D1.10: NGI Topic Guides & Evaluation Criteria Report II

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1.0 Introduction

The rapid expansion of the internet has caused complex and far-reaching challenges, e.g., in the form of democratic disruption, threats towards human rights and issues of ethics and responsibility. General themes, such as the centralisation of power on the global data market, privacy and data protection, and the sustainability of the internet, are some of the core subjects in this regard. These issues demand efficient solutions that should involve policymakers, researchers, and citizens. To design and execute these solutions, insight into the technologies and their corresponding challenges, including experiences of these, are of great value. By diving into the research conducted in the NGI Forward project and focusing on the topics addressed in these processes, we will provide topic guides that intend to inform the European Commission about the issues of the current internet and the technologies that surround it.

The main aim of the NGI Forward project is to articulate a vision for the internet of the future and set out efficient action steps to achieve it. In this deliverable, DATALAB at Aarhus University (hereinafter referred to as "AU") identifies eight topics (issues) that the research conducted as part of the NGI Forward project has indicated to be the most decisive; this will ultimately allow the European Commission to develop and shape a more inclusive, human-centric, resilient, and democratic future internet. The above is achieved through insights gained from several partners into internet-related subjects discussed on social media platforms, in articles, and by engaging the research community within the field of the internet.

1.1 Purpose and Scope

This report outlines the final set of topic guides identified by the NGI Forward project and reviews the evaluation criteria employed to select and identify the topics. The purpose of this deliverable is thus to pinpoint the key issues that are significant in the development of a future internet by providing insight into internet-related subjects. Since we are in the concluding part of the project, the applied approach is a synthesising of data and results from AU conducted throughout the project in different deliverables. In addition, we have gathered results from our partners to compare and evaluate topics from our research with theirs. Thereby the aim is to locate overlaps, similarities, and dissimilarities between the research findings of the partners to find a shared understanding of the NGI field. Based on this, we have come up with the final

selection of topics that reflects the common research findings and the subjects receiving the most attention from researchers, tech journalists and other stakeholder communities. A more thorough explanation of how the process has been executed will follow in the next chapter.

2. Methodology

To identify the key topics of the future internet, we developed and followed a three-step process. An overview of the different phases is outlined in the model underneath and described in the following section.
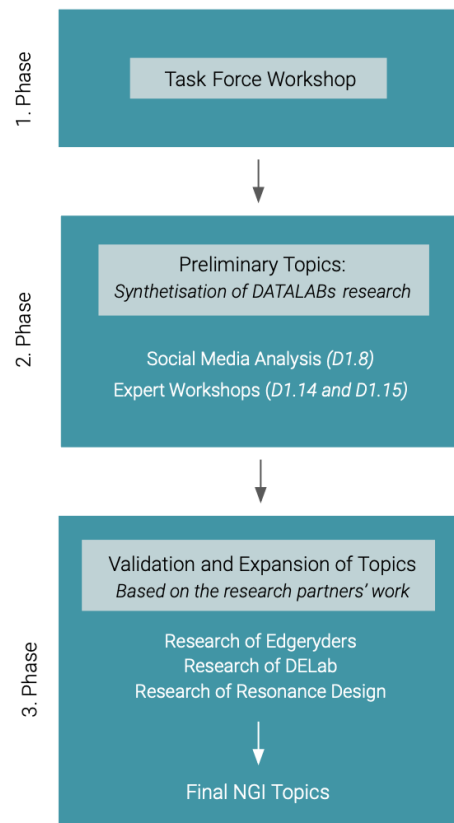
Figure 1: *Overview of Topic Selection*

As part of *the first phase*, we arranged a task force workshop with the partners of the NGI-project, of whom the following partners participated: DELab and Edgeryders. The workshop aimed to review a previous selection of topics (prepared in an online brainstorming session between the partners, held in February 2021, see Appendix A) in light of recent research conducted. The workshop started with each partner presenting the topics of their recent studies and then collating them with the previous selection. Moreover, they were encouraged to point us towards their most current and, in this context, relevant research, which was needed to complete the third phase.

In the second phase, our starting point was our research in AU – more specifically, the deliverables published after the first topic guide report, *D1.9 NGI Topic Guide and Evaluation Report I* (Møller et al., 2020). During this process, we synthesised the insights we had gained from a social media analysis with the results from two expert workshops; details on the three mentioned deliverables are in sections 2.1 and 2.2. Based on this, we deduced eight preliminary topics.

In the third phase, the aim was to evaluate and validate the topics identified at the previous stage by comparing them with the findings of the research partners. In this comparison, we considered the topics recurring in more than one deliverable as having a stronger ballast as significant issues, as various research methods have thus pointed to the same topic. Moreover, we discussed a possible expansion of the selection from the previous phase in the cases where the research partners had similar topics (although these were not necessarily traceable in AU's research). Lastly, we compared the findings of AU with Edgeryders, DELab, and Resonance Design (who did not attend the workshop but forwarded material and designated key topics in their research) to select the final NGI key topics.

