

Summary Final Report: ESRC Scoping review on “Ways of being in digital age”

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March 2017

1 Introduction

This short summary report details the findings from the Economic and Social Research Council (ESRC) scoping review on ‘Ways of Being in a Digital Age’. This is an abridged summary of the full report delivered to the ESRC in March 2017¹. The aim of the project is to inform a potential future ESRC theme. The report and the review it is based on, seeks to provide an holistic view of how digital technology mediates our lives the ways in which technological and social change, co-evolve and impact on each other. The scoping review undertook:

- A systematic review and synthesis of literature using digital tools
- A Delphi assessment of expert opinion
- Workshops with academic and non-academic stakeholders

The analysis of data from these three activities has been used to identify gaps in our knowledge base and where the ESRC can add most value. A further aim of the scoping review is to build and extend networks among the academic community, other stakeholders and potential funding partners. The project involved an international interdisciplinary research team. This report covers the following materials:

- Initial research ‘domains’ (Section 1)
- Summary of recommendations (Section 2)
- Description of methods (Section 3)
- Key results from the initial research domains (Sections 4 to 10)
- Cross-cutting issues (Section 11)
- Additional work areas – automation, policy and culture (Section 12 and 13)
- Specific topics for recommended research areas (Section 14)

1.1 Domains examined

The project initially split the review into seven domains. These were defined using the scoping questions and materials set out in the ESRC call to tender. This split was an attempt to separate the review tasks along reasonable topic and disciplinary lines, accepting that any segmentation would be in part artificial:

1. Citizenship and politics
2. Communities and identities
3. Communication and relationships
4. Economy and sustainability
5. Data and representation
6. Governance and security
7. Health and wellbeing

2 Recommendations

We present here the overall recommendations from the review. The key supporting evidence for these is provided in the following sections with the complete detail in the full report.

2.1 Assumptions

In proposing these areas, we have tried to consider the following assumptions:

- This is to be an ESRC programme. The work should therefore have a strongly social science focus, even where it is inter and cross-disciplinary.
- The topics should avoid areas that are already well researched or have been supported by recent or current research council programmes. We have therefore sought to avoid areas served by programmes such as:

¹ <https://waysofbeingdigital.com/reports/>

- EPSRC Digital Economy
- AHRC Connected Communities and Digital Transformations
- AHRC/MRC medical device design and evaluation
- The title of the programme is “ways of being” and we have taken this as an indication that areas need to look more holistically at the social, economic, political, cultural and community impacts and roles of digital technologies.

2.2 Priority research areas

From our assessment of the Delphi, literature and workshop outcomes we would recommend that the initial seven ‘domains’ noted above need to be reduced and reworked. We would propose two main substantive broad research areas for future ESRC work, combining:

- Communication and Relationships with Communities and Identities
- Citizenship and Politics with Governance and Security

We would then suggest four further focused areas that could stand alone or cross cut the two main areas:

- Economy with a focus on the impact of major digital platforms
- Data and digital literacies
- Health and wellbeing focused on workplace, every day and governance issues
- Digital divides and digital inequalities, including the two-way interaction between digital inequities and other areas of social inequity

We have separately made recommendations about work to be undertaken on the social impacts of automation (see Section 12). We would expect any project to address one or more of the cross-cutting challenges identified in Section 13. Section 14 at the close of this report provides more detail on each of these areas and suggestions for specific foci within them.

2.3 Multi platform/Holistic studies

We would strongly emphasise the need for projects that address multi-platform or holistic studies of digital technology use. The review of the literature to date indicates that much good work has already been done exploring specific technologies and platforms – Twitter, Facebook, Google, Uber, Mobiles, Smart phones, Blogs, specific government systems, etc. The Delphi responses have strongly argued for the need to look at digital technology use in the round. We would argue that the ESRC programme needs:

- To develop a more holistic picture of the integration of digital into citizens lives (or not in the case of digital inequalities).

In other words to ask broad social science questions and then explore which technologies are relevant in that context to citizens actual practices and in what ways. This does not preclude single technology studies where this has relevance, but such decisions should have a strong social science basis – *not simply one based on the utility of available data*. The one area where this may be more acceptable would be the case of the economic domain as the study of the impact of a platform on a sector might be limited to one technology (e.g. Uber). We would therefore emphasise that digital issues should also be addressed in other priority themes as relevant. We are very aware and our results clearly indicate, that digital issues are also of relevance to:

- Mental health – e.g. the benefits and hazards of lives spent “on screen”, use of technology to help maintain mental health
- Housing – e.g. the role of government digital by default approaches to social service delivery, impacts of digital working on mobility and urban space
- Productivity – e.g. automation, AI and the ‘gig economy’
- Understanding the macro-economy – e.g. major platforms for economic activity (Amazon) or the role of the CDI sector

We would also strongly argue that funded projects should address one or more of these cross cutting issues:

- Methods innovation
 - Including risk taking on digital tools – with a strong methods evaluation component
- Theory testing and evaluation, with theory development were needed
 - We are agnostic on the need to inherently develop new theory to understand the everyday uses and impacts of digital technologies. There may be a need for greater clarity on ‘most relevant’ theory and on incremental theory development as opposed to a need for ‘digital specific’ theory development.
- Ethics
 - This needs to cover both ethics with regard to methods, but also wider ethical concerns around social, commercial and government use of data, systems automation and human augmentation.

2.4 Big data – already well supported

The one area where we would argue that the ESRC **should not** argue undertake substantive additional investment is in “big data”. Not only could we not find consensus on what is “big” in “big data” – nearly all the research councils have substantial investments in big data initiatives. There are substantive ESRC investments in big data and methods (e.g. Consumer Data Research Centre, various PGR training programmes) as well as substantive STFC investment in the necessary computing facilities. We would argue that the **programme should be positively open** to projects that have a “big data” component but the focus should be on the use of such methods for social science - ***with a robust element of reflection and evaluation on the usefulness, limitations, tools used to analyse and representativeness of the big data sets examined.***

2.5 Funding models – suggestions from consultation workshop

The consultation workshop informally reflected on the potential funding models for the programme. Though no strong consensus was obtained the following elements were suggested:

- Strong support for Early Career Researchers – opportunity for those “born digital” to lead digital research projects
- Need for several large projects in the substantive areas identified by the review
- Need for smaller projects (maybe for ECRs) to explore specific facets of the topics
- Need for a co-ordinating network to link the projects and build on the networks created by the review

Two options that were **not** strongly supported were:

- Single national centre/project
- Sandpits

3 Method

3.1 Delphi process

The project undertook seven sets of Delphi process interviews. Round one of the Delphi process was undertaken with the project steering group. The results from this were used to develop a snowball sample of additional domain experts for round two. Round three consisted of a confirmatory survey of international scholars and a consultation workshop with the UK steering group and a set of invited UK academics. The Delphi process identified four sets of data for each domain:

1. Scoping questions for future programmes of research
2. Key topics to be addressed within these programmes of work
3. Key challenges when undertaking these programmes of research
4. Key authors and key literature for each domain

One of the important features of the Delphi process was the commonality of responses to the “challenges” questions across all seven domains. We have therefore reported these cross-cutting challenges as a separate section.

