

Response to the Call for evidence

The future of Public Service Broadcasting Specific Response to “Looking ahead”

Submitted by Neelima Sailaja and Prof. Derek McAuley
Horizon Digital Economy Research Institute, University of Nottingham

1. Horizon¹ is a Research Institute centred at The University of Nottingham and a Research Hub within the UKRI Digital Economy programme². Horizon brings together researchers from a broad range of disciplines to investigate the opportunities and challenges arising from the increased use of digital technology in our everyday lives. Prof. McAuley is Director of Horizon, and was a member of the Furman Digital Competition Expert Panel for HM Treasury that published the “Unlocking Digital Competition” report³, and Principal Investigator of the ESRC-funded CaSMa⁴ (Citizen-centric approaches to Social Media analysis) project to promote ways for individuals to control their data and online privacy, and the EPSRC-funded UnBias⁵ (Emancipating Users Against Algorithmic Biases for a Trusted Digital Economy) project for raising user awareness and agency when using algorithmic services. Neelima Sailaja is a researcher of Horizon, working on her doctoral and post-doctoral projects on the challenges of using personal data in media experiences, in association with the BBC. This evidence presents future possibilities in PSB services as they turn towards the data-driven Internet era. It particularly identifies and unpacks the complexities of the socio-technical challenges of trust and accountability witnessed by this shift (as evidenced in research). We present these challenges, which confront the very adoption of future PSB services with the view of informing the shaping of such services to be sensitive to these wider challenges. We are happy for this response to be published in full.

What should a PSB look like in a digital age? What services should they provide (Expected Properties of a Future PSB service)?

2. Traditional broadcast has relied primarily on radio and television for the widespread dissemination of information in the form of entertainment. With the rise of the internet age along with ubiquitous computing technologies, this definition of broadcast is currently being redrafted. This revision is inspired by the potential of the

¹ <http://www.horizon.ac.uk>

² <https://epsrc.ukri.org/research/ourportfolio/themes/digitaleconomy/>

³ <https://www.gov.uk/government/publications/unlocking-digital-competition-report-of-the-digital-competition-expert-panel>

⁴ <http://casma.wp.horizon.ac.uk>

⁵ <http://unbias.wp.horizon.ac.uk>

billions of mobile and other internet connected devices handled by diverse populations ^{6 7 8} that allow for the delivery of content anytime, anywhere, at the convenience of the audiences.

3. This shift allows current and future broadcast the ability to render a considerably more diverse range of novel possibilities, ranging from customised recommendations to even the personalisation of the broadcast content itself. Identified here are a number of significant characteristics that is redefining the very culture of modern media consumption. In this rapidly evolving scheme, for public service broadcast to be effective in its goals and values and more importantly, relevant to the 'public' it is recommended that it reflects upon these newer capabilities and work towards making them into inherent properties of future PSB services.

Ubiquitous :

4. Future broadcast should be diversified in terms of both their technologies and creative content to suit the ubiquitous nature of future consumption behaviours supported by the increase in use of handheld and IoT devices. For example, provision for content of varying lengths such as responsive radio as discussed by Tony Churnside of the BBC ⁹, optimized for the current device in terms of resolution, volume and streaming strength, to make the most efficient 'broadcast' available to any person, at any time.

Customised and Personalised

5. As media consumption turns ubiquitous, the need for customisation of the broadcast content through the use of effective recommenders and media curators is highlighted¹⁰. The success of several modern digital media platforms like Netflix and Spotify are single handedly dictated by the effectiveness of their recommendations ^{11 12}. Recommenders that are capable of assessing the delicate balance between suggesting content based on previous consumption versus exposing the audiences to

⁶ Schwab, K. and others. '[Personal Data : The Emergence of a New Asset Class](#)' 2011 (viewed on 13th June 2020)

⁷ Kalapesi, C. '[Rethinking Personal Data : A New Lens for Strengthening Trust](#)' 2012 (viewed on 13th June 2020)

⁸ Rose, J., Rehse, O. and Röber, B. '[The Value of our Digital Identity](#)', Boston Consulting Group 2012 (viewed on 13th June 2020)

⁹ <https://www.youtube.com/watch?v=ADIU5RcFz8U>

¹⁰ Sailaja, N., Crabtree, A. and Stenton, P. '[Challenges of using personal data to drive personalised electronic programme guides](#)', in Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems 2017 : pages. 5226–5231 DOI: <http://dx.doi.org/10.1145/3025453.3025986>