In the following sections (2.1 and 2.2), phase two and phase three are explained in detail to provide a more comprehensive summary and argumentation of the processes that led to the final selection of key topics.

2.1 Synthesis of Own Research: Preliminary Topics

In phase two, we synthesised the results from AU's deliverables published after the first topic guide report, namely:

- *D1.8 Final Social Media Analysis Report & Visualisations* (Nissen et al., 2021)
- *D1.14 Research Topic Analysis II* (Sørensen et al., 2021)
- *D1.15 Research Topic Analysis III* (Christensen et al., 2021)

The social media analysis focuses on the intersection of internet technology and social issues, moreover, how the public perceives the relationship between the two. Through data gathered from discussions on Reddit, Facebook and Twitter, the aim was to identify trends and topics considered relevant for the next-generation internet by the users of the platforms.

The other two reports build on expert workshops with leading researchers in the field of the internet. Through discussions on challenges and solutions, they sought to identify the most pressing issues related to the internet today and solutions or initiatives considered crucial to creating a more democratic and human-centric future internet. The challenges and solutions are summarised in the two reports.

To synthesise the results from the social media analysis with the results from the two expert workshops, we reviewed the topics touched upon in the three reports and listed them separately, as seen in the figure underneath.

D1.15 *Research Topic Analysis III*	D1.14 *Research Topic Analysis II*	D1.8 *Social Media Analysis Report*
Centralisation versus decentralisation	Internet shutdowns	Privacy
Improving digital literacy among politicians	Discrimination of minorities	Censorship
Improving digital literacy through education	Facial recognition and surveillance	Internet security and hacking
Lack of transparency and consistency	Unstable or no internet access	Cryptocurrency
Processes around standard setting	Risk of data leaks	Alternatives for mainstream internet services
Implementing citizen assemblies	Discrimination and unequal access	Disinformation and misinformation (COVID-19)
Convenience prevents the move away from centralised platforms	Discriminating algorithms	Gender inequality associated with AI/algorithmic decision making
	Implementing technology without proper deliberation	

Figure 2: *Overview of topics in AU's research*

Subsequently, we discussed the interrelations and then grouped and merged them manually into more general categories/topics, as seen in figure 3 on the following page. The groupings were guided by relating similar issues to each other. By merging the topics into more general

categories, it allowed for discussions on how the different partners' work could provide new perspectives to each other.
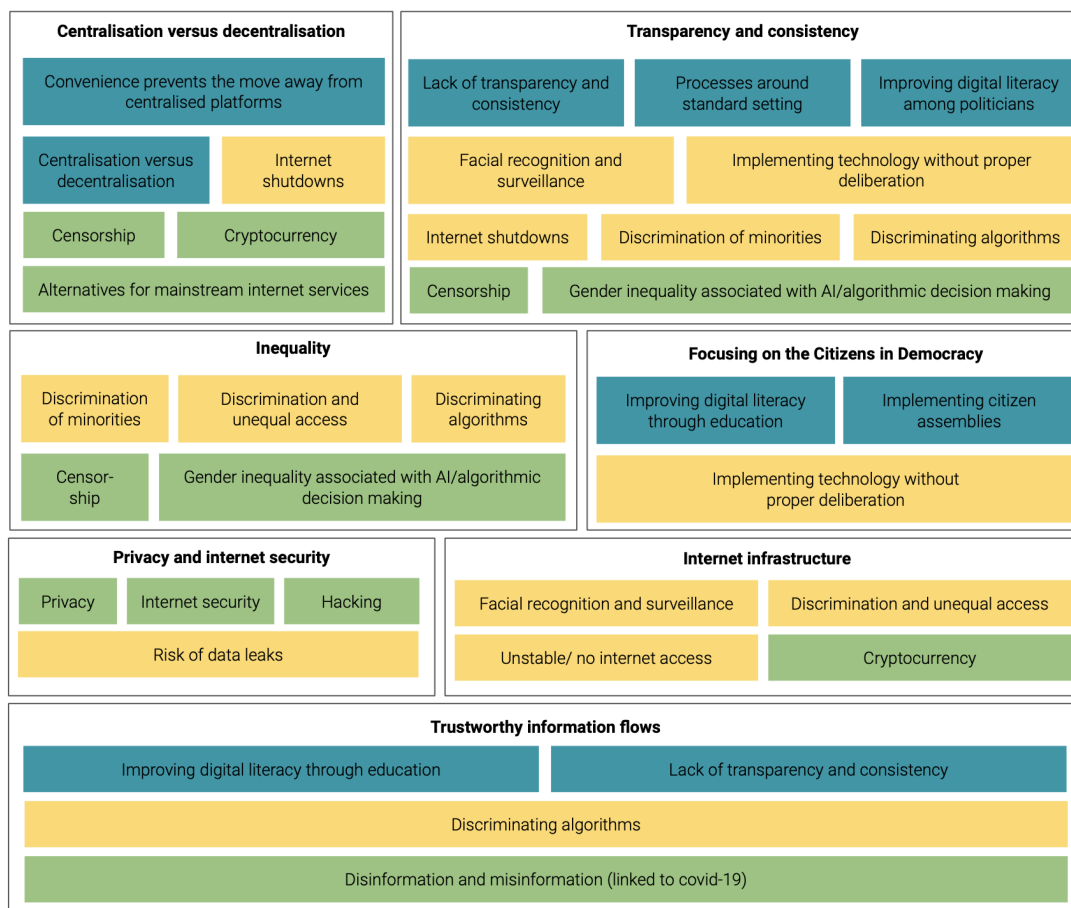