3.2 Systematic literature reviews

3.2.1 Approach

Given the volume of published work within these domains, undertaking a meta-analysis to synthesise the quantitative results of available empirical studies was not possible within the 10-month time frame. Rather, the work was a partly automated systematic narrative review with the goal of synthesising primary studies and descriptively exploring the heterogeneity of work. The project we undertook linguistic, content and reflective methods to assess the literature. First, the literature was analysed using corpus linguistic and digital humanities tools to identify predominant topics and concepts within each domain. Three approaches were taken:

- Data were subjected to a lengthy and detailed concept modelling procedures; developed by the Digital Humanities Institute with School of English at the University of Sheffield. Distinct from topic modelling, concept modelling focuses on neighbouring sections of discourse with a goal of extracting conceptual structure and tracing patterns and change in language and thought.
- Data were analysed to identify key topics using comparable but different methods by the Digital Humanities and Social Science team at the University of Liverpool.
- Data were examined for key topics using the commercial WordStat tool². This tool produced similar results to those from the University of Liverpool analysis.

The intent in using these tools was to gain an overall appreciation of key concepts and topics in this very large literature set within a short time frame. Thus, allowing the team to compare the literature topics with the proposed future topics identified in the Delphi process. Interactive visualisations of the literature data can be examined at:

- <https://waysofbeingdigital.com/literature-analysis-longitudinal-interactive-results/>
- <https://waysofbeingdigital.com/literature-analysis-interactive-results/>

The second approach to the literature consisted of a content analysis of the round one materials. This was undertaken to identify the main theories, methods and analytic approaches deployed in the reported research. As a third step, the lead researchers undertook a reflective review of the literature and workshop activities relevant to the domains that they had focused on.

3.3 Workshops

The project has run a range of facilitated workshops to engage academic and stakeholder partners:

- Monthly Salon events in collaboration with Digital Leaders (digileaders.com). Salon events were and are being led by academics based on the domains and the team has attended industry led Salon events.
- A joint ESRC and DSTL funded facilitated workshop to explore research topics around the social impacts of automation and augmentation in the workplace.
- A joint MECSSA and ESRC review supported workshop on “digital policy”.
- An ESRC project and DCMS Digital Project workshop to explore the impacts of digital on the arts and cultural sector.
- A final consultation workshop to review the outcomes of the Delphi process.
- A further joint ESRC and NSF workshop on “Work at the Human Technology Interface” will take place in Autumn.
- An academic symposium discussing the results from the project and seeking further invited review papers will be run by the project just prior to the ESRC and NSF workshop.

² <https://provalisresearch.com>

The following sections describe the key results from each of the initial 7 domains.

4 Citizenship and politics domain

This part of the report provides an overview of the analyses of the Delphi process, literature and any relevant workshops for the Citizenship and Politics domain. For a complete presentation of the analyses, results and discussion please see the full report. As a reminder, the initial ESRC scoping questions for this area of work were:

- How digital technology impacts on our autonomy, agency and privacy – illustrated by the paradox of emancipation and control
- Whether and how our understanding of citizenship is evolving in the digital age – for example whether technology helps or hinders us in participating at individual and community levels

4.1 Key research topics and challenges

The key research topics and challenges identified by the Delphi process are presented in Table 1 and ranked by importance as reported by the confirmatory survey.

The concepts and topic mapping analyses closely overlap the Delphi results. The top ranked topics and concepts are presented in Table 2. The close mapping of the Delphi and literature analyses indicates that this is a well-developed domain of research with clear foci. The consensus around the consolidation of research questions in the consultation workshop reinforced this. There may be a number of good clear reasons for this. Political communication and behaviour are substantive aspects of both communication studies and political science. These are both areas that have been dramatically impacted in very public ways by digital media. In contrast to the very real but less visible impacts of digital technologies on governance or public policy. There are also indications that the visibility of digital media from the web to social media, have made processes of political communication very visible and open to analysis.

Topics	Very important
Governance in a digital age	51.9%
Political mobilisation via digital media	48.1%
Digital and state control	48.1%
Citizenship in a digital age	48.1%
Data - big, small and citizen	44.4%
Political participation and engagement	44.4%
Privacy in a digital age	40.7%
Political media, old and new	29.6%
Digital divides	22.2%
Political identity in a digital age	22.2%
Online debate and interaction	18.5%
Challenges	Very important
Developing new theory	55.6%
Developing new methods	44.4%
Dealing with 'big data'	44.4%
Ethics	37.0%
Epistemological and ontological issues	37.0%

Table 1: Topics and challenges: Citizenship

4.2 Theory, method and approach

The majority (45%) of the papers undertook primary data collection with 23% being discursive reviews of or reflective on existing research. The main disciplines from which theory was used or for which theory was developed were:

- Politics and public administration (48.6%)
- Sociology (28.0%)
- Communication and media (14.3%)
- Psychology (5.1%)
- Other (3.4%)
- Geography (0.6%)

There was considerable variety in the specific theories applied from these disciplines and no clear preference. Ideas of the public sphere (6%) and political participation (5%) were the most common in the political science literature. The main research methods were literature reviews (33%), surveys (29%) content analysis (8%) and interviews (7%). The majority of the empirical work focused on specific groups (e.g. Facebook users) with a

Topics	Concepts
Twitter	citizen
Social Network Analysis	action
Homophili	network
Cyber hate crime	campaign
Political online fora	citizenship
Mobile	channel
Gender and ethnicity	access
Elections	engagement
Partisan politics	government
Civic engagement	participation
Web and social media	information
Protest and activism	link
Measurement	delivery
Public sphere	
Governance	

Table 2: Topics and concepts: Citizenship

limited number of general population studies. The majority (53%) of the analyses were qualitative. Only one study overtly stated that they were using a “big data” approach.