¹¹ Amatriain, X. '[Beyond Data : From User Information to Business Value through Personalized Recommendations and Consumer Science Categories and Subject Descriptors](#)', Proceedings of the 22nd ACM international conference on Conference on information & knowledge management - CIKM '13 2013 : pages 2201–2208 DOI: <https://dl.acm.org/doi/10.1145/2505515.2514701>

¹² Amatriain, X. '[Big & personal: data and models behind Netflix recommendations](#)', in Proceedings of the 2nd International Workshop on Big Data, Streams and Heterogeneous Source Mining Algorithms, Systems, Programming Models and Applications - BigMine '13 2013 : pages 1–6 DOI: <https://doi.org/10.1145/2501221.2501222>

new and diverse options are to be prioritized and integrated into the heart of future public service broadcast¹⁰.

Context-Aware

6. Broadcast as a holistic experience warrants customization beyond recommendations if it is to be extended beyond the audiences' homes to their commutes, breaks, waits and passive background consumption. Here, for future public service broadcast to be truly universal in terms of consumption, the broadcast should be able to be context aware and present opportunities for media consumption that are sensitive to the circumstances of the audience member(s) and deliver content that is intelligently perceptive of their social and technological wants, needs and intentions¹³.

Increased Public Investment

7. With the introduction of internet enabled media, the fundamental quality of one-way dissemination of broadcast content is challenged¹⁴. Herein lies the possibility for future broadcast to allow for active audience engagement with the process. This brings forth the 'public' aspect of a PSB, making the future of a PSB more relatable and relevant to the audiences. With the introduction of cutting edge internet based broadcast technologies like Object Based Media¹⁵ that allow for audience intervention in the content that is delivered, a PSB sees the potential for a shift in the current broadcast model to one where increased creative investment from the public is factored in.

Data Driven

8. All of the above-mentioned characteristics for a future PSB is enabled by a single resource, audience personal data. The types of data required to make these innovations possible could range from audience location and device ID to very granular viewing history details. This data is used to understand audience behaviour, highlight patterns and gaps, alleviate any identified consumption gaps, resolve audience wants, needs and intentions, infer social circumstances around consumption and deliver the opportunity for the most optimised content consumption at any given time.
9. However, the commercial approaches to data capture and processing are increasingly under scrutiny and are systematically undermining public trust. Public Service Broadcasting must take a more responsible and privacy preserving approach to maintain this public trust, as exemplified by the BBC Box project¹⁶, in which user personal data is not casually shared, but processed in their own TV, smartphone or computer, with only anonymised statistical data shared.

¹³ Sailaja, N. and others. [‘The Living Room of the Future’](https://doi.org/10.1145/3317697.3323360), in Proceedings of the 2019 ACM International Conference on Interactive Experiences for TV and Online Video 2019 : pages 95–107 DOI:

<https://doi.org/10.1145/3317697.3323360>

¹⁴ <https://www.bbc.co.uk/rd/projects/public-service-internet>

¹⁵ <https://www.bbc.co.uk/rd/object-based-media>

¹⁶ <https://www.bbc.co.uk/rd/blog/2019-06-bbc-box-personal-data-privacy>

What services should they provide (How the very inherent nature of future services will help serve more audiences, in an inclusive manner)? To whom should they provide the services?

10. One of the biggest advantages provided by audience data leverage in PSB is the ability to make future broadcast relevant and accessible to all. With the ability to understand user motivations at granular resolutions along with the capabilities for delivering customised content to audiences, broadcasters of the future would be able to deliver every one of their audience members experiences that match their expectations. Thus, this future would see a shift from broadcasters being forced to work under the constraints of studying audience demographics and catering to the majorities (with minorities being treated as special cases). Instead, the future would render equal weight to each audience member and their media consumption habits, thereby customising and curating broadcast to fit the circumstances and motivations of each audience member equally.
11. This advantage is not just limited to customising recommendations, but it diversifies. Firstly, making content more accessible to more vulnerable populations by controlling the resolutions, the media player's lighting and volume or text size of subtitles to enable the most pleasant consumption experience. Secondly, contributing to the delivery of age appropriate content in families with younger audiences. Or even considering other social and technological support that could be provided like taking into account the particular social group that has convened to watch television.
12. Adding to these possibilities the ability for increased public involvement in the creative aspects of the broadcast would increase the relevance of these services to the public further. This potential for a more inclusive, accessible, universal and engaging broadcast presented by the movement to internet delivery and appropriately leveraging audience personal data presents the possibility of strongly rooting the 'public' aspect of PSB, thereby strengthening the very core and need for this traditionally established approach in the modern digital era.