Figure 3: *Overview of new groupings and topics*

This procedure resulted in the following topic selection:

- Centralisation versus Decentralisation
- Focusing on the Citizens in Democracy
- Privacy and Internet-Security
- Inequality
- Transparency and Consistency
- Trustworthy Information Flows
- Internet Infrastructure and Access

2.2 Validation and Expansion of Topics

In phase three, the aim was, as previously mentioned, to validate the above topics. In this regard, we reviewed the work the research partners had proposed to us in the task force workshop.

2.2.1 Edgeryders

In the workshop, Edgeryders pointed us towards their ethnographic and semantic social network analysis, *D2.5 The Collective Intelligence NGI* (Hassoun et al., 2021). This analysis focuses on emerging topics discussed in the NGI XChange forum on Edgeryder's online platform. Here, the conversations centred around how the participants (mainly, but not exclusively, consisting of individuals from European, white, and middle-class backgrounds) envision the Next Generation Internet (ibid., p. 15). Data of the conversations have been harvested over 30 months and, during this period, the research revealed a focus on five core topics (ibid., pp. 30-33). Namely, the following:

- The Future of Work
- Data, Privacy & Control
- Big Tech, Regulation & Business Models
- Crisis, Resilience & Environmental Sustainability
- AI, Algorithmic Inequality & Justice

2.2.2 DELab, University of Warsaw

The research of DELab takes its starting point in the previously mentioned selection of umbrella topics by the NGI partners from February 2021 (see appendix A). They have thus not come up with new topics but developed the former ones, intending to relate them to more specific, narrow topics through a text-mining methodology in *Towards a Human-Centric Internet: Challenges and Solutions. Mapping Key Tech and Policy Topics with Text-mining* (Gyódi et al., 2021). The data consist of articles shared on social media, namely Twitter, Reddit, and Hacker News (ibid., p. 1). For each umbrella topic, they provide a map of all the articles that relate to it. Accordingly, the umbrella topics listed below will be used to validate and possibly expand our selection of phase 2, whereas the narrow topics identified under each map will inform the specific topic guides in section 3.0. The umbrella topics are:

- Environment, Sustainability & Resilience

- Decentralising Power & Building Alternatives

- Public Space & Sociality

- Privacy, Identity & Data Governance

- Trustworthy Information Flows, Cybersecurity & Democracy

- Access, Inclusion & Justice

2.2.3 Resonance Design

Resonance Design was not part of the workshop. Instead, the partner forwarded us a report documenting the activities and results conducted under Work Package 4 of the NGI Forward project. In addition, they brought attention to the topic they deemed most important in their research, namely: EU-ID/SSI (Self-Sovereign Identity). The report documents salons centred around the topic of identity in its broadest sense. Thus, it provides information on discussions on EU legislation on DATA, EU ID, Cybersecurity, Privacy (Van Kranenburg & Gars, 2021, pp. 2-3).

