Media Futures.

WP3 2021 M3.1 Report
The industrial expectations to, needs from and wishes for the work package

Bergen, July 25, 2021

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BACKGROUND

The MediaFutures Research Centre for Responsible Media Technology and Innovation has finally become a reality. It's been two years since the partners from the media industry and the research institutions worked on the research center application, and the main objectives and high-level research questions for the research center activities were defined.

This report from the industry partners in the WP3 Media Content Production & Analysis work package aims to define and update common ground on our expectations, needs and wishes for the work package in more detail. The industry partners involved have shared and exchanged inputs by presentations, discussions, and reflections during several digital workshops in the first half year of 2021. The focus has been mainly to identify common needs and actual use cases based on these inputs. Our conclusions are presented in the main chapter *"Industrial expectations to, needs from and wishes for the WP3 work package"*.

Several international media industry reports and surveys show that the introduction of new technology and artificial intelligence methodology in the newsroom is already proven to give a high value for news publishers. The pandemic has also sped up plans for digital transformation and the changes break down into several areas: changes to working practices; to journalism and formats; to business models; and to the way media companies think about innovation. As identified in the **Reuters Institute Digital News Report 2021** by Nic Newman on journalism, media and technology trends and predictions *"the publishers see AI as the biggest enabler for journalism over the next few years."* [1]

In his book **"Newsmakers – Artificial Intelligence and the Future of Journalism" (2020)** the American journalist Francesco Marconi predicts that AI could give a high value potential of streamlining workflows, automate mundane tasks, crunching more data, digging out insights, verifying information and generating additional outputs in our business. In "Newsmakers" Marconi also introduced the term 'Iterative journalism' as the idea of adjusting coverage in real time to serve the rapidly changing information needs of readers. Marconi is a computational journalist and the co-founder of information company Applied XL, and was previously R&D Chief at the Wall Street Journal. Prior to WSJ he managed AI strategy at the Associated Press. In AP he published *"The Future of Augmented Journalism: A guide for newsrooms in the age of smart machines" (2017).* [2] The guide pointed at five potentials of AI in journalism:

* Attend to menial tasks and free journalists to engage in more complex, qualitative reporting
* Enhance communication and collaboration among journalists
* Enable journalists to sift through large corpuses of data, text, images, and videos.
* Help journalists better communicate and engage with their audience
* Empower the creation of entirely new types of journalism

In the **EBU News Report 2019** director general Noel Curran in the European Broadcasting Union stated: *"It is clear that AI and other developing data technologies will have a profound effect on society and on the future of journalism and communications. It is already influencing how journalism is created, distributed and accessed."* [3]

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[1] Reuters Institute: Journalism, media, and technology trends and predictions 2021 (Nic Newman)
https://reutersinstitute.politics.ox.ac.uk/journalism-media-and-technology-trends-and-predictions-2021
[2] The Future of Augmented Journalism
https://insights.ap.org/uploads/images/the-future-of-augmented-journalism_ap-report.pdf
[3] EBU News Report 2019: The Next Newsroom
https://www.ebu.ch/news/2019/11/ebu-news-report-urges-public-service-media-to-work-together-to-face-challenge-of-platforms

"As public service broadcasters, we have a responsibility to understand these technologies, harness their potential, mitigate their dangers and ensure that journalism in the public interest remains accessible to all. We also need to ensure that we still maintain the extremely high ethical and quality standards."

According to the EBU report the introduction of AI in the newsrooms is not the end of humans in journalism. On the contrary. Humans are more vital than ever, particularly for judgement skills, but virtually all journalism roles will need to change. The adoption of AI is not optional – and it needs to happen now.

The global **JournalismAI Report "New powers, new responsibilities"** (2019) [4] by Professor Charlie Beckett at London School of Economics and Political Science is based on the state of mind and state of play in 71 news organizations from 32 different countries regarding artificial intelligence (AI) and associated technologies. The survey identifies three main key motives for using AI in the newsroom:

• *To make journalists' work more efficient (68 per cent of replies)*
• *To deliver more relevant content to users (45 per cent)*
• *To improve business efficiency (18 per cent).*

The JournalismAI Report also points out that AI will re-shape journalism in an incremental way but with longer-term structural effects that reflect how news media is changing for other reasons: technological, social, and commercial. In a more networked world AI will become more important in all fields. AI will make news media more 'unequal' and diverse and change the structure of work, the news flow, and the relationship with the public.

Several members of the Media City Bergen cluster are participating in the JournalismAI Collab Challenges networking program coordinated by NCE Media. [5]

Since the opening of the MediaFutures this year several seminars and workshops have been arranged with valuable updates on journalism and media technology matters. The TekLab/SFI web seminar about the INJECT project [6] given by Professor Neil Maiden from Digital Creativity at Business School London was very inspiring. Also the presentation of the ongoing News Angler project [7] by UiB and Wolftech showed solutions to assist journalists in creative ways. The presentation from David Caswell from BBC News Lab [8] showing examples of new story telling methods for online publication, including automated generation of graphics and automated text summarization for news articles was also very inspiring.

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[4] The JournalismAI report: New powers, new responsibilities. A global survey of journalism and artificial intelligence
https://www.lse.ac.uk/media-and-communications/polis/JournalismAI/The-report
[5] Media City Bergen accepted into the JournalismAI Challenge
https://mediacitybergen.no/home/journalismaien/
[6] Digital Creativity Support for Original Journalism
https://cacm.acm.org/magazines/2020/8/246366-digital-creativity-support-for-original-journalism/fulltext
[7] PROJECT: NEWS ANGLER Discovering unexpected connections in the news
https://www.uib.no/en/rg/i2s/114224/discovering-unexpected-connections-news
[8] How BBC News is experimenting with semi-automated journalism
https://medium.com/bbc-news-labs/stories-by-numbers-how-bbc-news-is-experimenting-with-automated-journalism-3d8595a88852

The seminars by Professor Vinay Setty from the University of Stavanger and Professor Duc-Tien Dang-Nguyen from the University of Bergen have also given valuable insights of the challenges in fact verification of text and images.

The WP3 industrial partners in MediaFutures expects that the results from the work package will give valuable and substantial contributions to the industry trends, knowledge and insights already given by the international news media industry and research of media technology.

We acknowledge the fact that the WP3 work package holding the media production domain will have strong dependencies to all the other work packages in the MediaFutures.

The results from WP1 could tell us the trends we should prepare for production.

The results from WP2 might be important to assist the journalists with personalized news monitoring inside the newsroom.

The results from MP4 will give valuable insights of the evolution of presenting touch points used by the consumers, and how media production need to adapt to comply.

And the results of WP5 will make all the difference to make the goals of augmented journalism and newsroom support become real.

In addition to identify expectations and common ground on needs and wishes for the WP3 work package the industry partners have also exchanged some reflections on the definition of the term "*responsible*". This term is a vital and strong part of the MediaFutures slogan *"Research Centre for Responsible Media Technology & Innovation"* and should imply possible guidelines and framework for our coming activities in the research centre.

EXECUTIVE SUMMARY

The objective of this report is to identify expectations from the industry partners, and to define common ground on needs and wishes for activities in the *WP3 Media Content Production & Analysis* work package in the SFI MediaFutures.

The process has been based on digital workshops with presentations from each partner, exchange of inputs, homework, discussions, and reflections to identify common ground. Inspiring seminars arranged by SFI MediaFutures have also been important as inspiration and updates on relevant aspects of the present challenges for journalism and media production.

We realize the comprehensive list of needs in this report, but considering the run for eight years of research and innovation we need high goals.