What services should they provide (Identification and unpacking of challenges faced by future services)? In what way, and to whom, should they be accountable?

13. But while the future of a PSB could be much enhanced by the shift towards data-driven internet technologies, there are certain socio-technical challenges this change entails. These challenges are inferred from the findings of three contextualised research studies that closely investigated the implications of personal data leverage in future media ^{10 13 17}. This research studied these challenges from the viewpoints of the audience members and several public service broadcast providers within the BBC (a PSB organisation). This viewpoints approach resulted in a holistic report that is

¹⁷ Sailaja, N. and others. '[Explicating the Challenges of Providing Novel Media Experiences Driven by User Personal Data](#)', in Proceedings of the 2018 ACM International Conference on Interactive Experiences for TV and Online Video 2018 : pages 101–113 DOI: <https://doi.org/10.1145/3210825.3210830>

sensitive to both the consumer perspective and provider perspective of these challenges.

14. Considering the specific grounding of this research within the scope of a public service broadcast organisation, its services and audiences, we believe the findings here speak specifically to the future of PSB services, which are inevitably shifting towards the digital, internet enabled and data driven era. The following account details two of these challenges that address the context of future broadcast : lack of trust and accountability. It unpacks the sensitivities around these challenges, to be considered by future services provided by a PSB. If not carefully studied and responded to, these challenges could almost form barriers in the adoption and widespread use of these innovative technologies ¹¹. Hence, we present these challenges through this evidence with the view that these sensitivities have the scope of being an integral part of the very guidelines for the creation and redefinition of a PSB.

Trust

15. Trust is a core value within the BBC, especially considering their agenda for public service broadcast. Here, the Director General of the institution is quoted saying “Our mission for the internet age is to provide world-class programmes and services, and be a trusted guide, for everyone.”¹⁸ For this mission to be achieved, particularly when personal data is involved, the factors that make trust a challenge calls for more attention.
16. When personal data is involved in media consumption, a lack of trust is highlighted, in two ways. First is the trust associated with the nature of broadcast media, where traditionally users trusted broadcast because of its very nature of serving uniform content to all. With that media being customised using audience personal data, the user trust in such scenarios becomes a challenge.
17. Ethical considerations are required here, especially those focusing on responses to the fear of bias. Two kinds of biases are persistent in this context. One is the possibility of serving content that might be biased to influence user attitudes, using knowledge given by their personal data. Second is the constraining of users in biased recommendations like filter bubbles and echo chambers, thereby limiting the diversity in the media they are exposed to.
18. Second form of trust is the trust around the data practices. Here, broadcasters have the added responsibility of being a ‘data broker’ where they have to understand and respond to the nature of trust and challenges associated with the data processes. Currently, there is a lack of trust in the data practices within media experiences^{19 20}.
19. The track record of the service provider often helps with user trust in this scenario, but the audiences do not consider that to be a guarantee when their personal data is involved.
20. When considering media services and a PSB in particular, the consideration of trust as a core value is central also because media services fall into the ‘pleasure

¹⁸<https://web.archive.org/web/20190130070345/http://www.bbc.co.uk/corporate2/insidethebbc/howwework/accountability>

¹⁹<https://www.wired.com/2009/12/netflix-privacy-lawsuit/>

²⁰<https://www.wired.com/2010/03/netflix-cancels-contest/>

spectrum' of the users' lives. Hence, there is the possibility of the public easily choosing not to engage with these services if they do not trust them, which challenges the very reason for existence of a PSB.