2.2.4 Final Topic Selection

Similar to the second phase, we again listed all the topics – this time across the partners – and discussed similarities and differences between them. More specifically, the topics are selected by first identifying topics of the partners' works and then using an interpretive process, performed in a collaboration between two researchers to (1) draw parallels between the topics proposed in the different research, and (2) formulate new labels of categories that reflect the most dominating (frequent) issues of the research. This led to the following final topics: (De)centralisation of Power; Data, Privacy, and Self Governance; Regulation of Big Tech; Access and Digital Inclusion; Trustworthy Information Flows; Environmental Sustainability; and Online Communities and Sociality (visualised in figure 4 underneath, in the white squares).
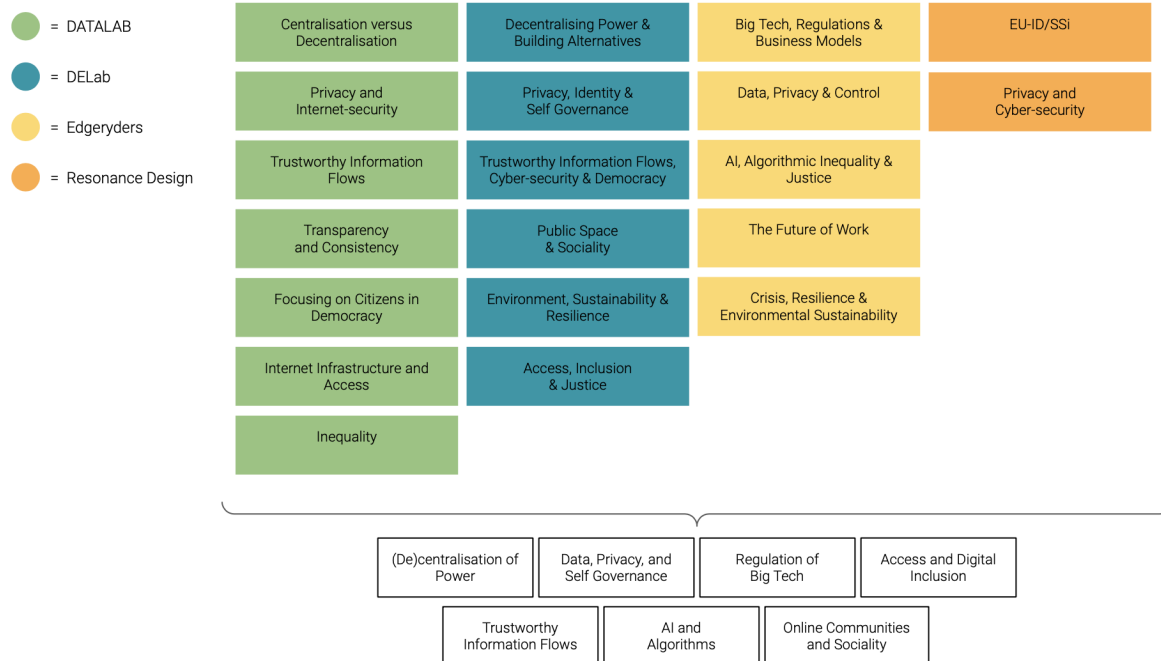
Figure 4: *Final selection of topics*

The target group/field of research varies in the different deliverables of the research partners. Edgeryders primarily focus on interested citizens and their discussions around the future internet, whereas DELab focuses on articles concerning the internet shared on social media platforms. Lastly, AU's deliverables concentrate around expert stakeholders and what they deem most important in achieving the next-generation internet and trending topics on social media. Thereby, we cover three different parts of the society: citizens, experts, and the press. At the same time, the various subject fields of the partners can explain why we do not necessarily achieve the same results; the mentioned groups probably have different agendas and frames of reference, which the research consequently will reflect. In addition, it also means that in cases of consistent results across the deliverables, these can be accentuated as crucial issues/topics since they circulate among citizens, experts, and the press. We will thus argue that this form of triangulation of methods and sources strengthens the validity of the topic selection.

3.0 Topic Guides

In this chapter, the above topics are expanded on through thoroughgoing guides. Each topic guide will address the specific subject in relation to the research conducted during the project. First, an introduction to the challenges often associated with the topic will follow, containing reasons for how the subject has a central role in the NGI initiative. Subsequently, possible solutions or initiatives are highlighted in some of the guides. The order of the topics listed is not a list of priorities. However, the first ones are more general and far-reaching, whereas the last ones become more specific and niche embossed. Many of the topics relate to each other and even overlay – therefore, it is difficult to make a constant distinction between them. Thus, some of the topics will refer to each other, and there may be some restatements.

3.1 (De)centralisation of Power

The topic of decentralisation versus centralisation raises several issues. However, this guide will not cover all of these. Instead, this guide will frame (de)centralisation in more general terms. The more specific issues related to this topic follow in some of the other topic guides.

A recurring topic throughout the partners' research is the question of centralised versus decentralised power structures on the internet. The internet is a public and global resource on which citizens, businesses and governments depend. Initially, the internet was designed as a decentralised and open ecosystem. However, a significant centralisation has occurred during recent years. It started in the early 2000s, with the advent of Web 2.0, as people started communicating and sharing information via centralised services implemented by Big Tech firms such as Google and Facebook. Since then, content and connectivity began to concentrate in the hands of a small number of companies. Today, the internet and its implied power structures are, almost exclusively, controlled by a handful of companies with near-monopoly status. That concentration of power is listed as a significant challenge of today's internet, as it confronts democratic principles considering that profit is often a higher priority than human-centric values.