This is the identified areas of <u>unified</u> common interest for the WP3 work package focus and activities:

1. The augmented newsroom
- New technology to help journalists work more efficient
- New technology to assist creativity
- New methods for verification of text information and image/video authenticity

2. Exploring new storytelling formats, and the adaption of news production thereof
- Development of new tools, workflows, and ways of connecting with readers and audience.
- Investigate how new storytelling formats will affect the media production of news
- Find solutions for these challenges

3. Trustworthy, secure, transparent, explainable, and unbiased technologies
- Technology as a transparent unbiased assistant, not as black boxes
- Build trustworthy and secure tools for journalists
- Ensure diversity in the news landscape

4. New technology to improve business efficiency and sustainability
- Discover new areas of use of AI, ML, semantics, and metadata
- Greener technology
- Fallback solutions

5. (Semi)automated content creation
- Automated journalism is about giving journalists the power to tell a greater range of stories
- Inspired by the work of BBC News Lab, AP and Wall Street Journal there's a higher potential in robot journalism, even in the Norwegian language
- Automated and augmented rough cuts and story creation in video has not reached the maturity for news production, yet, and should be targeted in WP3.

Reflections on "Responsible"
How to define "responsible" in the context of the MediaFutures slogan *"Research Centre for Responsible Media Technology and Innovation"*? Our workshops did also include separate inputs, discussions, and reflections on the meaning and possible definitions of "*responsible*" as a term.

Schibsted believes in a society built on trust and transparency. This means the technologies we build and apply should be *Reliable, Transparent/Explainable and Non-biased*. Schibsted also refers to a more in-depth coverage of their view on responsible AI by the article *Responsible AI: A marriage of theory and practice*.[9]

For AI to be «responsible» at **IBM**, it needs to abide by the following guiding principles:
1. The purpose of AI is to augment human intelligence.
2. Data and insights belong to their creator.
3. Technology must be transparent and explainable.

TV 2 refers to the chapter "The basics of AI ethics" from the EBU News Report 2019 "The Next Newsroom" [10]. Keywords discussed in the report are:
• *Human agency and oversight*
• *Technical robustness and safety*
• *Privacy and data governance*
• *Transparency*
• *Diversity, non-discrimination, and fairness*
• *Societal and environmental well-being*
• *Accountability*

For the **Fonn Group** the most important aspect of being *Responsible*, is probably to always be neutral in the tools offered, and to follow good ethical standards with regards to information gathering, use of AI's etc.

Wolftech Broadcast Solutions summarizes: *As the term responsible technology is ambiguous, we suggest calling technology responsible if it is also fair, ethical, socially desirable, and sustainable.*

The output of these discussions is presented in a separate chapter in this report.

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[9] Responsible AI: A marriage of theory and practice
https://schibsted.com/2020/12/02/responsible-ai-a-marriage-of-theory-and-practice/

[10] EBU NEWS REPORT 2019
https://www.ebu.ch/news/2019/11/ebu-news-report-urges-public-service-media-to-work-together-to-face-challenge-of-platforms

ABOUT MEDIAFUTURES

MediaFutures is a new research and innovation centre in Bergen, Norway. The centre is a consortium of the most important media players in Norway and beyond. The University of Bergen is the host of the centre and industry partners include NRK and TV 2, the two main TV broadcasters in Norway, Schibsted, including Bergens Tidende (BT), and Amedia, the two largest news media houses in Scandinavia/Norway, as well as the world-renowned Norwegian media tech companies Vizrt, Vimond, Wolftech, Highsoft, Fonn and the global tech and media player IBM.

The centre also includes renowned national research institutions such as the University of Oslo, the University of Stavanger and NORCE, and will work together with high-profile international research institutions. The centre's main objective is to develop the next generation of Artificial Intelligence for the media sector, or as we call it "responsible AI".

Why Responsible AI? Well, AI has shown to be of great value in many different application domains; however, it has also raised significant ethical issues, including, for example, the creation of echo chambers in online media systems, or has caused political polarisation as shown lately by many examples.

To address these challenges, we created a novel world-class research centre named MediaFutures. The centre will further develop advanced new media technology for responsible and effective media user engagement, media content production, media content interaction and accessibility, as well as research on novel methods and metrics for precise audience understanding.

The centre will deliver research outputs, e.g., in the form of patents, prototypes, papers and software, and will perform significant research training in media technology and innovation, to ensure that the outputs of the centre will sustain and impact the media landscape in the long run, including the creation of start-up companies with an innovation-oriented mindset.

(from the MediaFutures Annual Report 2020)

ABOUT THE WP3 WORK PACKAGE

Involved industrial partners

Bergens Tidende (BT), Fonn Group, IBM, Schibsted, TV 2, Vimond and Wolftech Broadcast Solutions

Objectives

We aim to develop solutions that produce verified and relevant content while employing engaging narratives. We will collaborate closely with media production companies to integrate and test the methods and tools we develop in realistic production settings, thus increasing industry relevance. Our ultimate objective is to analyse user-generated and other media content with respect to quality and validity, to extract data, information, and knowledge from media content, and provide this to algorithms that support (semi-)automated multi-modal content production.

Background

WP3 will produce novel tools for computational journalism to produce quality content in terms of both trustworthiness and engagement and will produce fact-checking software. Central research questions are: How can we computationally produce unbiased, high-quality, multimodal content? How can we analyse user-generated content in order to generate more valuable insights?

New Knowledge

Computational support for fake news detection – encompassing multimedia forensics techniques and fact checking – will be integrated within an adaptive platform supporting new content generation. The latter will be supported not simply through domain-specific search engines, and we will also employ sophisticated AI techniques for narrative generation. Here, the key element will be the use of news angles as a mechanism to support the creation of genuinely original content.

(from the MediaFutures Annual Report 2020)

ABOUT THE INDUSTRIAL PARTNERS INVOLVED

Mediahouses

Bergens Tidende (BT)

Bergens Tidende (BT) is one of Norway's oldest newspapers, and the country's largest outside Oslo. Due to their proximity to the centre and other partners in Media City Bergen, BT is well positioned to serve as a testbed for experiments, research, and innovation on behalf of their owner, Schibsted, and other affiliated news brands. Behavioural data from experiments will be made available for research to the extent possible under GDPR and current data policies.

Schibsted

Schibsted is the largest media house in Scandinavia and owns the leading Nordic marketplaces and news houses in Norway and Sweden, including FINN, Blocket, Aftenposten, VG, Svenska Dagbladet and Aftonbladet.

As the largest media group in Scandinavia, Schibsted will bring leading expertise, knowledge and completed and ongoing work within the fields of personalisation, data management, automatic content creation and language models, among others.

Schibsted will provide textual data needed for relevant research within their areas of interest.

TV 2

TV 2 is Norway's leading commercial public broadcaster, based in Bergen. An internal domain competence group, also consisting of specialists with academic backgrounds, will be closely involved in TV 2's activities within the centre. TV 2 will bring expertise in the fields of journalism, digitalisation, personalisation, data science and automation, and provide access to data needed for relevant research within their areas of interest.

Vendors

Fonn Group

The Fonn Group invests in companies that deliver journalistic and production tools for the media and entertainment industry. Fonn will provide knowledge and expertise within production workflow innovations and the use of AI for video analysis, automatic speech-to-text, face and object detection and machine learning, among other areas.

Vimond

Vimond is a leading streaming technology company and provides services and solutions to partners all over the world. As a leading streaming technology company with roots in the broadcasting industry, Vimond brings expertise on management and distribution of live and online content, provided to help broadcasters, operators and content providers adapt to new user habits, capture new user segments, and remain competitive.

Wolftech Broadcast Solutions

Wolftech Broadcast Solutions provides multi-platform broadcast solutions for the international market. Wolftech will be an essential partner in MediaFutures and WP3 for their expertise in workflow management systems and their ability to help media organisations streamline news production throughout the entire production process, from idea to multi-platform publishing.