Accountability

21. As the core value of trust becomes a challenge in future PSB, accountability becomes a solution to this challenge. The BBC has traditionally upheld accountability as one of its key responsibilities to the public. They exercise this accountability through transparency of "information about how we work including programme statements, salaries and expenses disclosures, board meeting minutes, and fair trading complaints and responses."¹² As audience personal data becomes a part of this system, the definition of accountability needs to be extended to these newer scopes.
22. Due to previous experiences with other data driven services, audiences reported not being satisfied with current levels of transparency and control. Here, they are forced to trust the service providers rather than encouraged through appropriate responses to organically build trust. Media service providers also report accountability as a challenge by pointing out the different aspects of accountability that must be considered if user trust is to be preserved.
23. Here, PSBs have traditionally viewed accountability in terms of responsibility. This is often regulated by external or internal bodies through several measures that make processes transparent (as highlighted in the quote from 20.). With the inclusion of personal data in future PSB, this understanding of a PSB calls to be widened to accommodate more perspectives. The GDPR imposes legal accountability on any entity collecting and processing personal data. Hence, accountability here extends to internal and external legal accountability²¹, which together practicalises accountability of the data practices both within and outside the system.
24. Another aspect of accountability pertinent within media and relates to responsibility is social accountability. This view on accountability, while not regulated, is an example of the service provider understanding of the need to go beyond just the mandated, to ensure user trust. It also differs from traditional definitions of accountability as this viewpoint focuses on being accountable as a societal entity, towards the society or the public, rather than a formal regulatory body. It is about taking active steps towards respecting and mitigating the social implications of using personal data that could otherwise lead to loss of user trust in the organisation²².
25. A newer perspective on accountability which again speaks to the public is that of computational accountability. Processing of personal data, particularly when Artificial Intelligence is involved, calls for accountability beyond legal mandates. For instance, it calls for computational accountability which refers to 'providing an account of' the underlying data practises to the audiences, thereby making the service and the data more accountable towards the public. This form of accountability focuses on making the computer system and the AI algorithms

²¹ Crabtree, A. and others. 'Building Accountability into the Internet of Things' 2016 DOI: <http://dx.doi.org/10.2139/ssrn.2881876>

²² Nilsson, T. and others 'Breaching the future: Understanding human challenges of autonomous systems for the home', Personal and Ubiquitous Computing 2019, volume 23(2), pages 287–307 DOI: <https://doi.org/10.1007/s00779-019-01210-7>

running it more transparent and legible²³ . Computational accountability, when exercised effectively by a future PSB service would contribute towards building user trust by helping eliminate both forms of bias reported in [16.].

26. Thus, in future PSB, due to technological advancements and socio-technical implications there is the requirement for broadening of the notion of accountability. In order to build public trust, accountability needs to be approached from different perspectives where it is not just exercised towards regulatory bodies at a legal level but also on technological and social levels to the public if they are to adopt increased stake and engagement with future PSB services.

Is the term ‘public service broadcasting’ still relevant and, if not, what is a suitable alternative? How this compares with alternative subscription, streaming services and Freeview services.

27. Future media services and broadcast is moving towards digitised, internet enabled, and data driven frameworks. The above account presents this shift along with the socio-technical challenge of trust introduced here. It identifies the need for future broadcast to be holistically accountable in this context in order to enable audience trust.
28. Here, while a PSB would inevitably pioneer in future technological advances, it also occupies a unique position wherein through its agenda for service to the public, it could also simultaneously be an enabler for best practice through accountability and improved trust. Research has already shown that audiences place a higher level of trust on a PSB versus alternate service providers¹³. However, given the implications the future of broadcast holds, audiences have explicitly asked for more tangible response measures that enhances their trust.
29. Thus, in the near future, the relevance of PSB shows the potential for further increase and grounding among the audiences who expect more accountable and responsible practices from a PSB as opposed to other providers. However, this potential mandates that the PSB, while reinventing itself technologically is also inclusive of and sensitive to the public concerns around the current and near-future changes in broadcast technologies and data use.
30. Through such initiatives, it would not only be providing the audiences with content that is in line with the audiences’ expectations, but it would be doing so in an accountable manner where the public’s trust in the service is not challenged. This would also in turn be a unique advantage to a PSB over alternate contemporary services who, despite facing severe audience displeasure over such challenges^{10 13 19 20} are yet to adopt effective models that respond efficiently to these audience concerns.

²³ Dourish, P. and Button, G. ‘On “Technomethodology” : Foundational Relationships Between Ethnomethodology and System Design’, Human-Computer Interaction 1998 : volume 13(4), pages 395–432
DOI: https://doi.org/10.1207/s15327051hci1304_2