date" (blue), "Location" (blue), "Source" (blue), "Reported Elsewhere" (red with a white exclamation mark), "Writing" (green with a white checkmark), "Tone" (green with a white checkmark), and "Image & Video" (green with a white checkmark). The article text below the tool reads: "A record number of more than 430 illegal immigrants have crossed the Channel in the past 24 hours in a bid to settle in Britain". Below the text is a photograph of a large crowd of people walking across a green field.

# Verification Indicator Tool

The screenshot shows a Chromium browser window with the URL `en.news-front.info/2021/07/20/a-record-number-of-illegal-immigrants-have-crossed-into-the-uk...`. The page title is "A record number of illegal immigrants have crossed into the UK in 24 hours - Chromium". The browser interface includes a search bar, navigation buttons, and a language dropdown set to "English".

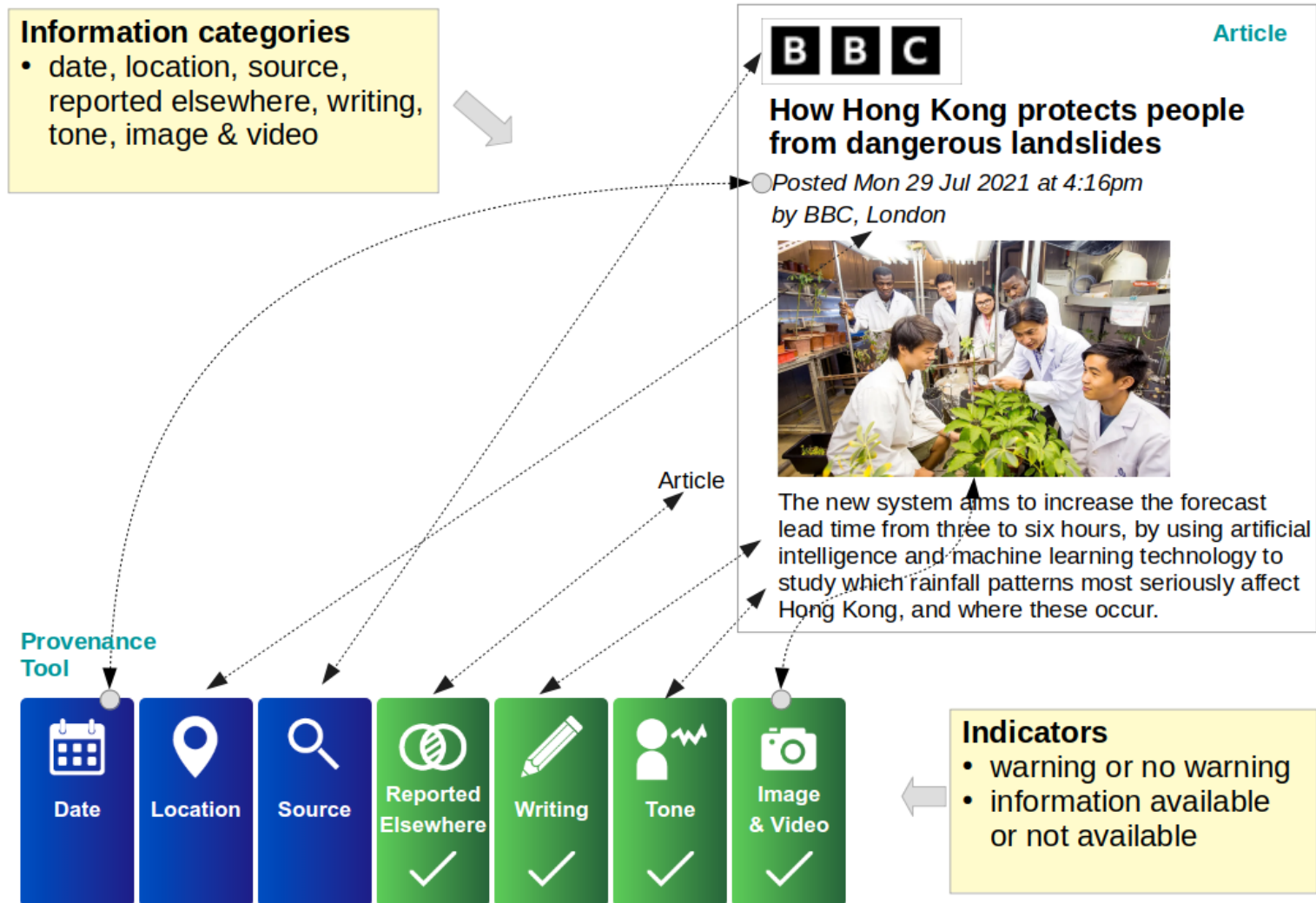
Overlaid on the page is a verification tool interface with seven colored buttons: "Date" (blue), "Location" (blue), "Source" (blue), "Reported Elsewhere" (red with a white exclamation mark), "Writing" (green with a white checkmark), "Tone" (green with a white checkmark), and "Image & Video" (green with a white checkmark). Below these buttons is a red banner with a white icon of two overlapping circles and a diagonal line. The banner contains the text: "This content is not similar to other published stories." and a "Media Literacy Tip: Ask yourself 'are reliable news sources reporting the same information?'" with a speech bubble icon.