Platform

IBM

IBM is among the world's leading suppliers of hardware, middleware, software, and cloud services. As a leading global technology company, IBM will provide leading technological expertise and resources in the form of data, cloud services, development tools and AI technology to develop and test innovative concepts and solutions.

THE REPORT: INDUSTRIAL EXPECTATIONS TO, NEEDS FROM AND WISHES FOR THE WP3 WORK PACKAGE

The objectives

To identify expectations from the industry partners, and to define common ground on needs and wishes for the WP3 Media Content Production & Analysis work package in the SFI MediaFutures.

The process

Digital workshops with presentations from each partner, exchange of inputs, homework, discussions, and reflections to identify common ground. Separate inputs and discussions and reflections on the meaning and possible definitions of "responsible" as a term in the context of media technology, research, and innovation.

We have also got valuable inspiration and knowledge update from SFI seminars.

Identified Common Areas of Interest

The industry partners involved in the WP3 work package do have some common business values as media houses, vendors, and platform service providers, like upholding trust, putting audiences at the heart of everything we do, celebrating diversity, delivering quality and value for money, and boosting creativity.

Areas of unified common interest in the WP3 work package:

1. **The augmented newsroom**

2. **Exploring new storytelling formats, and the adaption of news production thereof**

3. **To improve business efficiency by discover new areas of use of AI, ML, semantics, and metadata**

4. **Trustworthy, secure, transparent, and unbiased technologies**

5. **(Semi)automated content creation**

The needs of the industrial partners in WP3

1. **The Augmented Newsroom**

Some of the unified interest areas identified could be summarized within the concepts of "augmented journalism" or "augmented newsrooms" as referred in the Background chapter.

We see the augmented potential in the whole end-to-end media house workflow. From newsgathering where algorithms could be used to mine data from sensors, smart tools are leveraged to speed up story packaging in production and the content get circulated, personalized, and adapted to individual UI screens through AI in the distribution chain.

Special needs for the industry partners in the augmented newsroom domain:

- **New technology to help journalists work more efficient**

  With a human in the loop, how can AI help journalists create high quality content? A human-machine interaction based on machine learning and algorithms is by experiences already proven to raise the quality and creativity of journalism by offering better tools and workflow solutions to assist journalists and the media production staff.

  Journalists are every bit as crucial to the implementation of new tools as they are to the process of storytelling. Algorithms and AI do not recreate the "journalistic sense" — they only augment it.

  A primary goal in WP3 should be to get rid of human routine tasks in the newsroom by improving workflows and usability for end-users by practical implementation of AI, machine learning and semantic technologies. This will make time and space for creative and more valuable tasks, like investigative journalism, data-journalism and to meet people in person to tell their stories.

  Using artificial intelligence to assist in newsgathering. Analysing and verifying large volumes of information are just two examples of how this technology can strengthen journalism into the future.

  With new knowledge coming from WP2 there's also a potential of looking for news monitoring recommendations solutions inside the newsroom, pushing relevant and personalized content to journalists.

  The reliability & quality of AI technologies in end-user applications is fundamental.

- **New technology to assist creativity**

  Journalism involves the search for and critical analysis of information. Journalist creative thinking, to discover and generate new associations during this search and analysis of information, contributes to the generation of new stories.

  Can we support journalists with the help of new digital tools to discover new associations with which to generate stories with angles more novel and valuable than stories published previously? Can we help journalists to find other people writing about the same thing, or finding knowledgeable people about certain topics?

  The TekLab/SFI web seminar about the INJECT project [11] given by Professor Neil Maiden from Digital Creativity at Business School London showed a lot of potential in this area. The ongoing News Angler project [12] by UiB and Wolftech do also investigate solutions to assist journalists in creative ways.

- **New methods for verification of text information and image/video authenticity**

  Source material from unverified providers and from social media will increase, and the importance of fact checking and content verification will be of most importance to

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[11] Digital Creativity Support for Original Journalism
https://cacm.acm.org/magazines/2020/8/246366-digital-creativity-support-for-original-journalism/fulltext
[12] PROJECT: NEWS ANGLER Discovering unexpected connections in the news
https://www.uib.no/en/rg/i2s/114224/discovering-unexpected-connections-news

maintain trust. We assume that (semi)automated tools for false news detection and integrity verification are needed. Different from fake news detection, integrity verification aims to identify manipulation/deceptions within media content. Possible approaches might be to develop issue fact certificates for real news verification and more.

Some partners pointed out that journalists are currently not very interested in such tools, as they can well estimate the trustworthiness of news articles of known origin.

For images and audio-visual content deep fake generators for video have become increasingly popular and accessible by the democratization of AI, causing dystopian scenarios towards social erosion of trust.

2. Explore new storytelling formats, and the adaption of news production thereof

How will the development of artificial intelligence, augmented reality (AR), 5G connectivity, and smart devices affect journalism?

Driven by the (r)evolution of consumer interface technologies, storytelling of news is in big change, calling for development of new tools, workflows, and ways of connecting with readers and audience.

We expect to see more immersive and new adaptive storytelling formats and floating storytelling elements for news, also with timed and synced reference to video, - live or clips, on all distributed consumer platforms and devices.

The focus in the MediaFutures WP4 work package of exploring possible solutions for 'responsive design' and 'late binding'-scenarios in the multimodal and trans-medial publication domain is expected to be both relevant and important for news.

In his book "*Newsmakers – Artificial Intelligence and the Future of Journalism*" (2020) [13] the American computational journalist Francesco Marconi also introduced the term *'Iterative journalism*' as the idea of adjusting coverage in real time to serve the rapidly changing information needs of readers.

An investigation of how new multimodal and trans-medial storytelling formats will affect the media production of news, and how to find solutions for these challenges should be an essential part of the WP3 work package.

3. Trustworthy, secure, transparent, explainable and unbiased technologies

The definitions of the terms *'trustworthy'*, *'secure'*, *'transparent'*, *'explainable'* and 'unbiased' differ slightly from partner to partner. But we all believe in a society built on trust and transparency, and the importance of journalism to reflect these values with integrity and ethical standards. The five terms chosen are a result of the partner's reflections on the term "*responsible*", which are presented in a separate chapter in this report.

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[13] Newsmakers: Artificial Intelligence and the Future of Journalism
https://www.journalism.ai/

- **Technology as a transparent unbiased assistant, not as black box.**

  AI systems can have unintended consequences, since they are sometimes 'black boxes' – even the people who trained them may not know what logic they use to draw their conclusions.

- **Build trustworthy and secure tools for journalists.**

  The latest news article from The Guardian[14] about the Israeli Pegasus spyware sold to authoritarian regimes used to target activists, politicians, and journalists clearly shows the importance of securing the sources and newsroom material in case of razzias or digital break ins.

  It should be possible for journalists across national regions to work together in a secure way, even with digital tools, and reduce risk of injuries in extreme situations. It should also be possible to verify sources of information during high-risk assignments and in extreme environments.

- **Ensure diversity in the news landscape**

  New technology could support monitoring and ensure increased diversity reflected in the sources, contributors, and interviewees that a newsroom selects. For example, can smarter tools track the gender, political and ethnic diversity of experts and sources they quote.

4. **New technology to improve business efficiency and sustainability**

   In addition to the journalism aspect there's also a need to discover new areas of the use of AI, ML, semantics, and metadata in our businesses. Which AIs are proven to work consistently over time? Which ones improve and how?

   - **Greener technology**

     Aiming for solutions that directly and indirectly reduce the carbon footprint.

   - **Fallback solutions**

     when online services are unresponsive.