To raise a recent example that highlights the power of Big Tech and people's dependence on it: on October 4, 2021, Facebook and its subsidiaries (Messenger, Instagram, WhatsApp, Mapillary, and Oculus) experienced a six-hour outage, which meant that communication in general and even businesses globally were disrupted, as users were unable to access its platforms and its related services (Sweney, October 5, 2021). For instance, people who rely on

services such as Instagram and WhatsApp as their primary means of communication were unable to get in contact with friends and family during these hours. Also, it resulted in damaging consequences for businesses, as many rely on Instagram or Facebook to run these (Milmo & Anguiano, October 5, 2021). This example of outage not only points to how dependent much of the world is on centralised social media but, in addition, to the global scale of power of these platforms. In addition, it raised attention on the need for competition and alternatives in this regard.

"Alternatives" is a buzzword throughout the analysed research when discussing the decentralisation of power on the internet. Thus, there is a thoroughgoing focus on open-source alternatives and distributing the power to a broader range of individuals to reinforce the decentralised networks and destabilising the power of Big Tech (Gyódi et al., 2021, pp. 16-17; Hassoun et al., 2021, p., Nissen et al., 2021, p. 19). Some of the experts from the workshop of AU argue in favour of a more decentralised internet by establishing countervailing regulations and legislation, as others focus on empowering people to move away from the centralised systems and hence make use of alternative services (Christensen et al., 2021).

Although the research carried out by all the partners primarily, almost unambiguously, calls for a decentralisation of the internet, centralisation is also mentioned as having possible positive effects. In the latest workshop led by AU, attention was drawn towards centralisation as something not unequivocally negative (ibid., p. 7). Although one of the groups was predominantly in favour of decentralisation, the same group pointed to the social cohesion that centralisation entails. More precisely, how it, in some cases, can have a strengthening effect on democracy, connectivity, and globalisation, as centralised platforms make it easier to share views, opinions, and ideas due to the accessibility and scale of the services (ibid., pp. 7-8). Thus, this perspective may be worth considering and discussing in a possible redesign of the internet – more precisely, how to implement decentralised models and disperse power while retaining the potential of the platforms in terms of cohesion.

3.2 Data, Privacy, and Self Governance

The topic of Data, Privacy, and Self Governance relates to issues that arise with the centralisation of power, in particular, Big Tech's method of operation and its business model. This topic thus comes in continuation of the above and can be said to be a by-product of it.

We are sharing more and more of our data with the businesses we interact with, whether it is on social media, online shopping, banking etc. According to a survey from January 2021, targeted at adults worldwide, 66 % of the total respondents agreed that tech companies hold too much control over their personal data, while only six per cent disagreed with the statement (Johnsen, November 2021). The amount of data and the lack of control over the data shared has created a rising concern around privacy among users (ibid.). This concern has, among others, been expressed in discussions on social media (Nissen et al., 2021, p. 3). A social media analysis conducted by AU found that trending topics on social media revealed privacy concerns. The users expressed negative emotions, including fearful and angry posts (ibid., p. 28). This area of concern is consistent with a central conversation theme in the report of Edgeryders (Hassoun et al., 2021, p 49.). Thus, we see a user base aware of countless apps and services using their data in an exposing way and expressing explicit scepticism about it. On this basis, innovations considering privacy concerns are a necessary and crucial focal point when one wants to accommodate a more human-centric development of the internet and, in other words, ensure the safety of the users. An innovation highlighted in this regard is a decentralised identity system – an emerging concept aimed at empowering the users and providing them with ownership of data (Gyódi et al., 2021, p. 17; Van Kranenburg & Gars, 2021, p 19).

Data authority and privacy often clash with the power of the Big Tech firms, their proprietary business models and surveillance technologies. Most users nearly routinely supply personal data to tech companies in exchange for their services. In this regard, many feel they cannot have respectively access and privacy simultaneously if they want to use and take advantage of the services (Hassoun et al., 2021, pp. 44-45). There is a constant trade-off in terms of deciding to share or protect one's data. An issue on this subject is the tensions between, on one side, the comfort, convenience, and user experience of online services provided by the tech giants and, on the other side, user privacy and control (Gyódi et al., 2021, p. 20; Christensen et al., 2021, pp. 9-10; Hassoun et al., 2021, p. 47). The issue raises a central question: *Is it possible for the individual user to move away from these platforms, or are the associated exclusion stakes too impactful?* (Christensen et al., 2021, p. 9). And maybe more crucial: *Is it up to individuals to constantly make decisions about their data privacy?* (Hassoun et al., 2021, p. 50).

There is an agreement that the responsibility for ensuring users from intrusive conglomerates and protecting safety and privacy often falls on the individual itself (Christensen et al., 2021,

pp. 10-11; Hassoun et al., 2021, pp. 49-50; Nissen et al., 2021, p. 15). New approaches to privacy and data governance are needed, and here both participants on the Edgeryders platform and experts from the final AU workshop point at regulatory actions, such as the GDPR implementation, and a need to ensure that policymakers are held responsible for this regulation (Christensen et al., 2021, pp. 10-11; Hassoun et al., 2021, pp. 49-50).