The background article text includes a timestamp "20.07.2021 14:23" and a headline "A record number of mo... settle in Britain". Below the text is a large photograph of a dense crowd of people walking across a grassy field.



# Verification Indicator Tool

- Seven information categories are related to particular aspects of online news articles



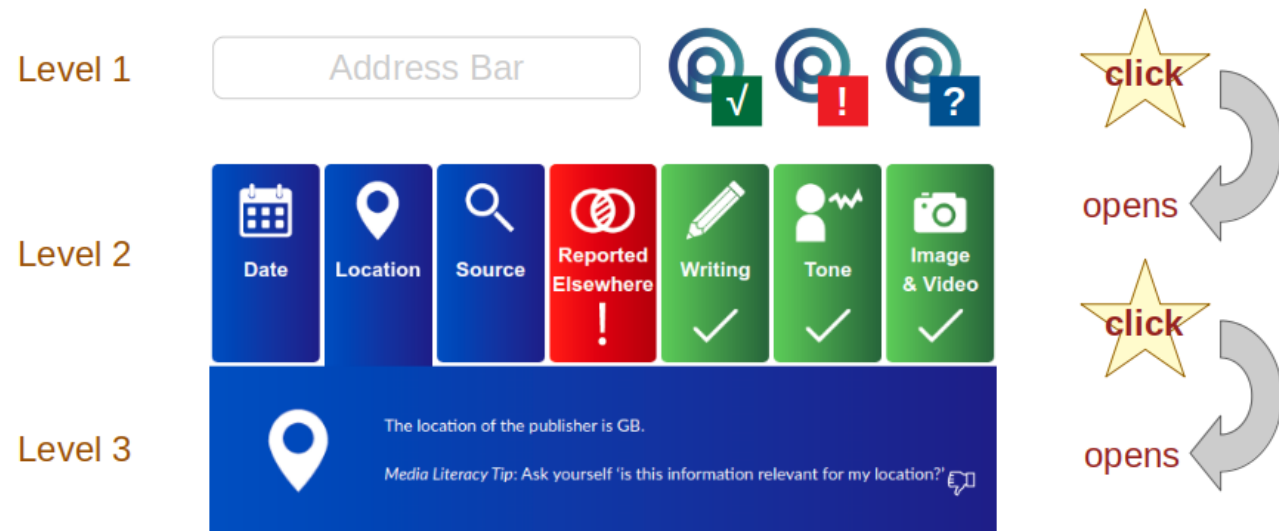
# Verification Indicator Tool

## User feedback

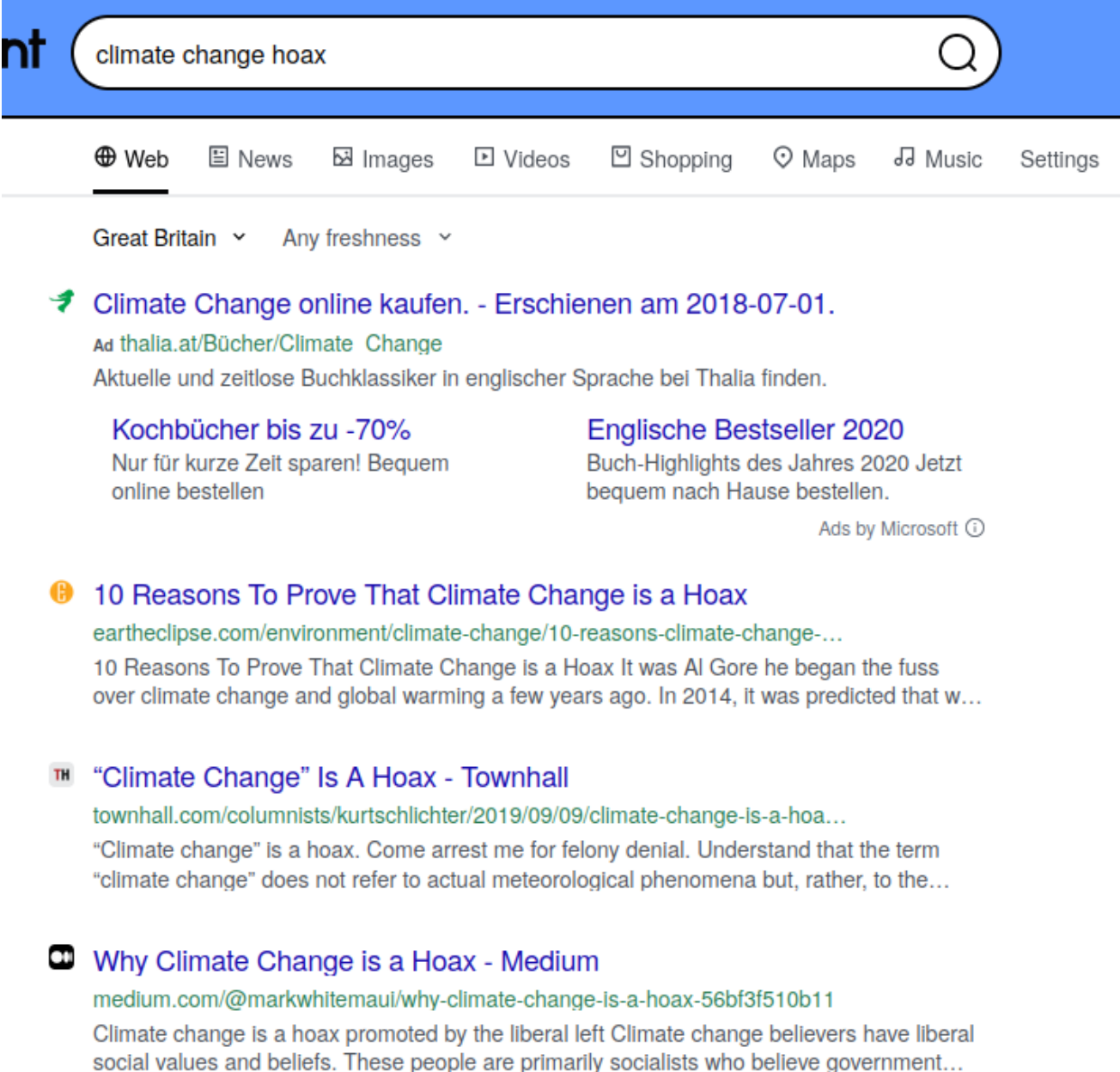
- very positive feedback regarding usability, user acceptances, and user experience
- several ideas that have not been implemented

## Experimental studies

- users better identify disinformation
- increase competence related to identifying disinformation?