5. **(Semi)automated content creation**

   "Automated journalism and content creation isn't about replacing journalists or making them obsolete. It's about giving them the power to tell a greater range of stories— whether they are directly publishing the stories being generated, or using them as the starting point to tell their own stories— while saving them the time otherwise needed to analyse the underlying data." [15]

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[14] The Guardian: Revealed: leak uncovers global abuse of cyber-surveillance weapon https://www.theguardian.com/world/2021/jul/18/revealed-leak-uncovers-global-abuse-of-cyber-surveillance-weapon-nso-group-pegasus

[15] How BBC News is experimenting with semi-automated journalism https://medium.com/bbc-news-labs/stories-by-numbers-how-bbc-news-is-experimenting-with-automated-journalism-3d8595a88852

This was the message from Executive product manager David Caswell from BBC News Lab in the TekLab/SFI Augmented Journalism Network seminar in April this year. Caswell showed examples of automated generation of graphics, automated text summarization for news articles and more.

Robot journalism for financial, real estate and sports notices has already been in production in Norway for a long period of time. Inspired by the work of BBC News Lab, AP and Wall Street Journal there's a higher potential even in the Norwegian language, especially with the support of the outputs of the MediaFutures WP5 work package. It's about the need for higher volumes of niche content to comply with the demands of personalized interests of information.

On the other hand, automated and augmented rough cuts and story creation in video has not reached the maturity for news production, yet. It's all about timed metadata associated with video, and should be targeted in WP3.

Expectations and wishes

- Knowledge sharing
- Access to research resources & take part in Research-based Innovation
- Access to relevant research data and analysis of the data
- Industry based research vs doing all by ourselves
- Creation of a common baseline between the partners, solutions should use the same standards to be used across partners allowing possible reimplementation.
- Create AI-driven solutions that solve a marked need, making the lives of journalists and editors easier and better.
- Be in love with the problem, not the solution.
- Planning for a standard for how automated story production is done, so interoperability between systems is possible. Collaboration with bodies such as Video Standards Forum (VSF), Society Motion Picture Television Experts (SMPTE) or Advanced Media Workflow Association (AMWA) would ensure any standard is ratified by an internationally recognised industry body.
- Promote this work, there are many forums that want to learn about technical challenges and ideas around solutions in the Broadcast space that are not just a supplier advertising a product, our own MCB Tech is a local example. We should make sure there is a focus on getting "speakers on stages" and talking about this to the global audience.
- Collaborate with other industry partners that are closely related to us when it comes to customer base/market. Offer integrated solutions with competitive advantages, and potentially find new business opportunities
- Access to sandbox environment for developers with available AI/ML technologies and data that we don't have access to in our own development environments
- Using MCB sandbox/infrastructure
- Involve 3rd parties (IBM, Google, AWS) to share new stuff, unreleased/untried technologies - size of SFI center may give us access to resources/investments that we don't get access to on our own?

Reflections on "Responsible"

The term "*responsible*" is a vital part of the MediaFutures slogan *"Research Centre for Responsible Media Technology and Innovation"*

How to define "responsible" in this context, and what are the implications of this statement?

Schibsted believes in a society built on trust and transparency. This means the technologies we build and apply should be Reliable, Transparent/Explainable and Non-biased:

Reliable: Assertions about the world produced by systems and tools should make any uncertainty visible and actionable to journalists and editors, so that we are able to maintain journalistic integrity and sustain our user's trust.

Transparent / explainable: Wherever our tools make decisions that affect our users we want to be able to explain why they do so.

Non-biased: Our tools should make balanced, non-biased decisions and not contribute to harm for any exposed / vulnerable groups.

Schibsted also refers to a more in-depth coverage of their view on responsible AI by the article Responsible AI: A marriage of theory and practice.[16] The blog post discusses implications related to Artificial Intelligence (AI) by exploring possible areas of concern, and identified four selected themes which may relate to Schibsted's areas of operations:

1. Traceability & Interpretability
2. Reliability
3. Curation
4. Marginalisation

IBM:

For AI to be «responsible», it needs to abide by the following guiding principles:
1. The purpose of AI is to augment human intelligence.
2. Data and insights belong to their creator.
3. Technology must be transparent and explainable.

What IBM believes to be foundational properties of ethical AI.[17]
1. Explainability
2. Fairness
3. Robustness
4. Transparency
5. Privacy

In the end responsible use of AI, in media or elsewhere, needs to be determined by the ones that are subjected to the use of it. The media is both informing the public, but also influencing the public, for better or worse. Applying AI in either of these areas should be done with utmost care and sense of responsibility to avoid negative effects of the use of AI.

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[16] Responsible AI: A marriage of theory and practice
https://schibsted.com/2020/12/02/responsible-ai-a-marriage-of-theory-and-practice/
[17] IBM's Principles for Trust and Transparency
https://www.ibm.com/blogs/policy/trust-principles/

Fonn Group:

The most important aspect of being Responsible, is probably to always be neutral in the tools we offer, and to follow good ethical standards with regards to information gathering, use of AI's etc..

In the end, to do responsible journalism will always be up to the journalists and media houses. The angle the journalists choose for a story is of course always up to them. But what we can do is to try to offer tools to make sure reporting can be done based on reliable sources and information where the bias is clear.

TV 2

Regarding the definition of the term *"responsible"* in the MediaFutures slogon, and the possible consequences thereof, we would like to refer to the chapter *"The basics of AI ethics"* from the [EBU News Report 2019 "The Next Newsroom"](#) [18]:

OLD RULES IN NEW CONTEXTS
Are AI ethics different from general ethics?
The answer is simple: no. But AI ethics is a field of applied ethics, so the general rules have to be applied to AI-specific issues. Additionally, AI systems can have unintended consequences, since they are sometimes 'black boxes' – even the people who trained them may not know what logic they use to draw their conclusions.

The main ethical problems in AI are:

*• **A lack of transparency**, due to the 'black box' issue*
*• The **data used to train the model** can be used unethically or contain unintentional biases (for example, a postcode may seem to be just a number – an unbiased piece of data about where people live – but it could be used in an unethical and discriminatory way to predict where crimes will occur)*
*• The machines can be **designed** in such a way that they produce biased results, e.g., a machine may only be able to detect faces if they belong to white people*
*• AI can be used for **unethical purposes**, such as unmanned weapons*
*• Data can be **collected and handled** unethically, e.g., by breaking privacy laws*

One key challenge is that people tend not to accept errors from machines, even when they would accept the same errors from humans. Blind spots in the systems also undermine trust and prevent AI from being used to produce positive outcomes.

High-level experts with the European Union have published guidelines for the ethical use of AI that are very much in line with the core public-service mission and its values. The guidelines state that AI should empower humans to make informed decisions, that algorithm

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[18] EBU NEWS REPORT 2019
https://www.ebu.ch/news/2019/11/ebu-news-report-urges-public-service-media-to-work-together-to-face-challenge-of-platforms

usage should be transparent, and that AI systems should consider the values of diversity, non-discrimination, and fairness. Its key points are summarized below.