4.3 Conclusion

Our analysis has identified four key areas for future research, these being:

- "Digital technologies", radicalisation, mobilisation and political action
- "Digital technologies" and the disruption of current political institutions
- "Digital technologies" and new forms of citizenship
- "Digital technologies", political communication, debate and media

We would note that the Governance and Security domain significantly addresses the issue of "Digital technologies and governance" which is also the top ranked topic in the confirmatory survey. The other key topics identified fit within the four scoping areas above, except for:

- Digital and state control

This fits with comments at the consultation workshop that the issue of digital political communication in non-democratic regimes was not visible in the Delphi results.

5 Communication and relationships

This part of the report provides an overview of the analyses of the literature, Delphi process and any relevant workshops for the Communication and Relationships domain. For a complete presentation of the analyses, results and discussion please see the full report. As a reminder, the initial ESRC scoping question for this area of work was:

- How our relationships are being shaped and sustained in and between various domains, including family and work

5.1 Key research topics and challenges

The key research topics and challenges identified by the Delphi process are presented in Table 3 and ranked by importance as reported by the confirmatory survey.

The key topics and concepts from the literature analysis are presented in Table 4. As might be expected the focus of the literature is predominantly on aspects of relationships, especially among younger people (adolescents-sex-sexuality; children and families). As a result, there is also a focus on technologies and practices associated with younger people (digital entertainment media use; mobile phones; Facebook). Broader comparative work across digital (and non-digital media) was also identified. Social network analysis was a notable feature of more recent work.

Topics	Very important
Privacy and ethics	57.1%
Friendship and relationship formation	57.1%
Social change	42.9%
Social and community support	35.7%
Education	35.7%
Exclusion	28.6%
Age factors - cohort and age	28.6%
(Social) Media 'Bubbles'	21.4%
Work and organisations	14.3%
Political communication	14.3%
Data and representation	14.3%
Challenges	Very important
Ethics and privacy	64.3%
Theory	53.8%
Multidisciplinary working	46.2%
Multi-platform studies	42.9%
Big data	35.7%
Methods	28.6%
Surveys	14.3%
Co-design	0.0%

Table 3: Topics and challenges: Communication

5.2 Theory, method and approach

Most of the analysed papers (64%) were inductive, either describing findings or building theory. Only 14% undertook theory. Reflecting this 64% of the papers undertook primary data collection with 23% being discursive reviews of or reflective on existing research.

The main disciplines from which theory was used or for which theory was developed were:

- Psychology (39.2%)
- Sociology (32.3%)
- Communications and media (15.6%)

There was considerable variety in the specific theories applied from these disciplines and no clear preference. No one theory appeared more than three times. The main research methods were surveys (36%), interviews (24%) and literature reviews (20%). The majority of the empirical work focused on specific groups (e.g. Facebook users) with a limited number of general population studies. Less than 2% of studies overtly stated that they were using a “big data” approach.

5.3 Conclusions

The work to date has employed fairly-traditional methods. It is orientated towards psychological and sociological approaches with some linguistic and information studies aspects. The work does not appear to have extensively employed digital tools and big data methods. Most notably the work appears to have been “platform driven” and “platform specific” with a bias towards younger people. The future research identified in the Delphi process is different. The proposed focus shifts towards more general studies of communication and relationship in everyday life and the need to understand the integration of multiple media into communications and relationships behaviour. With the key questions, topics and challenges being:

- The norms and values of digital communication and relationships
- The ‘affordances’ different platforms provide for digital communication and relationships
- The quality of relationships and communication supported by digital media and technologies
- The management of relationships via digital media and technologies

Within these areas the top five topics to consider are:

- Social and community aspects
- Privacy and ethics
- Exclusion
- Social change
- Work and organisations

With key domain-specific challenges being:

- Multi-platform studies
- Ethics and privacy

6 Communities and identities

This part of the report provides an overview of the analyses of the Delphi process, literature and any relevant workshops for the Communities and Identities domain. For a complete presentation of the analyses, results and discussion please see the full report. As a reminder, the initial ESRC scoping questions for this area of work were:

- How we define and authenticate ourselves in a digital age
- What new forms of communities and work emerge as a result of digital technologies – for example new forms of coordination including large-scale and remote collaboration

6.1 Key research topics and challenges

The key research topics and challenges identified by the Delphi process are presented in Table 5 and ranked by importance from the confirmatory survey. Key concepts in the literature are identified in Table 6. Much of the literature focuses again on younger people, especially children and topics such

Topics	Concepts
Facebook	friend
Measurement	media
Twitter	pair
Higher education	group
CMC vs FTF	adolescent
Storytelling	phone
Nation and EU	communication
Gender and language	relationship
SNA	time
Advertising	medium
Class	level
Privacy	teen
Health care	life
Blogging	parent
Media consumption	
Adolescents and sexuality	
Social club	
Children and families	
Social network platforms	
Old media	
Mobile phone	

Table 4: Topics and concepts: Communication

as friendship networks, gender and technology use, aspects of online community formation and maintenance, identity and diaspora communities. More recently there is a greater focus on specific platforms, especially Facebook. The consultation workshop identified specific challenges for research in this Domain:

- History and culture are important to the development of online community
- How identity gets lost outside citizens control – ethics of platforms use of big data
- Understanding privacy in online communities

What appear as new concerns in the Delphi materials are a range of issues associated with inequality in both access and participation in online

communities. The proposed research areas typically probe whether digital processes can include or exclude certain individuals/groups/communities. They also examine if differences within and amongst these, whether physical, social, political or cultural, have a negative bearing on the dynamics of inclusion and exclusion. The review highlights that questions about identification, intersectionality and tackling of systems of discrimination or disadvantage are of primary importance in understanding contemporary processes of ‘digital opt out’ and ‘digital opt in’. This contrasts with much early work (1985-2000) on computer-mediated communication that emphasised the potential of a progressively developed digital age. There therefore remains a questions about what current platforms might offer in terms of addressing persistent inequality or whether they may add to its reinforcement.

We would argue that the Delphi process identified three key areas for future research: community membership and processes; defining identity online; and understanding remote relationships.