3.3 Regulation of Big Tech

Regulation of Big Tech is mentioned often in discussions on decentralisation and concerns of privacy and data protection. This topic follows after the two previous ones, as it stems from these and is often considered or framed as a solution to the listed issues in the above guides.

The regulation of Big Tech companies (or lack thereof) has received the attention of several of the sources in the partners' work. In this context, regulatory actions are named a crucial necessity for obtaining a future internet where human rights are neither compromised nor neglected. In the latest expert workshop managed by AU, legislation-driven solutions, compared with user-driven, are considered the most crucial among experts to achieve actual change in society (Christensen et al., 2021, p. 11). The experts advocate for more regulation of Big Tech companies and the technologies they design and produce as their incentives are all too often at odds with the common good. Consistent with this, participants across the various threads on the platform of Edgeryders advocate for more regulation of Big Tech. Edgeryders' analysis focuses on the issue of individualising responsibility. More specifically, the fact that the identified pressing issues are created by large institutions, but solutions are often proposed at the individual level e.g., educating yourself on critical digital literacy, improving your privacy settings, etc. (Hassoun et al., 2021, p. 115). This mismatch between the root of the problem and the approach to solving it accentuates the argument for sharpening the focus on legislation to enforce corporate responsibility, thus not leaving it to the individual to ensure its safety online.

Although there is a relatively large consensus in favour of regulation, there is also scepticism towards those responsible for it. When discussing regulation initiatives and political decisions regarding Big Tech, AI and the Internet in general, the research of Edgeryders and AU both point to a form of government failure (Hassoun et al., 2021, p. 106; Christensen et al., 2021, pp. 14-15). More specifically, the experts in the workshop led by AU and the participants of Edgeryders' NGI XChange Forum point to a lack of preparation among politicians concerning

the internet and related technologies (Hassoun et al., 2021, p. 107; Christensen et al., 2021, p. 14). They propose a requirement for heightening critical digital and tech literacy through the education of government workers to ensure specific knowledge and proficiency in advanced and complex discussions about the current digital issues (Hassoun et al., 2021, p. 107; Christensen et al., 2021, p. 14). This demand originates from perceptions and experiences that several politicians do not understand the systems and technologies in question. There is thus scepticism of the ability of the government to regulate something that moves faster than it can appraise what is happening, which gives rise to concerns about the growing power of tech companies and their invisible influence on political decisions. Another initiative proposed is to implement citizens assemblies or another form of civic involvement in developing regulatory frameworks or providing solutions. (Christensen et al., 2021, pp.12-13). This will ensure a citizen-centric development of the internet. Both initiatives will optimally promote a more critical approach to how and to which extent technology and the internet are regulated so that the balance of power is not distorted in favour of Big Tech alone and its agenda.

3.4 Access and Digital Inclusion

This topic centres around the consequences of not having access to the internet and the services it provides, whether it is due to government control or lack of resources. The guide concentrates on the meaning of digital inclusion and focuses on education as a crucial tool in this context.

The internet has become crucial to access a wealth of resources, opportunities, and services for digital citizens. A world without the internet is almost unimaginable for many. However, access to the internet should not be taken for granted, and it is not a matter of course for all. Within this frame of reference, it is crucial to note that around 40 % of the world's population has no access to/are non-users of the internet (Johnson, September 10, 2021). And even people who do have access may be limited by factors like cost, unreliable connections, lack of digital literacy or censorship issues, such as in Iran, Turkey, and China (Gyódi et al., 2021, p. 23). Thereby, there is a large proportion of individuals and groups of the population that are excluded in one way or another. The causes of the exclusion vary from issues of poverty to infrastructure and education. But a common reference point for all of them is that they pose fundamental challenges to democracy and human rights.

The works of the different partners focus on various circumstances of access and associated consequences. Thus, the reasons for lack of or sensitive access are multifaceted, but common to the encounters are exclusion. Internet shutdowns and other actions of control by governments, including blocking platforms and censoring content, are named a crucial challenge as it violates human rights such as freedom of expression and freedom of information (Franklin et al., 2014, p. 7; Sørensen et al. 2021, pp. 8-9). In other words, they are examples of excluding actions, which are against the idea behind an open internet and online freedom (Gyódi et al., 2021, pp. 26-27). Moreover, the COVID-19 pandemic has fuelled processes of tightening state control over online spaces.

The COVID-19 pandemic has been the focus of attention in the work of many of the research partners. Not only has it cast light on the right to freedom of information and expression but revealed the meaning of access in today's society. High-speed internet, modern devices, physical surroundings for concentration, digital skills and literacy get a new meaning and importance when everything turns digital (ibid., p. 29; Hassoun et al., 2021, p. 80). If the mentioned factors are not present or available for the individual, it results in people being excluded from, especially, education and work when performed remotely. Moreover, it primarily affects the groups that lack resources in general. In the context of COVID-19, the importance of generally supporting the development of children's, the so-called "digital natives", tech literacy further through education is emphasised (Hassoun et al., 2021, p. 79; Christensen et al., 2021, p. 13). It is desired that values, such as transparency, inclusion, and collaboration, are integrated into how younger generations learn to think about and critically interact with digital technologies. Ultimately, this will conceivably affect how technologies and the big tech industry are developed and regulated henceforth (Hassoun et al. 2021, p. 80).