*• **Human agency and oversight:** AI systems should empower human beings, allowing them to make informed decisions and upholding their fundamental rights. At the same time, proper oversight mechanisms must be put in place.*

*• **Technical robustness and safety**: AI systems need to be resilient and secure as well as safe, accurate, reliable, and reproducible to ensure that unintentional harm is minimized and prevented.*

*• **Privacy and data governance**: Privacy and data protection laws must be fully complied with. Adequate data governance mechanisms must also be put in place.*

*• **Transparency**: Data, AI systems and AI business models should be transparent. Traceability mechanisms can help achieve this goal. In addition, AI systems and their decisions should be explained in such a way that the stakeholder concerned can understand. People should always be told when they are interacting with an AI system and made aware of the system's capabilities and limitations.*

*• **Diversity, non-discrimination, and fairness**: Unfair bias must be avoided as it could have multiple negative implications, including the marginalization of vulnerable groups and an increase in prejudice and discrimination. AI systems should foster diversity, be accessible to all regardless of disability, and involve relevant stakeholders throughout their entire life cycle.*

*• **Societal and environmental well-being**: AI systems should benefit all human beings, including future generations of people. Therefore, they must be sustainable and environmentally friendly; their impact on other living beings, human relationships and society should be considered.*

*• **Accountability**: Mechanisms should be put in place to ensure accountability for AI systems and their outcomes. Auditability, which enables the assessment of algorithms, data and design processes, should play a key role."*

<div align="right">(from the EBU News Report 2019 "The Next Newsroom")</div>

TV 2 would also like to point at the BBC Machine Learning Engine Principles (MLEP). With some modifications this practical checklist approach might also be a helpful guidance when working on AI and ML related activities in the SFI:

The BBC Machine Learning Engine Principles (MLEP) [19]:

RESPONSIBILITY
Editorial values and broadening horizons

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[19] Responsible AI at the BBC: Our Machine Learning Engine Principles
https://www.bbc.co.uk/rd/publications/responsible-ai-at-the-bbc-our-machine-learning-engine-principles

Where ML engines surface content, outcomes are compliant with the BBC's editorial values (and where relevant as set out in our editorial guidelines). We will also seek to broaden, rather than narrow, our audience's horizons.

Taking responsibility: review, security, and fairness
The BBC takes full responsibility for the functioning of our ML engines (in house and third party). Through regular documentation, monitoring and review, we will ensure that data is handled securely. And that our algorithms serve our audiences equally & fairly, so that the full breadth of the BBC is available to everyone.

Human in the loop
ML is an evolving set of technologies, where the BBC continues to innovate and experiment. Algorithms form only part of the content discovery process for our audiences, and sit alongside (human) editorial curation.

The BBC MLEP is defined by 47 checkpoint elements assigned to nine main areas:

1. Scoping your ML project
2. Planning your ML project
3. Working with editorial values
4. Other relevant BBC processes
5. Data and privacy
6. Training and testing a ML model
7. Model documentation & transparency
8. Life cycle management & monitoring performance
9. Checklist review

WOLFTECH BROADCAST SOLUTIONS

As the term responsible technology is ambiguous, we suggest calling technology responsible if it is also fair, ethical, socially desirable, and sustainable. Below we outline the three criteria in detail.

- **Fair**: The technology should ideally be bias free, from bias free data acquisition to non-discriminative prediction models, and selection mechanisms.
- **Ethical**: Ethical technology is a broad term by itself, we propose to leave it that way to allow for company specific ethical standards. Common to all should be technology transparency and explainability, both in terms of algorithm decisions as well as uncertainty. Furthermore, the technology needs to be non-discriminative and has to respect human values such as privacy or data ownership.
- **Socially Desirable**: Responsible technology needs to serve the broader public and not just a selective few. As such we need to make sure that the developed technology directly or indirectly benefits society.
- **Sustainable**: Sustainable technology is ecologically safe and should aim to reduce its carbon footprint. That can either occur directly by choosing green technology and energy sources or indirectly by reducing costly overhead processes or utilizing effective supply chains.

- **Transparency/Interpretability**

- **Greener technology**
- **Avoiding data bias** (racial bias, gender bias)
- **Keep the end user in mind** (not full automation/replacement but technology as assistant, being careful how to communicate the research goals)

ONLINE REFERENCES:

1. Reuters Institute: Journalism, media, and technology trends and predictions 2021 (Nic Newman)
   https://reutersinstitute.politics.ox.ac.uk/journalism-media-and-technology-trends-and-predictions-2021
2. The Future of Augmented Journalism
   https://insights.ap.org/uploads/images/the-future-of-augmented-journalism_ap-report.pdf
3. The EBU News Report 2019: The Next Newsroom
   https://www.ebu.ch/news/2019/11/ebu-news-report-urges-public-service-media-to-work-together-to-face-challenge-of-platforms
4. The JournalismAI report: New powers, new responsibilities. A global survey of journalism and artificial intelligence
   https://www.lse.ac.uk/media-and-communications/polis/JournalismAI/The-report
5. Media City Bergen accepted into the JournalismAI Challenge
   https://mediacitybergen.no/home/journalismaien/
6. Digital Creativity Support for Original Journalism
   https://cacm.acm.org/magazines/2020/8/246366-digital-creativity-support-for-original-journalism/fulltext
7. PROJECT: NEWS ANGLER Discovering unexpected connections in the news
   https://www.uib.no/en/rg/i2s/114224/discovering-unexpected-connections-news
8. How BBC News is experimenting with semi-automated journalism
   https://medium.com/bbc-news-labs/stories-by-numbers-how-bbc-news-is-experimenting-with-automated-journalism-3d8595a88852
9. Responsible AI: A marriage of theory and practice
   https://schibsted.com/2020/12/02/responsible-ai-a-marriage-of-theory-and-practice/
10. Newsmakers: Artificial Intelligence and the Future of Journalism
    https://www.journalism.ai/
11. The Guardian: Revealed: leak uncovers global abuse of cyber-surveillance weapon
    https://www.theguardian.com/world/2021/jul/18/revealed-leak-uncovers-global-abuse-of-cyber-surveillance-weapon-nso-group-pegasus
12. Responsible AI at the BBC: Our Machine Learning Engine Principles
    https://www.bbc.co.uk/rd/publications/responsible-ai-at-the-bbc-our-machine-learning-engine-principles
13. TekLab (UiB) Augmented Journalism: Workshops to explore news work in the age of automation
    https://teklab.uib.no/artikler/augmented-journalism-workshops-to-explore-news-work-in-the-age-of-automation/
14. A brief note on artificial intelligence and journalism (Francesco Marconi, 2017)
    https://www.linkedin.com/pulse/brief-note-artificial-intelligence-journalism-francesco-marconi/
15. Automated Journalism – AI Applications at New York Times, Reuters, and Other Media Giants (Corina Underwood, nov 2019)
    https://emerj.com/ai-sector-overviews/automated-journalism-applications/
16. Responsible AI: A marriage of theory and practice (Schibsted, 2020)

https://schibsted.com/2020/12/02/responsible-ai-a-marriage-of-theory-and-practice/
17. IBM's Principles for Trust and Transparency
https://www.ibm.com/blogs/policy/trust-principles/
18. The BBC Machine Learning Engine Principles (MLEP):
https://www.bbc.co.uk/rd/publications/responsible-ai-at-the-bbc-our-machine-learning-engine-principles

APPENDIX: THE INPUTS FROM EACH PARTNER

MEDIA HOUSES:

SCHIBSTED

We need to maintain our tradition of delivering journalism and other content that benefits society as a whole, while also ensuring financial viability. By participating in research programs such as Media Futures we seek to enhance our own performance, while also furthering the state of the art of journalism, news production and media research in Norway.

- **EXPECTATIONS**
  - We are interested in being able to correctly assess the integrity and veracity of externally generated media content (recordings, photos, videos) in order to maintain extremely high standards of transparency and trustworthiness, and are currently evaluating participation in the KLARSYN project.

- **NEEDS**
  - We need to be able to better use and distribute the textual content we produce, in particular we are interested in the ability to generate article/content summaries and representations, ideally in varying lengths and for different audiences, while maintaining factual correctness. Examples of summarization include short capsule summaries for young readers, and short search engine optimized headlines.
  - We would also like to ensure that our media content is presented in the best possible way for our customers and users. This includes device form factor adaptation and accessibility.

- **WISHES**
  - We wish for cooperation in the workstream leading to positive impact and better outcomes for ongoing projects and products in Schibsted, as well as providing stimulus for starting new, innovative and sustainable projects that bring positive impact to our users and Schibsted as a whole.