Within these areas, the top five topics to consider are:

- Digital Community Exclusion/Inclusion
- Digital community participation, action and social change
- Power in online communities
- Understanding global diaspora as digital communities
- Understanding function of aspects of identity online (Gender/Race/Ethnicity/Sexuality)

Topics	Very important
Digital Community Exclusion/Inclusion	87.5%
Digital community participation, action and social change	87.5%
Power in online communities	75%
Understanding global diaspora as digital communities	37.5%
Understanding function of aspects of identity online (Gender/Race/Ethnicity/Sexuality)	37.5%
Challenges	Very important
Methods to address complexity of digital media use	75%
Ethics of dealing with digital data	62.5%
Holistic understanding of online and off line behaviour	50.0%
Big data - developing and utilising large databases and corpora	12.5%
Comparative historical (diachronic) analysis of digital media use	0%

Table 5: Topics and challenges: Communities

Topic	Concepts
Online community	group
Identity (Psychology)	computer
Friendship network	community
Education	gender
Computing	identity
Governance	child
Children	knowledge
Facebook	network
Mobile phone	machine
Gender	communication
Migration and diaspora	leadership
Identity (Assessment)	college
	game

Table 6: Literature topics and concepts: Communities

6.2 Theory, method and approach

Most of the analysed papers (62%) were inductive, either describing findings or building theory. 38% undertook theory testing. The papers were split with 57% papers undertaking primary or secondary data work with against to 43% discursive reviews of, or reflective on, existing research. The main disciplines from which theory was used or for which theory was developed were: Sociology (38.1%); Psychology (30.9%); and Communications and media (19.6%).

There was considerable variety in the specific theories applied from these disciplines and there was no substantive clear preference. The main specific theories were:

- Sociology (38.1%)
 - Social network analysis (4%)
 - Technology acceptance models (3%)

- Psychology (30.9%)
 - Social identity theory (7%)
 - Self-categorisation theory (3%)
- Communications and media (19.6%)
 - All the theories identified “Computer-mediated communication” approaches

The main research methods were surveys (14%), interviews (14%), literature reviews (14%) and experiments (12%) The majority of the empirical work focused on specific groups (e.g. Students or Twitter users) with a limited number of general population studies. Less than 3% of studies overtly stated that they were using a “big data” approach.

6.3 Conclusions

Existing work has employed fairly-traditional methods. It is orientated towards psychological and sociological approaches with some communication studies research. The work does not appear to have extensively employed digital tools and big data methods. Most notably the work appears to have been *less* “platform driven” and “platform specific” but has a bias towards younger people and children. The future research areas identified in the Delphi process are substantially similar:

- Community membership and processes
- Defining identity online
- Understanding remote relationships

The notable shift is in the topics and challenges have been identified. As with other domains there is a shift away from technology and platform foci to broader social science questions though there remain some overlapping areas. As noted in the confirmatory workshop discussion there is a greater concern with the negative aspects of online identity and community. As with the Communication and Relationships domain there is a concern to look at multi-platform or “holistic” aspects of digital media use. The suggested future topic areas being:

- Digital Community Exclusion/Inclusion
- Digital community participation, action and social change
- Power in online communities
- Understanding global diaspora as digital communities
- Understanding function of aspects of identity online (Gender/Race/Ethnicity/Sexuality)

With key domain-specific challenges being:

- Holistic understanding of online and off line behaviour

7 Data and representation

This part of the report provides an overview of the analyses of the Delphi process, literature and any relevant workshops for the Data and Representation domain. For a complete presentation of the analyses, results and discussion please see the full report. As a reminder, the initial ESRC scoping question for this area of work was:

- How we live with and trust the algorithms and data analysis used to shape key features of our lives Initial comments

7.1 Key research topics and challenges

The key research topics and challenges identified by the Delphi process are presented in Table 7 and ranked by importance from the confirmatory survey. The challenges in undertaking research in this area identified by the Delphi panel were placed into 8 categories. The majority of these were methods issues and so this category has been further broken down into specific methods challenges. The ranking of these by the confirmation survey are presented in Table 7. There is a mismatch in the rankings with Ethics and Inequality coming top of the confirmation survey list. These are though key cross cutting issues. The challenges identified point towards specific concerns in working across the social sciences, information studies and computer science disciplines. Especially as the tools and

methods being used often originate in computer science and information studies and must be integrated or translated into social science. This was the only area where there was explicit comment on the need to provide higher education support to develop and train both students and researchers in new methods and deeper data literacy.

Exploring that the underlying keywords (Table 8) in each analysis we would argue that the topics in the literature are split between ‘data methods’, ‘data sources’ and the social issues examined:

- Data methods
 - Science and methods
 - Big data
 - Google
- Data sources
 - Social media
 - Mobile
- Areas of focus
 - Global and urban culture
 - Consumer services
 - Health
 - Law and hate speech
 - Gender
 - Twitter and politics
 - Governance
 - Cybercrime
- Other topics
 - Ethics and impact

Topics	Very important
Social impacts of data	86.70%
Privacy and surveillance	60.00%
Citizens/Everyday life experiences and uses of data	53.30%
Understanding Open data/Algorithm transparency/Accountability	53.30%
Data Exclusion/Inclusion/Divides	40.00%
Digital identity and data	40.00%
Data visualization/Representation/Social construction of data	40.00%
Research methods	26.70%
Economic impacts	20.00%
Challenges	Very important
Ethics	66.7%
Data Inequality/Exclusion/Inclusion/Divides	53.3%
Interdisciplinary working (Computing and Social Science)	53.3%
Methods - Combining old and new social research methods	46.7%
Social theory and social questions	40.0%
Methods - Concepts	40.0%
Higher Education and training	40.0%
Access to data	20.0%
Methods - Analytics and measurement	20.0%
Methods - Social measures	20.0%
Data literacy	20.0%

Table 7: Delphi topics and challenges: Data

This is a very similar to the breakdown of research questions and challenges from the Delphi review.

7.2 Theory, method and approach

Most the analysed papers (70%) were inductive, either describing findings or building theory. The papers were predominantly focused on reviews of prior work and secondary data (overall 73%) with only 27% undertaking primary data work.

Overall the literature is therefore far more reflective and based on commentary on the issues than that in the other six domains. The main disciplines from which theory was used or for which theory was developed were: Sociology (62.5%); Psychology (17.5%); Communications and media (20%). There was considerable variety in the specific theories applied from these disciplines though there was no substantive clear preference the main specific theories were:

- Sociology (62.5%)
 - Sociomateriality (10%)
 - Structuration (Giddens) (5%)
 - Critical theory (5%)
- Communications and media (20%)
 - Uses and gratifications (55)

Topic	Concepts
Social media	datum
Science and methods	news
Global and urban culture	country
Consumer services	business
Big data	government
Ethics and impact	medium
Google	consumer
Health	internet
Law and hate speech	arrow
Mobile	community
Gender	Citizen
Twitter and politics	Privacy
Governance	Impact
Cybercrime	Group
	Science
	development

Table 8: Literature topics and concepts: Data

Where primary research was undertaken the main research methods were surveys (14%), interviews (14%), literature reviews (14%) and experiments (12%). The majority of the empirical work focused on case studies with a limited number of general population studies, reflecting the review and

commentary nature of the materials. Less than 2% of studies overtly stated that they were using a “big data” approach.