# Disinformation and Web Search



The screenshot shows a search engine interface with a blue header. The search bar contains the text "climate change hoax" and a magnifying glass icon. Below the search bar, there are navigation tabs for "Web", "News", "Images", "Videos", "Shopping", "Maps", "Music", and "Settings". The "Web" tab is selected. Below the tabs, there are location and freshness filters: "Great Britain" and "Any freshness". The search results are as follows:

- Advertisement:** "Climate Change online kaufen. - Erschienen am 2018-07-01." from thalia.at/Bücher/Climate Change. Description: "Aktuelle und zeitlose Buchklassiker in englischer Sprache bei Thalia finden." It features two sub-promotions: "Kochbücher bis zu -70%" and "Englische Bestseller 2020".
- Search Result 1:** "10 Reasons To Prove That Climate Change is a Hoax" from earthclipse.com. Description: "10 Reasons To Prove That Climate Change is a Hoax It was Al Gore he began the fuss over climate change and global warming a few years ago. In 2014, it was predicted that w..."
- Search Result 2:** "'Climate Change' Is A Hoax - Townhall" from townhall.com. Description: "'Climate change' is a hoax. Come arrest me for felony denial. Understand that the term 'climate change' does not refer to actual meteorological phenomena but, rather, to the..."
- Search Result 3:** "Why Climate Change is a Hoax - Medium" from medium.com/@markwhitemaui. Description: "Climate change is a hoax promoted by the liberal left Climate change believers have liberal social values and beliefs. These people are primarily socialists who believe government..."

# Disinformation and Web Search

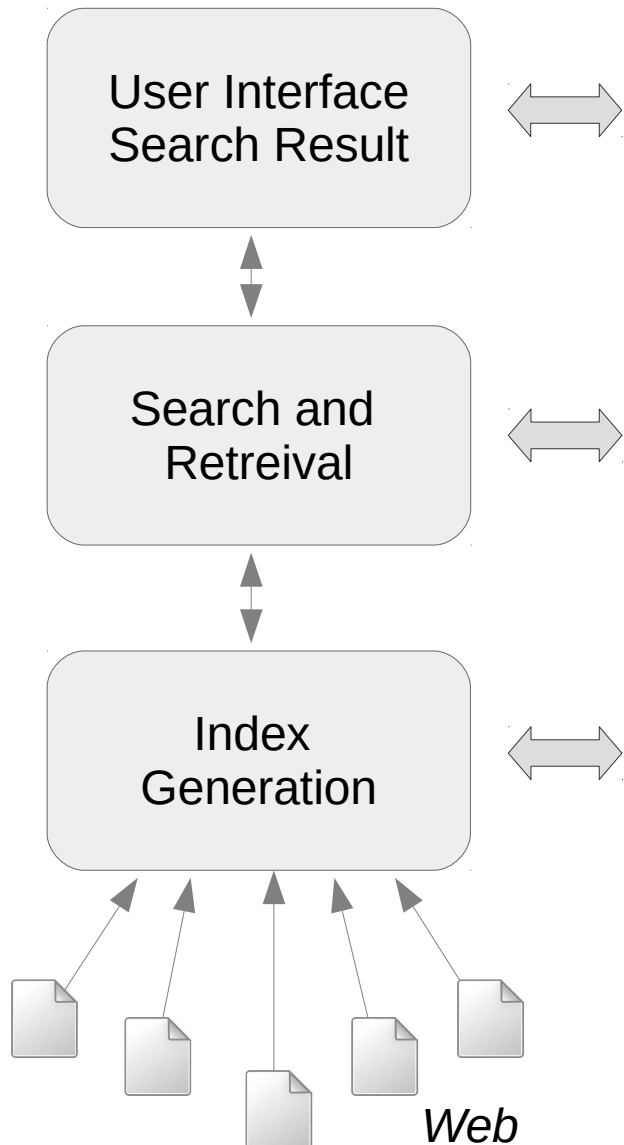
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The search results include:

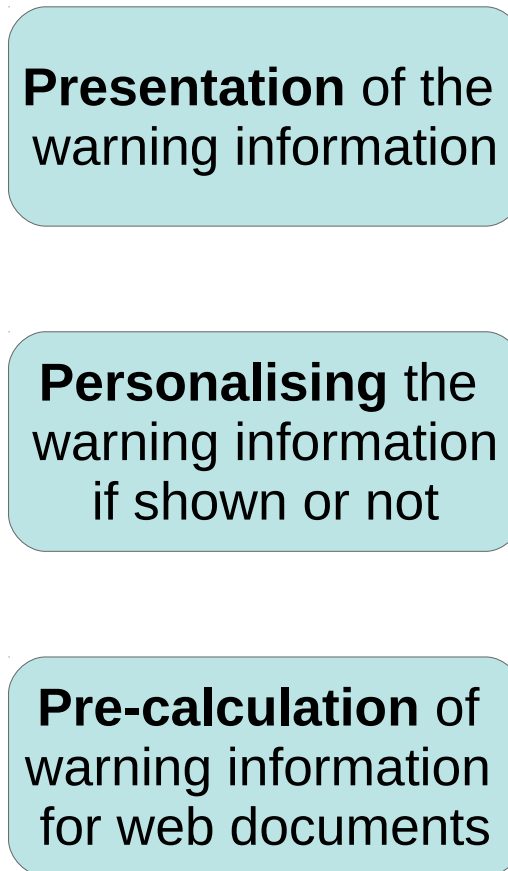
- Advertisement:** "Climate Change online kaufen. - Erschienen am 2018-07-01." from thalia.at. It promotes books with a "-70% discount" and "Englische Bestseller 2020".
- Search Result 1:** "10 Reasons To Prove That Climate Change is a Hoax" from earthclipse.com. The snippet states: "10 Reasons To Prove That Climate Change is a Hoax It was Al Gore he began the fuss over climate change and global warming a few years ago. In 2014, it was predicted that w...".
- Search Result 2:** "'Climate Change' Is A Hoax - Townhall" from townhall.com. The snippet says: "'Climate change' is a hoax. Come arre 'climate change' does not refer to actu...". Below the snippet is a fact-checking tool with icons for Date, Location, Source, Reported Elsewhere (marked with a red exclamation mark), Writing, Tone, and Image & Video.
- Search Result 3:** "Why Climate Change is a Hoax - Medium" from medium.com/@markwhitemauli. The snippet reads: "Climate change is a hoax promoted by the liberal left Climate change believers have liberal social values and beliefs. These people are primarily socialists who believe government...".