3.5 Trustworthy Information Flows

In continuation of and, at times, overlapping with the above topic guide, follows this guide on information flows. Thus, one of the threats that stand out in the partners' work is the spread of so-called information disorders in today's society, such as misinformation, disinformation, and fake news. These disorders, together with issues of governmental censorship and content moderation performed by online platforms, throw light on the value of ensuring trustworthy information flows for democracy and the next generation internet.

As previously stated, the internet has become remarkably vital in accessing all kinds of information, which means that users highly rely on it as their source for and access to information. Therefore, the spread of the above-listed issues, misinformation, disinformation, and fake news, especially seen on social media, induces multiple societal consequences. A case that highlights it is the COVID-19 pandemic. "We're not just fighting an epidemic; we're fighting an infodemic," declared WHO's director-general, Tedros Adhanom Ghebreyesus, at the 2020 Munich Security Conference (The Lancet Infectious Diseases, 2020, p. 875; Nissen et al., 2021, p. 36). This quote shed light on the threat that accompanied the virus, namely the spread of misleading information, which in the case of a pandemic can put the health of society at stake.

With solutions in mind to the growing problem of misleading information on the internet – especially seen on social media – there is a throughgoing focus on improving critical digital literacy, as lack of literacy are said to possibly increase the vulnerability to misinformation and disinformation (Sørensen et al., 2021, p. 16; Hassoun et al., 2021, p. 80; Christensen et al., 2021, p. 13). However, improving digital literacy raises the issue, touched upon earlier, of individualising responsibility to combat the threats on the internet – saying the individual has to improve their skills instead of legally regulating and making technological attempts to fight the spread (Hassoun et al., 2021, p. 114). This issue refers, in other words, back to topic guide *3.3 Regulating Big Tech*. In addition, AU's research calls for a better understanding of the contexts and drivers of misinformation and disinformation to minimise its potential impact (Nissen et al., 2021, p. 37).

3.6 Environmental Sustainability

In the discourse surrounding the development of the next-generation internet, environmental sustainability is framed as crucial. This topic guide focuses on the relationship between sustainable technological advances and the climate threat posed by the growing tech industry and the internet itself.

The topic is two-sided, a balance of contrary forces: First, it covers how technology constitutes accelerating damage to the environment and climate and, secondly, it focuses on how technology can play a crucial role in the development of more sustainable solutions and combat existing environmental issues. The tech industry has negative impacts on the environment that are not to be overlooked. Here, non-recyclable, mass-produced devices, as

well as the energy consumption that follows from them, are pointed out (Hassoun et al., 2021, p. 82). However, the tech firms are not only highlighted as the sinners but also potential solution-providers; since they have the capability to develop sustainable solutions that help deal with the problems stated and protect the climate (Hassoun et al., 2021, p. 81; Gyódi et al., 2021, p. 15). There is an ongoing tension between the urge in society to innovate and invent new technologies and the ability and compliance to anticipate their potential harm to the environment. There is thus an urgent call to assess and regulate the relationship between the environment and technologies. Here, a possible solution raised was more transparency on the environmental impact of electronic products, both in terms of production and consumption. This step will help monitor and measure technologies from a political point of view but also from a design perspective. Additionally, this will make it easier for consumers/customers to make an informed choice about the products they use and are considering buying (Hassoun et al., 2021, pp. 83-85).

3.7 AI and Algorithms

The topic of artificial intelligence (AI) and algorithms is discussed throughout the project as a core technology impacting how users interact with and are affected by the Internet. This guide will review AI-related issues brought to attention by the partners and present reflections on how to utilize AI technologies so that they are not against human rights but rather cultivate a people-centred internet.

Edgeryders' report points out the issue of the rush to deploy AI in society. Here, a concern has been raised regarding employing technological solutions to problems that are inherently social and structural (Hassoun et al., 2021, p. 95). In this connection, participants argue and condemn that the possibility of implementing AI seems to be an automatically valid and sufficient justification for implementation, as it often leads to more problems. This perception echoes the discussion in a workshop conducted by AU. Here experts highlight the issue of implementing technology without proper deliberation and transparency. By bringing in the algorithmic character scandal of the university-level entrance grading system in the UK, participants discussed how this exemplified a case of rush to deploy AI, which lacked genuine deliberation and transparency (Sørensen et al., 2021, p. 12). These frequent AI responses to different societal issues are presumably a result of the prevailing discourse on AI technologies as necessary, inevitable and highly efficient solutions (Hassoun et al., 2021, pp. 95-99).