7.3 Conclusions

Contemporary research in the Data and Representation domain studied here appears to have focused on:

- Data methods
 - Science and methods
 - Big data
 - Google
- Data sources
 - Social media
 - Mobile
- Topic areas
 - Global and urban culture
 - Consumer services
 - Health
 - Law and hate speech
 - Gender
 - Twitter and politics
 - Governance
 - Cybercrime

Which closely matches the areas identified by the Delphi process:

- Social research questions:
 - Citizen and community use of data
 - Citizen interaction with data and algorithms
 - Data literacy
 - Power and accountability for data and algorithms
 - Social construction of data and algorithms
 - Social implications of data and automation
- Social research topics and challenges:
 - Social impacts of data
 - Privacy and surveillance
 - Citizens/Everyday life experiences and uses of data
 - Understanding Open data/Algorithm transparency/Accountability
 - Data Exclusion/Inclusion/Divides
 - Digital identity and data
 - Data visualization/Representation/Social construction of data
 - Economic impacts
- Methods challenges:
 - Interdisciplinarity
 - Analytics and measurement
 - Combining old and new social research methods
 - Concepts
 - Social measures
 - Understanding and developing new research methods

What is missing from this domain are substantive empirical studies of either the research questions, or of the implementation of digital methods. We would argue that this domain therefore needs to develop a set of robust studies addressing the key research questions identified by the Delphi process.

8 Economy and sustainability

This part of the report provides an overview of the analyses of the Delphi process, literature and any relevant workshops for the Economy and Sustainability domain. For a complete presentation of the

analyses, results and discussion please see the full report. It should be noted that this domain did not garner as extensive a Delphi response at the other 6. As a reminder, the initial ESRC scoping questions for this area of work were:

- How do we construct the digital to be open to all, sustainable and secure?
- What impacts might the automation of the future workforce bring?

8.1 Key research topics and challenges

The key research topics and challenges identified by the Delphi process are presented in Table 9 and ranked by importance from the confirmatory survey. The consultation workshop offered up a number of additional topics, some of which overlap with those from the Delphi process and the literature (see Table 10); the additional topics are:

Topics	Very important
Role and impact of major corporate platforms	85.7%
Forms of digital labour	71.4%
Environment and sustainability	71.4%
Disruptive technology	57.1%
Challenges	Very important
Sustainability and digital technologies	57.1%
Understanding the impact and development of algorithms	42.9%
Access to data on the digital economy	42.9%
Ethics	28.6%
New methods and tools to study digital economy	14.3%
Representativeness of big data on digital economy and society	14.3%

Table 9: Delphi topics and challenges: Economy

- Impacts of digital labour on people’s life experience
- Impacts on firms of digital platforms
- Technology adoption in organisations
- Role of digital monopolies and large corporations
- Digital impacts on the state: taxation, feedback to society
- Inequality and justice, social divides
- Financing, investment, crowd funding, lending
- Implications of the digital for energy/resource use (i.e. increased paper consumption)
- Enabling of sustainability through digital means through new platforms and apps
- Regional urban/rural development

The consultation workshop offered up a set of further challenges some of which overlap with those above.

The domain specific ones being:

- Measuring overall impact of a digital technology on a business very difficult.
- Similarly measuring scale/scope of new ways of working and consuming.
- Fluctuating/differentiation of prices makes certain qualifications challenging (e.g CPI)

Given the more limited data making both broad and in-depth conclusion is harder than it is for the other domains. We would argue that the data here point to two clear areas for future work around “ways of being”:

- Role and impact of major corporate digital platforms
 - Impacts on firms of digital platforms
 - Role of digital monopolies and large corporations
- Forms of digital labour
 - Impacts of digital labour on people’s life experience
 - Gig economy (linked to platforms)

Topic	Concepts
Product and technology development	information
Social capital	knowledge
Facebook and internet use	computer
Democracy and public sphere	internet
Economic growth	communication
Intellectual property	work
Digital education and skills	datum
Supply chains	medium
Smart energy	chain
Urban migration and mobile	organization
Marxist analysis	
Twitter	
Taxation	

Table 10: Literature topics and concepts: Economy

8.2 Theory, method and approach

Most the analysed papers (59%) were inductive, either describing findings or building theory. The remainder were deductive undertaking theory testing or assessment. Only 30% of the papers

undertook primary data collection with 55% being discursive reviews of, or reflective on, existing research. The majority of papers (76%) did not utilise theory in the analysis of data. The main discipline from which theory was sociology (72% of all theory used). There was considerable variety in the specific theories applied from any disciplines and no clear preference. No one theory appeared more than three times. The main research method was literature reviews (36%) . The majority of the empirical work focused on specific groups with a limited number of general population studies. No papers were based on the use of big data.

8.3 Conclusions

As noted above this domain may have the least reliable Delphi data set. Though the identified literature data set is of a similar scale to all the other domains (500+ articles). The literature appears to be predominantly reflective and review based as opposed to being based on empirical data collection. It also appears to be strongly sociological as reflected in the strong political economy aspects of the topic analysis. Selecting areas for future work is therefore more problematic here, especially as the issue of the automation of work has been addressed separately.

We would therefore like to introduce some themes from the stakeholder workshops (Digital Leader Salons) run during the project and before. In these SME and corporate and government stakeholders have predominantly raised issues with regard to:

- Product and technology development
- Use of social media and internet platforms (Facebook, Twitter, Google)
- Economic growth
- Intellectual property
- Digital education and skills

This would therefore look to reinforce the relevance of topics identified in the literature and the Delphi review. There may of course be some circularity here as stakeholders in the Digital sector are noted as keeping track of academic and more rigorous popular accounts of digital innovation and challenges. Those attending the Salons are likely self-selecting as they have an interest in keeping up to date on research and policy developments.