- **HOW TO DEFINE "RESPONSIBLE"?**

  Schibsted believes in a society built on trust and transparency. This means the technologies we build and apply should be:

  - Reliable: Assertions about the world produced by systems and tools should make any uncertainty visible and actionable to journalists and editors, so that we are able to maintain journalistic integrity and sustain our user's trust.

- Transparent / explainable: wherever our tools make decisions that affect our users we want to be able to explain why they do so.
- Non-biased: our tools should make balanced, non-biased decisions and not contribute to harm for any exposed / vulnerable groups.

For more in-depth coverage of our view on responsible AI, see the article [Responsible AI: A marriage of theory and practice](#).

BERGENS TIDENDE

- **EXPECTATIONS**
  - Knowledge sharing
  - Discover new use of AI and machine learning in the newsroom
  - Tools for content presentation and accessibility

- **NEEDS**
  - Better use of automatically produced content within scope of a regional primary news destination
  - Ensure we manage and monitor data streams in a smart way

- **WISHES**
  - Be able to test methods and applications in the newsroom
  - Be able to give input on newsroom needs

- **HOW TO DEFINE "RESPONSIBLE"?**
  - Transparency
  - Security

TV 2

- **EXPECTATIONS**
  - To be part of an innovation culture based on experimentation, research, collaboration, expertise and knowledge sharing.
  - Independent technology and services
    - Journalism does not need black boxes
    - Journalism need unbiased and transparent machine learning solutions

- **NEEDS**
  - Smarter, responsible and trustable methods and tools for journalism
  - Smarter and responsible tv- and media production
  - Smarter and trustable user recommendations and personalization inside the newsroom

- ○ "Smarter" means optimization of tools and workflows, including development of automatic and machine assisted solutions for media production in our newsroom.

- **WISHES**
    - ○ Free the editorial and journalistic creativity space in our newsroom
    - ○ Optimized tools for journalistic research and investigative journalism
    - ○ Optimized tools for verification and origin of information
    - ○ Machine assisted and personalized SoMe, news and information monitoring
    - ○ Automated and augmented rough cuts, story creation and robot journalism
    - ○ Automated and augmented touchpoint adaptive story versioning
    - ○ Participate in studies

- **HOW TO DEFINE "RESPONSIBLE"?**

    Regarding the definition of the term *"responsible"* in the MediaFutures slogan, and the possible consequences thereof, we would like to refer to the chapter *"The basics of AI ethics"* from the [EBU News Report 2019 "The Next Newsroom"](#) :

    OLD RULES IN NEW CONTEXTS
    Are AI ethics different from general ethics?
    The answer is simple: no. But AI ethics is a field of applied ethics, so the general rules have to be applied to AI-specific issues. Additionally, AI systems can have unintended consequences, since they are sometimes 'black boxes' – even the people who trained them may not know what logic they use to draw their conclusions.

    The main ethical problems in AI are:

    *• **A lack of transparency**, due to the 'black box' issue*

    *• The **data used to train the model** can be used unethically or contain unintentional biases (for example, a postcode may seem to be just a number – an unbiased piece of data about where people live – but it could be used in an unethical and discriminatory way to predict where crimes will occur)*

    *• The machines can be **designed** in such a way that they produce biased results, e.g. a machine may only be able to detect faces if they belong to white people*

    *• AI can be used for **unethical purposes**, such as unmanned weapons*

    *• Data can be **collected and handled** unethically, e.g. by breaking privacy laws*

    One key challenge is that people tend not to accept errors from machines, even when they would accept the same errors from humans. Blind spots in the systems also undermine trust and prevent AI from being used to produce positive outcomes.

    High-level experts with the European Union have published guidelines for the ethical

use of AI that are very much in line with the core public-service mission and its values. The guidelines state that AI should empower humans to make informed decisions, that algorithm usage should be transparent, and that AI systems should take into account the values of diversity, non-discrimination and fairness. Its key points are summarized below.

*• **Human agency and oversight:** AI systems should empower human beings, allowing them to make informed decisions and upholding their fundamental rights. At the same time, proper oversight mechanisms must be put in place.*

*• **Technical robustness and safety**: AI systems need to be resilient and secure as well as safe, accurate, reliable and reproducible to ensure that unintentional harm is minimized and prevented.*

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*• **Societal and environmental well-being**: AI systems should benefit all human beings, including future generations of people. Therefore, they must be sustainable and environmentally friendly; their impact on other living beings, human relationships and society should be taken into account.*

*• **Accountability**: Mechanisms should be put in place to ensure accountability for AI systems and their outcomes. Auditability, which enables the assessment of algorithms, data and design processes, should play a key role."*

(from the EBU News Report 2019 "The Next Newsroom")

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The BBC Machine Learning Engine Principles (MLEP):
https://www.bbc.co.uk/rd/publications/responsible-ai-at-the-bbc-our-machine-learning-engine-principles

VALUES
Reflecting the BBC's values
The BBC's ML engines will reflect the values of our organisation; upholding trust, putting audiences at the heart of everything we do, celebrating diversity, delivering quality and value for money and boosting creativity.

AUDIENCES
Our audiences
Our audiences create the data which fuels some of the BBC's ML engines, alongside BBC data. We hold audiencecreated data on their behalf and use it to improve their experiences with the BBC

Clear explanations
Audiences have a right to know what we are doing with their data. We will explain, in plain English, what data we collect and how this is being used, for example in personalisation and recommendations.

RESPONSIBILITY

Editorial values and broadening horizons
Where ML engines surface content, outcomes are compliant with the BBC's editorial values (and where relevant as set out in our editorial guidelines). We will also seek to broaden, rather than narrow, our audience's horizons.

Taking responsibility: review, security and fairness
The BBC takes full responsibility for the functioning of our ML engines (in house and third party). Through regular documentation, monitoring and review, we will ensure that data is handled securely. And that our algorithms serve our audiences equally & fairly, so that the full breadth of the BBC is available to everyone.

Human in the loop
ML is an evolving set of technologies, where the BBC continues to innovate and experiment. Algorithms form only part of the content discovery process for our audiences, and sit alongside (human) editorial curation.

1. **Scoping your ML project**

   Intended ML application
   1.1 What will this application of ML do and why is it being created?
   1.2 Have you considered using potential alternatives to ML? If not, why is ML appropriate or essential to your project?
   1.3 Which of the BBC's public purposes does the project support? Please give reasons for your choice.
   1.4 How does this project represent value both to the BBC and (if your project is external facing) to the BBC's audiences?
   1.5 What are the desired/expected outcomes?

   Impact

1.6 Who will be affected by the deployment of this system? Will it have an impact on any audience-facing services? If so have you considered the editorial policy aspects?

Risks, opportunities and consequences
1.7 What are some of the potential limitations, issues, or risks that could arise from your project?
1.8 Have you considered whether any groups could be negatively impacted because of the use of your application? How might you mitigate this?

2. Planning your ML project

Public service outcomes
2.1 How are you defining what success (e.g. intended outcomes) looks like? How will you evaluate the effectiveness of your approach in line with this?
2.2 What is your process for logging, reporting, and escalating issues? Who are the key people who must be contacted in the event that unanticipated risks and issues arise?
2.3 Is your application built for a product that has a younger audience or does it directly affect children? If so, how have you ensured that you conform to BBC guidelines relating to children and included this in your DPIA?
2.4 Is your application built for a product that deals with sensitive topics? If so, how have you ensured that you conform to BBC guidelines relating to harm and offence?