# Conceptual Integration

## Search Engine Process



## Verification Indicator Integration

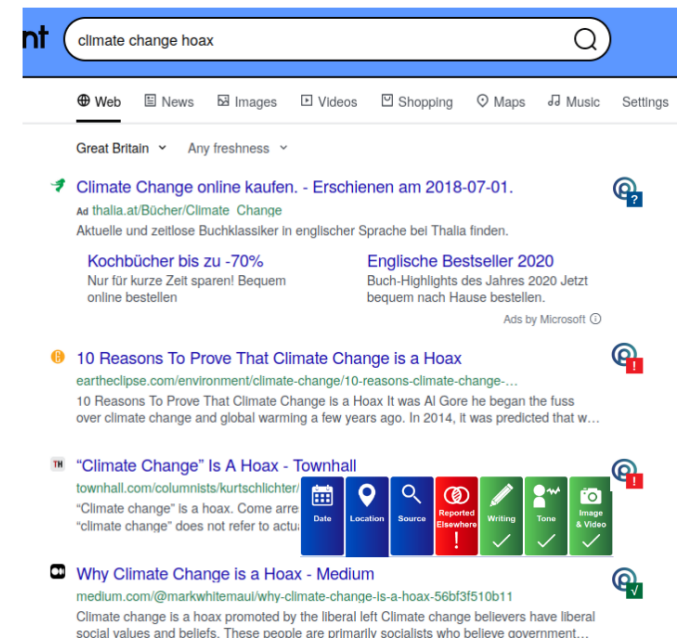


- based on media literacy competence
- based on preferences

- only news outlets
- only suspicious sources

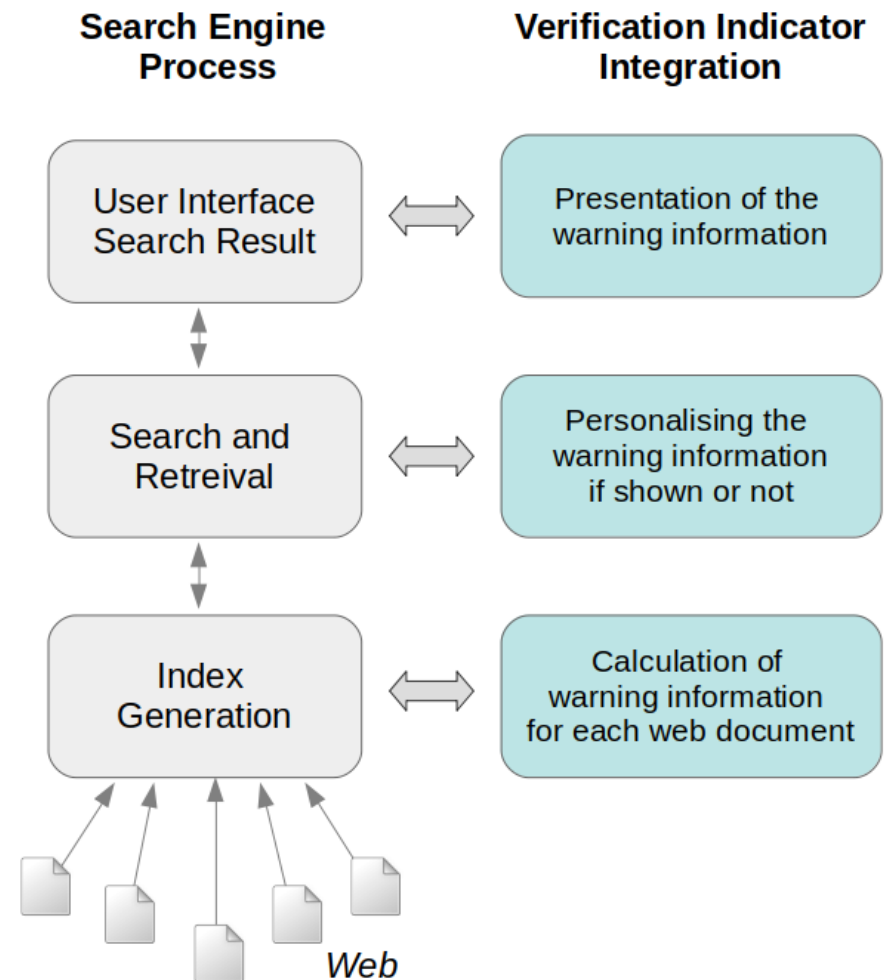
# Ethical Perspective

- Trust and search engines
  - Ethical value "trustful information"
  - Trust bias – humans tend to believe in what computers do
  - Trust in search results – numerous aspects (e.g. accuracy)
  - Result documents are reliable and contain trustworthy information
- Solution to ethical dilemma?
  - show only reliable documents in results
  - don't withhold documents from users



# Ethical Perspective

- Ethics-by-design
  - Integration of ethical aspects in the research and development process
  - Analysing each component how integration can be facilitated



# Conclusion and Outlook

- Verification Indicator approach successfully evaluated
  - very high usability, user acceptance, and user experience
  - performance, competence, and behaviour change
- Implementation of presented concept rather unrealistic
  - Provenance project is over
  - Analysis of huge amount of documents
- Possible way forward:
  - Selecting other (lightweight) attributes
  - Using heuristics for judgement
  - Comparison if same result is possible



## Any Questions?

### Contact

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