Overall we would argue that further work may need to be done to explore the specifically Economic disciplinary issues that digital technologies engender. Within the context of this review we would argue, caveats around the representativeness of the data notwithstanding, that the workshops, Delphi results and stakeholder input have defined the following key areas for future research:

- Role and impact of major corporate digital platforms
 - Impacts on firms of digital platforms
 - Role of digital monopolies and large corporations
- Forms of digital labour
 - Impacts of digital labour on people’s life experience
 - Gig economy (linked to platforms)

Key challenges that cross cut these are:

- New methods and tools to study digital economy
- Access to data on the digital economy

This leaves three areas for separate consideration:

- Automation and augmentation of work. This has been addressed by a separate report provided alongside this report. This work would clearly cross over with the ESRC Productivity theme and the Macro-economy theme.
- Specific economic issues such as: intellectual property; digital education and skills; digital supply chains; financing, investment, crowd funding, lending; regional urban/rural development. Further work may be needed to assess these issues. Again, this work would clearly cross over with the ESRC Productivity theme.

- Broader questions of environmental sustainability and digital technology use and the role of digital in supporting a sustainable economy. This work would most likely better fit under the EPSRC Digital Economy programme.

9 Governance and security

This part of the report provides an overview of the analyses of the literature, Delphi process and any relevant workshops for the Governance and Security domain. For a complete presentation of the analyses, results and discussion please see the full report. As a reminder, the initial ESRC scoping questions for this area of work were:

- What are the challenges of ethics, trust and consent in the digital age
- How we define responsibility and accountability in the digital age How our relationships are being shaped and sustained in and between various domains, including family and work

9.1 Key research topics and challenges

The key research topics and challenges identified by the Delphi process are presented in Table 11 and ranked by importance from the confirmatory survey. The consultation workshop highlighted a set of challenges not covered in the Delphi returns:

- Governance based on values, culture, beliefs and evidence
- Future proofing governance for the digital age – too big a task?
- Big data
- Reconstituting labour contacts
- People centric NOT technology driven.
- How do people benefit - governance that gets best trade-off between human need and economic need?

	Very important
Privacy	83.3%
Cyber security	66.7%
Governance of digital economy	33.3%
Government digitization	16.7%
Challenges	Very important
Big data and analytics - both methods and use by government	66.7%
Detecting cyber attacks	50.0%
Ethics for digital research	16.7%
Transnational governance of digital economy	16.7%
Understanding disruptive change	16.7%
Understanding digital divides	0.0%
Understanding cross-cultural engagement via digital technologies	0.0%

Table 11: Delphi topics and challenges: Governance

There is a much stronger correlation between the concept and topic mapping for this domain. We would argue that there appear to be five major topics in this literature:

- State use of digital media – especially with regard to surveillance of social movements and protest
- Internet regulation and governance – both national and international
- Children’s use of digital media – both protection and regulation
- Regulation and governance of automated systems
- Deception in digital media

In reviewing the materials, the team noted that of the theories that were explored, either empirically or discursively, it was those pertaining to the informational or network society that proved most popular followed by those that examined:

- Privacy
- Public/private sphere
- Political economy.

Surprisingly little attention appears to have been paid to exploring issues of trust between government and the governed, public participation in the government decision-making process or, indeed uses of technology to improve the governance of our communities.

We also noted that there is little account of how government, at either national or local level, has managed and responded to the ensuing social media and big data revolution. It is a surprising

omission given the recent emphasis on the centrality of government, particularly local government, to implementing the smart city agenda. This may be a feature of the selected literature as much of the recent work on smart cities and digital government has been undertaken within the Information and Computer Science disciplines. That is papers reporting on building systems, with some social science input. Such work might fall more closely into the EPSRC Digital Economy programme or similar approaches.

The team also noted that there was limited discussion of how technology might be used to ‘foster a civic well-being’. This would fit with arguments made in the Digital Leaders Salons with stakeholders where a ‘public value’ orientation for the administration of public services in place of the current New Public Management paradigm was put forward. It was argued that a public value governance approach to service delivery is more congruent with the information and communication affordances of digital technology, particularly those associated with the advent of the ‘social web’. As such it may be more likely to usher in a smart governance process that can lever in the local democratic and economic opportunities long associated with digital media but which local government has hitherto failed to grasp. However, these emergent ideas do rest upon a number of assumptions, not least that there is a favourable local governance environment capable of sustaining this approach, that have received little empirical investigation.

Social movements and protest communication	child
Internet governance	datum
Measurement	privacy
Automation	law
EU commission and privacy	internet
Urban migration mobile	information
Social media	parent
Law enforcement	governance
Marxist analysis	protection
Education	innovation
Children’s internet use	health
Voting	government
Employment	inspectorate
Deception	code
Surveillance	

Table 12: Literature topics and concepts: Governance

9.2 Conclusions

As with the Economy and Sustainability domain the lower Delphi response rates limit some of the confidence we have in the results. Also it is clear that the Delphi responses that the identified literature present a broader brief than that in the initial ESRC scoping questions. There are two areas identified by the research that are important but which already have substantive ongoing support:

- Cybersecurity
- Children’s use of digital media

Both of these are clearly mature research areas with substantive empirical research behind them. We would argue that any support for these should target specific issues, potentially where they intersect with cross-cutting themes (see Part 12). For example, inequalities and divides in children’s digital lives, or digital literacies and cyber security. We would argue that the following potentially overlapping areas need further work:

- Impact of social media on governance
- Success factors in digital governance at local, national and international level
- Privacy, citizenship, the state and surveillance in the digital age.
- Regulation and governance of automated systems

Especially as there appears from the literature review to be less empirical work in these areas. Having said that, these topics and the majority of questions and topics identified in the Delphi and workshop discussions crossover with the other domains. We would note that that they in particular cut across the Citizenship and Politics and Data and Representation domains. We would therefore argue that these topics should be merged with other domains as appropriate, retaining the following two specific issues:

- Success factors in digital governance at local, national and international level
- Personal privacy in the digital age

10 Health and wellbeing

This part of the report provides an overview of the analyses of the Delphi process, literature and any relevant workshops for the Health and Wellbeing domain. As a reminder, the initial ESRC scoping question for this area of work was:

- Whether technology makes us healthier, better educated and more productive?

10.1 Key research topics and challenges

The key research topics and challenges identified by the Delphi process are presented in Table 13 and ranked by importance from the confirmatory survey. There is a good overlap between the these and the literature analyses (Table 14). We would argue that the analyses point to literature that is focused on the use of digital technologies and social media in three main areas:

- Monitoring and supporting individuals in changing health behaviours (such as weight loss or stopping smoking)
- Using digital technologies to monitor and support patients with chronic illness (e.g. hypotension)
- Using digital technologies to support health communication or as part of health support communities

Separate from this the literature is focused on the measurement and evaluation of the efficacy of such interventions. This evaluation focus fits with the content analysis on methods and theory below. A section of the literature included work on educational technology with some crossover to technologies to support health education.