Ensuring fairness and equality
2.5 Is your team multi-disciplinary? Do those that provide feedback - such as testers - bring different perspectives?
How have you sought out diversity of thought (e.g. in your choices, of data sources, design process, functionality, UX)?
What specific areas of expertise and lived experience are important to your project (e.g. beyond technical)?
What measures will you put in place to ensure the perspectives of these relevant groups are taken into account?
2.6 What have you done to understand the potential impact of the system you are developing on people with protected characteristics (age, disability, gender, race, religion/belief, sexual orientation)?

Sign-off
2.7 Who is responsible for go-live sign-off, and is the sign-off process documented?

3. Working with editorial values

If your project has editorial consequences then ...
3.1 Have you considered how editorial stakeholders can be involved throughout your project?

3.2 What editorial insights would be useful to know? e.g. Editorial priorities, audience observations, production workflows, public service offers

3.3 Do you have a way of documenting editorial decisionmaking? e.g. via an editorial decisions log?

User insights

3.4 What user insights would be useful to know? e.g. Audience preferences, issues which trigger user complaints, niche audiences.

3.5 What implications do these user insights have for editorial decision-making, e.g. via business rules and algorithmic weightings?

Content insights

3.6 What content production systems are used, and what impact does this have on your data engineering?

3.7 Should you conduct a data/content audit to gain editorial insights? This might include details of the production workflows, identifying edge cases etc.

3.8 What implications do these content insights have for editorial decision-making, e.g. via business rules and algorithmic weightings?

Editorial principles

3.9 Have you considered if/how the following editorial principles should be reflected in your project:

- Provide an experience that is impartial and reflects editorial integrity.
- Provide an experience that is in the public interest.
- Provide content that meets editorial and legal obligations.
- Reflect editorial judgement and sensitivity when providing content that is challenging.
- Protect vulnerable groups and the privacy of contributors.

Provide users with good quality content (metadata, fits the users context).
- Provide breadth and/or depth depending on the user's preference and context as well as editorial priorities.
- Doesn't violate any other editorial guidelines.

4. Other relevant BBC processes

The following BBC processes or sources of expertise might also be relevant to your project:

4.1 Is other domain expertise required for this project (HR, UX, audiences etc)? For example, you would need to consult HR if designing a project for staff to opt into. Or audience analytics teams can provide insights into audience behaviour and preferences.

4.2 Legal status of the data
- Have you checked the status of the data (e.g. personal, identifiable) and the legal basis for which the data is/was processed?

- Are you compliant with GDPR principles around data sourcing, use, minimisation and retention?
- Have you kept a record of your Data Protection & Impact Assessment (DPIA), if applicable?

4.3 Have you carried out a threat model review with InfoSec?
This will cover topics including:
- The effect of malicious inputs intended to confuse or disrupt the model.
- Security controls in your non-production environments.
- Whether your model could be used to make inferences about an individual e.g. reveal their identity based on the data being processed.
- The InfoSec classification of the datasets that you are processing.
- The impact on other areas of the BBC if your service were to be compromised and a data breach occurred. Refer to ML/AI Infosec Guidelines for further detail and examples.
4.4 If any procurement is involved, have you contacted Commercial Rights and Business Affairs?

5. Data and privacy
5.1 Is your work aligned with the BBC privacy promise, BBC privacy practices and the BBC's commitment to privacy by design?
5.2 In order to understand what data is being used:
- Have your data source origins been documented (i.e. How and why it was collected)?
- Have all your transformations and/or modifications been documented? Documentation here includes but is not limited to: well-structured, accessible, and legible source code to perform transforms; data schemas; and system diagrams.
5.3 If using personal data: could you achieve your aims with nonpersonal data or minimised data? If not, are your aims clearly stated and justified?
5.4 Data Quality and Fairness:
- What are you doing to ensure quality?
- What are you doing to counter possible errors and sources of unfair bias in the data?
- How are you trying to minimise the effect of unfair biased data? If you have fixed groups, have you taken appropriate steps to fairly represent those groups (this may include minimum representation samples or other weighting techniques)?

6. Training and testing a ML model
6.1 Have you asked for domain expert advice in your feature engineering process?
6.2 (having thought about the impact of your ML application on different groups as per 2.6) Have you carried out appropriate and reasonable tests for bias? (e.g. tests for disparate error rates).
Do these require any changes to the model, or data sources? (5.4)

6.3 Have you considered how particular types of use or less predictable use of the system could affect its expected performance, and have you carried out appropriate testing for this at this stage?

6.4 How will you monitor if the model is giving unexpected or incorrect results?

6.5 Can you fix the model quickly if it breaks? For example through retraining or rolling back to a previous version of the model?

6.6 How easily and quickly can you retrain and redeploy the model?

7. Model documentation & transparency

7.1 Has this ML project been added to the BBC AI+ML registry?

7.2 Have you sufficiently described what your model does and documented how it was created? e.g. via a data science decision log.

7.3 Do you have an explanation or visualisation of the model that can be used to effectively communicate – in plain English – its purpose and how it works ? Have you considered how to do this for:

- Your users (whether internal or external).
- Your ML project stakeholders across the BBC (whether direct - e.g. product, or more widely, e.g. Quality, Risk & Assurance division).

8. Life cycle management & monitoring performance

8.1 Have you got a plan to monitor and review the continuing validity of your model and its live performance, including what to do if it is not performing as expected? Does your plan include consultation with the relevant users (the audience, stakeholders, domain experts and others who use the model output) to ensure that it is working as expected?

8.2 What is a sensible cadence for review of the results? Quarterly, monthly, weekly, prior to large release, as needed and/or when triggered by performance metrics?

8.3 Given input will change over time, how will you be monitoring the output when new data is added?

8.4 What is the defined process to decommission the ML system if this is required?

9. Checklist review

9.1 What important changes (or revisioning / redeployment of the model) would trigger a MLEP checklist review? Are there particular sections or questions you should revisit? If so, when?

9.2 Would it be helpful to get peer review of your checklist responses?

VENDORS:

FONN GROUP

- **EXPECTATIONS**
  - Stronger position in the market with our connection the SFI, research results and new innovations/collaborations etc

- - *We build tools that enable journalists to publish **reliable news**, using new technology and AI*
  - Explore new end-user workflows utilizing AI and ML:
    - Practical implementation of AI
    - Improving workflows and usability for end-user
  - Discover new areas of use of AI and ML
    - Which AIs are proven to work consistently over time?
    - Which ones improve and how?
    - Reliability & quality of AI technologies in end-user applications?
  - News verification methods (source material from unverified providers will increase)
    - Fact checking & content verification.
    - Issue fact certificates / Real news verification
      - Verification authentication methods?
        - A set of minimum requirements to be met to get issued a certificate?
          - A graded verification?
        - Blockchain verified certificate?
  - Creativity assist
    - Finding other people writing about the same thing
    - Finding knowledgeable people about the topic
    - AI suggestions of relevant topics
    - Suggest crews close to where things are happening
  - Fake news detection
    - TBD
  - Security for journalists
    - Build trustworthy tools for journalist
      - Secure the sources and material, safe from seizure of equipment etc. in case of razzias or digital break ins.
      - Make it possible for journalists across national regions to work together in a secure way. (Share information)
    - Reduce risk of injuries in extreme situations
    - Be able to do the job in a secure way
    - Verify sources of information during high risk assignments /extreme environments

- **NEEDS**
  - A huge party :)

- **WISHES**
  - Knowledge sharing
  - Access to relevant research data and analysis of the data
    - longer-term research data
    - ***industry based research vs doing all by ourselves***
  - Access to research resources & take part in Research-based Innovation
  - Collaborate with other industry partners that are closely related to us when it comes to customer base/market
    - Offer integrated solutions with competitive advantages
    - Potentially find new business opportunities

- ○ Access to sandbox environment for developers with available AI/ML technologies and data that we don't have access to in our own development environments
  - ■ using MCB sandbox/infrastructure
  - ■ Involve 3rd parties (IBM, Google, AWS) to share new stuff, unreleased/untried technologies - size of SFI center may give us access to resources/investments that we don't get access to on our own?