Besides the concern of the rush to deploy AI, another issue discussed is how AI systems often are encoded, unintendedly, with values and practices that maintain specific power relations, which can cause discrimination (Hassoun et al., 2021, p. 98). Here, gender biases are discussed in the work of Edgeryders, bringing in examples of discriminating hiring algorithms (ibid., pp. 100-101). Also, this topic is present in AU's work, in the social media report, which aims to examine gender inequality associated with AI (Nissen et al., 2021, p. 34). Thus, this topic guide refers to the previous topic guide 3.4 on access and, more relevant, in this context, digital inclusion. This guide highlights the importance of heightening inclusion and equality in the next generation internet, in this case, by bringing awareness to the unwanted, discriminating biases that occur in algorithms. Both partners point to a crucial problem with discriminatory technologies on the Internet. However, it is rarely AI models and algorithms themselves that discriminate. Instead, it derives from the contribution of human components – "those that make decisions about what model to choose for what purpose, what data to train the algorithm on, how to interpret thresholds, etc." (Nissen et al., 2021, p. 30; Bechmann & Bowker, 2019).

The awareness of the human contribution is reflected in the solutions proposed by the partners. The proposed solutions are, thus, based on the root of the problem – namely, the group of actors responsible for the technology. One solution the researchers recommend is more circumspection by and education of developers (Bechmann & Bowker, 2019; Nissen et al., 2021, p. 35). In addition, regulation is crucial, as the area is barely regulated now, and decisions are almost exclusively outsourced to corporations, which refers back to topic guide *3.3 Regulation of Big Tech* (ibid.; Hassoun et al., p. 2021, 106). A reorientation is needed to serve the common good. We should ask questions of what we should do – including questions of ethics and societal implications – rather than ask what we can do (Hassoun et al., 2021, p. 109). Moreover, DELab's research points to making AI models explainable, referring to the "Right of Explainability", which will allow the user to get a better understanding of and trust the outputs produced by the technology (Gyódi et al., 2021, p. 33).

3.8 Online Communities and Sociality

This topic concentrates on the sense of community that platforms provide, which has been highlighted especially in times of COVID-19's social restrictions. However, the topic guide not only touches on the social advantages but also on the consequences of the technological transformation of the public space and sociality.

Though the first topic guide, *(De)centralisation of Power,* primarily speaks for decentralisation, the internet and the centralised platforms also accommodate spaces for social aspects, such as online communities that cross national borders and the advantageous reach to an extent rarely seen before (Christensen et al., 2021, p. 10). Therefore, centralisation can be said to be a social dilemma as the social aspects of centralisation come with a price of surveillance and other concerns, e.g., raised in the topic guide of Data, Privacy, and Self Governance.

The social aspects of the internet, such as the sense of community, have been even more apparent during the COVID-19 pandemic as several societal lockdowns followed. During COVID, remote working has been a reality for thousands of people and, thus, has been the centre of discussion. Here, a challenge was and still is, maintaining a sense of community and sociality as companies and other institutions adjusted to remote work. Edgeryders report points at people feeling isolated socially since the online transformation of workspaces. In this regard, internet technologies play a crucial role in enabling and encouraging human interaction and creating new ways of supporting work from home situations (Hassoun et al., 2021, p. 37). However, a concern raised in this regard is digital access. The remote version means that people who do not have access or lack tech skills are excluded, both socially and professionally, in times of remote work (ibid., p 42). The circumstances of COVID have, in other words, shed light on how internet technologies act as reshapers of public spaces and can have a direct influence on social aspects of human lives. The approach of Edgeryders findings is thus to focus on how the offline and online world intervene both in times of COVID but also with new concepts and innovations. The same could be discussed with the concepts of "Smart cities", which is another example of online/offline interventions. A crucial question to ask is: What are the social potentials and limits here? (Gyódi et al., 2021, pp. 18-19). This focus should include discussions of the disadvantages and advantages of these interventions, which is crucial in the redesign of the next-generation internet.

4.0 Conclusion

The report seeks to identify the topics that are deemed most decisive to design the next generation internet. The final selection of topics builds on research findings from four partners of the NGI Forward project: Edgeryders, DELab, Resonance Design, and AU. Through various methodologies, each partner has examined crucial subjects of the NGI. Based on this, and through processes of synthesising, we have identified the following final topics:

- (De)centralisation of Power
- Data, Privacy, and Self Governance
- Regulation of Big Tech
- Access and Digital Inclusion
- Trustworthy Information Flows
- Environmental Sustainability
- AI and Algorithms
- Online communities and Sociality

The report suggests that the above topics are crucial to have in mind to build a more resilient, human-centric next-generation internet.

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Appendix A

Initial topics were prepared in a workshop between the consortium partners in February 2021. Underneath is the digital board that was produced during the meeting, populated with the issues grouped into topics.