Topics	Very important
Benefits and harm from digital technology use	76.9%
Health communication	46.2%
Privacy	46.2%
Device, environment and service design	38.5%
Preventative and long term condition support	38.5%
Digital divide	38.5%
Digital literacy	30.8%
Organizational change	7.7%
Challenges	Very important
Methods to analyse digital health	61.5%
Rapid change in digital and health technology	38.5%
Big data for health	38.5%
Interdisciplinary	38.5%
Collecting and accessing data on digital health	30.8%
Processes of co-design	30.8%

Table 13: Delphi topics and challenges: Health

10.2 Theory, method and approach

Most the analysed papers (52%) were deductive, applying existing theory. The majority of papers undertook primary data collection (48%) 24% of the papers undertook primary data collection with the remainder predominantly using secondary data. The main disciplines from which theory was used or for which theory was developed were:

- Sociology (19%)
- Psychology (50%)
- Health studies (8%)
- Communication and media (8%)
- Information studies (5%)

There was considerable variety in the specific theories applied from these disciplines. Theories of Behaviour Change, Social Cognition and Planned Behaviour (8% each of total) where the main theories in Psychology and social network analysis (2% of total) in Sociology. For those items that undertook empirical research the main research methods were predominantly quantitative: experiments (19%), surveys (11%), social network analysis (3%) and meta-analysis (4%). The majority of the empirical work focused on specific groups with a larger proportion of general population studies than in the other domains. Less than 2% of the work described itself as using a “big data” approach.

Topic	Concept
Healthcare	disease
Activity	body
Measures	care
Educational technology	health
Social media	behaviour
Social support network analysis	loss
Mobile devices	activity
Controlled trial	network
Ethnicity and gender	communication
Product quality	child
Family	intervention
Disease outbreak surveillance	
Chronic diseases	
Weight loss	
Efficacy	
Hypertension	
Stopping smoking	
Palliative care	

Table 14: Literature topics and concepts: Health

10.3 Conclusions

It is clear that the majority of the literature is focused on the evaluation of digital health technologies. There appears to be a limited literature on the broader question of the impacts of digital lifestyles on health and wellbeing. There appears to be limited work on the negative impacts of the digital technologies. Given the ESRC focus here we suggest that work on the following areas may fall out of scope:

- Device, environment and service design.
- Preventative and long term condition support.
- Design for positive health impacts of digital technology use.
- Negative health impacts of digital technology use.
- Health user needs.
- Technical challenges of ‘joining up’ health providers and services through digital technologies.

These topics are likely to overlap with MRC, AHRC and EPSRC concerns over the design and evaluation of health care devices. Such work would necessarily involve social science research but may likely be medical or medical engineering led.

The broader social questions identified in the Delphi work and consultation workshops that appear to go beyond the literature appear to be:

- Understanding and addressing the governance of digital health technologies.
- Need for detailed systematic evidence of the impact and lived experience of everyday health technologies (e.g. fit bits).
- Questions of health and wellbeing in the digital workplace.
- Digital technologies and health communication and health behaviour change.
- Broader socio-economic challenges and issues in ‘joining up’ health providers and services through digital technologies.

11 Automation

This short section provides the key recommendations of the ESRC and DSTL Automation of Future Roles Workshop. The workshop was commissioned by the ESRC and DSTL, developed by the ESRC Ways of Being in a Digital Age scoping project and facilitated by KnowInnovation. The original workshop proposal and final report can be separately reviewed³. The invited attendees were a deliberately interdisciplinary mix of academics from a variety of disciplines covering social sciences, psychology, business studies, humanities and computer science. The event consisted of a set of facilitated activities, designed to elicit ideas, thoughts opinions, and research questions from the attending experts. The core goals of the workshop activities were:

- To Identify key research clusters and questions
- To identify priority areas for research.

11.1 Overall outcomes

The workshop identified 10 research clusters:

- Social and cultural attitudes to automation
- Community and social issues
- System design for being (in) digital/augmented/automated work
- Organisations, professions and work and automation
- Trust and accountability of automated systems
- What is human? – What is the role of humans in a future automated society?
- Technological limitations of automation

³ <https://waysofbeingdigital.com/reports/>

- Research methods
- Education and training in the context of automated and augmented work roles
- Theory

Further details of these ten clusters are presented in the full report. At all times a range of cross-cutting and overlapping aspects to these research questions/clusters were identified in the workshop. It was recognised that many of these clusters and questions are interdependent, and any overarching research programme would need to address this. Six recommended priority areas were identified by two teams from the clustering work. These priorities were:

- 1 Trust in automated systems
- 2 Meaningful life roles
- 3 Roles, system design and economics
- 4 Oversight and governance
- 5 Social impacts
- 6 Research methods

12 Cross-cutting topics and challenges

As has been noted throughout the discussion above, we have identified a number of questions, topics and challenges that cross-cut the seven domains. Table 15 details the most common topics and Table 16 the most common challenges we have identified. To create these lists the topics and challenges were recoded into a standard format for all domains. Those topics that cross more than three domains are in bold. The highest ranked cross-cutting challenges are common to all the domains.

Topics	Percent
Digital divide	8.04%
Privacy	6.75%
Data access and literacy	6.11%
Citizenship	4.50%
Device, environment and service design	4.50%
Participation	3.22%
Methods	3.22%
Governance	2.89%
Education	2.57%
Role and impact of major corporate platforms	2.57%
Mobilisation	2.57%
Talk	2.25%
Cyber security	2.25%

Table 15: Crosscutting topics

12.1 Implications of cross-cutting topics and challenges

We would argue that the cross-cutting topics can be dealt with in two ways. Either as domains to be addressed in themselves or as key features or requirements for projects within the seven domains. Two topics which we feel warrant separate consideration are:

- Digital divides and digital inequalities – including the two-way interaction between digital inequities and other areas of social inequity
- Data and digital literacy

Methods issues are addressed below. The remaining cross cutting topics are:

- Governance, regulation and legislation
- Role and impact of major corporate platforms

There may be an argument for including these as key aspects in relation to any specific project. With regard to cross-cutting challenges we would argue that all projects supported by the programme should seek to examine or address each of the following:

- **Methods innovation.** This should include reflection on and evaluation of: digital tools, analytic approaches and the digital representation of results. This could and should include risk taking with the efficacy of new tools and methods as they are tried out and tested.