- ● **HOW TO DEFINE "RESPONSIBLE"?**
  - ○ Plenty of examples of how media technology can be misused to achieve certain goals
  - ○ So the most important aspect of being Responsible, is probably to always be neutral in the tools we offer, and to follow good ethical standards with regards to information gathering, use of AI's etc..
  - ○ In the end, to do responsible journalism will always be up to the journalists and media houses.
    - ■ The angle the journalists choose for a story is of course always up to them.
  - ○ But what we can do is to try to offer tools to make sure reporting can be done based on reliable sources and information where the bias is clear.
    - ■ We should explore how to analyse whether information is biased via sentiment and comparative analysis based on information on the same subject from multiple sources. Then the result could be presented to the journalist; if the source is positive, negative, sarcastic..., if the information differs from other sources etc.
  - ○ (..Don't be evil…)

Common areas/notes from workshops /keywords

- Trustworthiness
- Transparency
- Equip journalists with tools for raising quality of work and creativity
- Responsible journalism
- Security
- Fake news detection
- "Augmenting" people with AI tools
- Fallback solutions, when online services are unresponsive
- Prototypes - what level?

Mjoll and 7Mountains can contribute with licenses & APIs for our software for
- sandbox
- proof of concept for TBD

VIMOND

- **EXPECTATIONS**
  - Create AI-driven solutions that solve a marked need, making the lives of journalists and editors easier and better.
  - Be in love with the problem, not the solution.
  - Creating compelling stories will still need a human for the foreseeable future, but it shouldn't be necessary to start "on scratch" each time.
  - When creating stories, computerized algorithms should be able to assist, eg. creating rough cuts from a synopsis.

- **NEEDS**
  - Validations from the market that there is a need for the solution
  - Some indication of price sensitivity - we need to know the commercial value for the customer x market size to justify the investment spend (we can of course help with that).
  - Find the strategic fit where technology to be developed fits the market needs

- **WISHES**
  - Planning for a standard for how automated story production is done, so interoperability between systems is possible. Collaboration with bodies such as Video Standards Forum (VSF), Society Motion Picture Television Experts (SMPTE) or Advanced Media Workflow Association (AMWA) would ensure any standard is ratified by an internationally recognised industry body.
  - Data from the exploration of different methodologies explored, to be used in marketing - we looked at X y and Z, we chose Y because of …
  - Promote this work, there are many forums that want to learn about technical challenges and ideas around solutions in the Broadcast space that are not just a supplier advertising a product, our own MCB Tech is a local example. We should make sure there is a focus on getting "speakers on stages" and talking about this to the global audience.

WOLFTECH BROADCAST SOLUTIONS

- **EXPECTATIONS**
  - Market analysis for the research needs.
  - Commerciability estimate, cost benefit analysis
  - Creation of a common baseline between the partners, solutions should use the same standards to be used across partners allowing possible reimplementation.

- **NEEDS**
  - Transparent (trustworthy) smart investigative tool for journalists to handle heterogeneous and large real time news streams. Identification of important

key events on multiple levels. Allowing journalists to identify interesting events and search for similar ones.
  - Fake news identifier Automatic tool that flags potentially problematic sources
  - Smarter scheduling tools, AI supported scheduling tools for production planning. Automatic roadmap layout and cost minimization changes for reschedules.

- **WISHES**
  - Reduce time on laborious tasks
  - Actively contribute to new solutions
  - Balance between flexibility and usability of the application results

- **HOW TO DEFINE "RESPONSIBLE"?**

  As the term responsible technology is ambiguous we suggest calling technology responsible if it is also **fair**, **ethical, socially desirable**, and **sustainable**. Below we outline the three criteria in detail.
  - **Fair**: The technology should ideally be bias free, from bias free data acquisition to non discriminative prediction models, and selection mechanisms.
  - **Ethical**: Ethical technology is a broad term by itself, we propose to leave it that way to allow for company specific ethical standards. Common to all should be technology transparency and explainability, both in terms of algorithm decisions as well as uncertainty. Furthermore, the technology needs to be non discriminative and has to respect human values such as privacy or data ownership.
  - **Socially Desirable**: Responsible technology needs to serve the broader public and not just a selective few. As such we need to make sure that the developed technology directly or indirectly benefits society.
  - **Sustainable**: Sustainable technology is ecologically safe and should aim to reduce its carbon footprint. That can either occur directly by choosing green technology and energy sources or indirectly by reducing costly overhead processes or utilizing effective supply chains.

- Transparency/Interpretability
- Greener technology
- Avoiding data bias (racial bias, gender bias)
- Keep the end user in mind (not full automation/replacement but technology as assistant, being careful how to communicate the research goals)

PLATFORM:

IBM

- **EXPECTATIONS**
    - Support the SFI MediaFutures in its endeavours to perform research in the areas concerning responsible media
        - Be part of the discussions around industrial use cases and see if/how IBM AI technology could be used
        - Identify use cases in collaboration with partners in Mediafutures where IBM AI can be used
    - Work in SFI MediaFutures that is relevant for IBM globally and where it is possible to reuse findings from the research
    - Establishing common ground that supports IBMs active engagement in the SFI

- **NEEDS**
    - Good collaboration with partners in Mediafutures
    - Openness aroudn internal data and needs/use cases so we can have a open ideation on possible applications of IBM technologies

- **WISHES**
    - Industry partners actively engaging IBM to indentify areas for collaboration
    -
- **HOW TO DEFINE "RESPONSIBLE"?**

IBM has from the outset been focused around ethical development and application of AI in all its facets. IBM has therefore had a multidisciplinary, multidimensional approach to trustworthy AI.

IBM is convinced that AI that is trusted will be the AI that wins in the end and will be used, in contrast to AI that is not trusted. IBM has therefore established a set of principles to make sure that any research, development, implementation and/or use of AI is done in line with these principles. If this is not possible we stop doing it, like we did with facial recognition in spring of 2020:
https://www.bbc.com/news/technology-52978191

For AI to be «responsible», it needs to abide by the following guiding principles:

1. *The purpose of AI is to augment human intelligence*. At IBM, we believe AI should make all of us better at our jobs, and that the benefits of the AI era should touch the many, not just the elite few.

2. *Data and insights belong to their creator*. IBM clients' data is their data, and their insights are their insights. We believe that government data policies should be fair and equitable and prioritize openness.

3. *Technology must be transparent and explainable*. Companies must be clear about who trains their AI systems, what data was used in training and, most importantly, what went into their algorithms' recommendations.

For more detailed definitions please look at
https://www.ibm.com/blogs/policy/trust-principles/

IBM Research has a dedicated group of researchers that are focused on creating open, transparent, trustworthy AI technologies and solutions. They are studying what IBM believes to be foundational properties of ethical AI.

1. Explainability
2. Fairness
3. Robustness
4. Transparency
5. Privacy

To put the principles at work IBM has created an internal AI ethics baord and is partnering with governmental institutions all over the world in this area. Our chief scientist og ethical AI, Francesca Rossi (IBM fellow and AI Ethics Global Leader) is part of the EU AI advisory board and has influenced the recently published «Precision Regulation for AI» that is now being discussed.

IBM has also established the IBM Policy Lab that has as its main goal to drive growth and innovation in the digital economy in a responsible manner.
(https://www.ibm.com/policy/)

 In the end responsible use of AI, in media or elsewhere, needs to be determined by the ones that are subjected to the use of it.

The media is both informing the public but also influencing the public, for better or worse. Applying AI in either of these areas should be done with utmost care and sense of responsibility to avoid negative effects of the use of AI.