Row Labels	Percent
Methods	38.02%
Theory	11.98%
Ethics	9.50%
Big data	8.68%
Co-design	4.96%
Multi platform studies	3.31%
Holistic understanding	2.89%
Digital divide	2.48%
Education	2.07%
Data access	2.07%
Interdisciplinarity	2.07%

Table 16: Crosscutting challenges

- **Theory testing and evaluation, with theory development were needed.** In all the domains, we have found a great variety of theory, but also theory used as a general backdrop without operationalisation or evaluation. For example, many of the sociology based items reference “Network Society” theory without operationalising this in any clear manner. In contrast, much of the psychology work directly applies theory but there is an extensive variety. We would caution about the need to develop new theory for its own sake. As was noted in the consultation workshop – just because digital technologies are new they *may not need new social science to understand their impacts*. This makes theory testing, new and old, essential.
- **Ethics.** Ethics, especially around the use of publicly visible social media data remain a challenge for researchers, though clearer guidance is being provided by professional organisations (e.g. BPS, AOIR). There are also considerable ethical questions around what government, businesses and organisations do with citizens data. We would argue that projects will need to have an element or work package that assesses the ethical challenges faced to help build a knowledge base of best practice and key concerns.
- **Big data.** All the research councils are currently supporting initiatives that address big data (however that is understood in their disciplines). We do not suggest focusing specifically on this issue. Separate from methods innovation we would argue that projects which seek to use “big data” should include a robust element of reflection and evaluation on the usefulness, limitations, tools used to analyse and representativeness of the big data sets examined.
- **Multi platform/Holistic studies.** The analyses of the literature clearly point out a trend in which research is undertaken relative to new technologies and platforms, or is focused on one technology or platform. Such work is necessary to understand the specifics of technologies or socio-technical contexts. Though there may be a trend to follow accessible data sources. But the Delphi and workshop results highlight a contemporary need to “reverse the telescope” and focus on the breadth and depth of citizens’ digital worlds, as they navigate among multiple technologies and platforms. This puts social science questions to the fore within which a mix of digital technologies may play a part.

13 Missing areas

During the project it became clear that two substantive areas were missing from the scope of the project:

1. Impact and policy implications
2. Digital culture

The project therefore undertook two additional workshops in collaboration with:

1. Media, Communication and Cultural Studies Association: Policy Network
2. Department of Culture Media and Sport Digital Culture Team (of which the PI is a member)

13.1 Policy

The policy workshop brought together scholars from across the disciplines covered by this review as well as from Ofcom, the ICT sector, DCMS and DWP. The workshop identified the following areas where digital facing research may inform policy:

1. Digital policies
 - a. Digital Inclusion and exclusion
 - b. CDI sector policy/regulation
 - c. Digital and social policy
 - d. Arts and culture policy
2. Digital tools in policy making
 - a. Tools that support policy making
 - b. Methods of policy making – rise of ‘agile’ policy making
3. Digital in policy delivery
 - a. Digital communication
 - b. Big data and evaluation

A full report on the workshop is separately available⁴. Elements of the discussions clearly fall under the governance issues identified in the review. We would also argue that further work may need to be undertaken by funded projects within the programme to identify how the projects or routes to impact might address these three areas.

13.2 Culture

the joint workshop with DCMS examined four areas:

- Access and participation - including digital and cultural participation
- Digitisation of cultural content
- Culture and technology innovation
- Skills, IP and business models

The materials from the workshop are still being assessed and written up as part of the DCMS Digital Culture review that will report in September. We can draw some conclusions from the discussions. First, these topics clearly overlap with AHRC priorities but there may be dangers in issues falling between research councils. Second, cultural inclusion, like social inclusion is becoming bound up with aspects of digital inclusion. Digital and cultural capital are becoming intertwined – if they are not in fact the same thing? Third, digital skills for culture, especially around cultural production, may be a route to digital, educational and economic inclusion. Digital literacies may therefore be better developed through cultural engagements with digital technologies.

⁴ <https://waysofbeingdigital.com/reports/>

14 Potential specific topics by suggested research area

As was noted in Section 2 we propose the following 6 research areas for the ways of being programme. For each we have identified potential research topics from the Delphi and literature work.

14.1 Ways of being in a digital age – Communication, community and identity

We propose the following potential topics (not in a priority order):

- The norms and values of digital communication and relationships
- The ‘affordances’ different platforms provide for digital communication and relationships
- The quality of relationships and communication supported by digital media and technologies
- The management of relationships via digital media and technologies
- Social and community aspects of everyday digital technology use
- Digital community exclusion/inclusion
- Digital community participation, action and social change
- Power in online communities
- Understanding global diaspora as digital communities
- Understanding function of aspects of identity online (gender/race/ethnicity/sexuality)

14.2 Ways of being in a digital age – Citizens politics and governance

We propose the following potential topics (not in a priority order):

- Digital technologies, radicalisation, mobilisation and political action
- Digital technologies and the disruption of current political institutions
- Digital technologies and new forms of citizenship
- Digital technologies, political communication, debate and media
- Digital technologies and state control – especially in non-democratic regimes
- Impact of social media on governance
- Success factors in digital governance at local, national and international level
- Privacy, citizenship, the state and surveillance in the digital age
- Regulation and governance of automated systems

14.3 Ways of being in a digital age – Understanding the platform economy

We propose the following potential topics (not in a priority order)::

- Role and impact of major corporate digital platforms
 - Impacts on firms of digital platforms
 - Role of digital monopolies and large corporations
- Forms of digital labour
 - Impacts of digital labour on people’s life experience
 - Gig economy (linked to platforms)

14.4 Ways of being in a digital age - Data and digital literacies for engaged and included citizens

We propose the following potential topics (not in a priority order):

- Citizen and community use of data
- Citizen interaction with data and algorithms
- Data literacy in everyday life
- Power and accountability for data and algorithms
- Social construction of data and algorithms
- Citizens/Everyday life experiences and uses of data
- Understanding open data/algorithm transparency/accountability

- Digital identity and data
- Data exclusion/inclusion/divides

14.5 Ways of being in a digital age – Everyday digital health and wellbeing

We propose the following potential topics (not in a priority order):

- Understanding and addressing the governance of digital health technologies
- Need for detailed systematic evidence of the impact and lived experience of everyday health technologies (e.g. fit bits)
- Questions of health and wellbeing in the digital workplace
- Digital technologies and health communication and health behaviour change

14.6 Ways of being in a digital age – Digital inequalities

We propose the following potential topics (not in a priority order):

- Digital Community Exclusion/Inclusion
- The two-way interaction between digital inequities and other areas of social inequity
- Data Exclusion/Inclusion/Divides
- Digital cultural capital and cultural exclusion/inclusion
- Digital governance, policy and inclusion
- Digital health inequalities