Unmasking Power: Alternative Futures for Empowering Our Digital Identities

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Abstract

As generations of new users are born into a radically interconnected world, *digital identities* are increasingly becoming a key determinant for how we interact with products, services, information, and each other. Yet, our digital futures seem to be in the hands of a few highly powerful platforms, instead of ourselves. In this paper I make the case that we're building a future where inhabitants of digital communities may well be losing trust, choice, and human rights without awareness.

This research project calls for and aims to demonstrate a kind of transformation of the design of digital services. The paper examines various models of power relationships in online digital identity ecosystems, revealing multiple leverage points for change. To help investigate alternative futures with an intersectional and systemic lens, I start an ongoing creative collaboration which explores the futures of digital identities through serious game design and development.

The project is directed primarily toward design and innovation teams, and associated knowledge workers, whose efforts have significant influence on future technologies, platforms, and their impacts. This work explores how we might deconstruct power dynamics prevalent in digital service design today. Through multiple analyses, maps and models of these systems, the paper reveals multiple opportunities for change. The serious game prototype, developed and tested through iterative, participatory design, demonstrates promise in facilitating critical conversations about digital identities, enabling discovery of new insights.

Keywords: digital identities, power, intersectionality, design justice, foresight, collaborative foresight, systems thinking, design thinking, serious game design

Land Acknowledgement

I offer this acknowledgement as a gesture of respect to the Indigenous peoples on whose land I have worked throughout this research. I acknowledge I am on the traditional territory of many nations, including the Mississaugas of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee and the Wendat peoples, which is now home to many diverse First Nations, Inuit and Métis peoples. They are the traditional guardians of the land on which I have lived, worked, and created during this project.

People Acknowledgement

First and foremost, I would like to express my sincerest and most special thanks to Greg Van Alstyne, Associate Professor at OCAD University, who was my primary advisor, for his unwavering support and guidance throughout my project. His creativity, genuine passion for influencing change, sincerity and dynamism has greatly motivated me to finish this project. I have learned a lot from his vast expertise in strategic foresight and innovation, and he continues to inspire me. I can not express enough how grateful I am for the guidance of Dr Alexis Morris, Assistant Professor at OCAD University, who was also my secondary advisor for this project, for his invaluable advice. Dr Morris helped me learn a lot about designing in virtual worlds, asking the right questions, and breaking down the toughest of challenges. Many thanks to the industry experts and individuals who participated in my research activities and generously shared their time and insights into the research. Their contributions and participation have added significant value to this research project.

I would not have made it through my Master's degree without the support from the Student Wellness Centre at OCAD University. Thank you, Dr Alexandra Hrabowych MD CCFP and Courtney Ward, MSW, RSW, for your kind support, helping me grow into my stronger independent future self with self-compassion. I am also grateful to Dr Ashok Mathur, the Dean of Graduate Studies at OCAD University, for the opportunities to work with and learn from him and for his kind support and inspiring vigour, which helped me grow and thrive. Also, a big thank you to Susan Kemp from the International Students Support Office at OCAD University for her kind help and guidance to me as an international student. I would also like to thank my dear friends at OCAD university, especially Iris Elliot, Veronique Claude, Puja Prakash, Hetvi Hardev Vyas, Danielle Lim, Shaun Alfonso, Monika Tak, my roommate—Shivani Gulati, and everyone else who was there to support me throughout the roughest patches in my journey. Lots of love and gratitude to my family in Toronto, New Delhi and Seattle, especially Ishan Chopra and Sakshi Kapoor. Special thanks to Noor, the beautiful boxer puppy, for being such a good girl. And lastly and most importantly, I would like to thank myself for taking care of myself.

Dedication

This Major Research Project (MRP) is dedicated to my younger self for being amazing and hopeful, and also the stronger person I will grow into in the future.

To the many future digital versions of myself in the future, and I hope they get the respect that they deserve.

To everyone who supported me in this journey.

Intended audience

Members of design and innovation teams, including industry roles that centre around creating emerging technological systems, are an important segment of my intended readership, including academicians and professionals from adjacent or other industries. I welcome academics, practitioners, and futurists who influence change via their work in the design and politics of modern technological systems to analyze, critique, and expand on the theories, approaches, and findings of this work. I also welcome all generalists and critical thinkers from different fields with genuine curiosity to read my work.

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Tables and Figures

PART I: INTRODUCTION

> If a technology platform could set itself up as the authority when it comes to verifying my identity, what else might its algorithms – and those of all my other online service providers – be deciding about me? If I could be told that I wasn't me, I felt like question marks could be raised over every other aspect of my existence. And I started to wonder who was in charge.

– Tracy Fellows, 2022, *The Future of You*

Chapter 1. Motivation

1.1 Overview

This chapter provides readers with both the personal and theoretical motivation for the research. The first section, “Awakening the digital self,” offers personal motivation and other artistic inspirations for the project. The following section provides some theoretical grounding on the concept of *intersectionality* and defines *marginalized identities* based on that. In the last section, I recognize power and exploration of its understanding as an opportunity for social change.

1.2 Awakening of the digital self

“Could I interest you in everything
All of the time?
A little bit of everything
All of the time
Apathy's a tragedy
And boredom is a crime
Anything and everything
All of the time”

- *Lyrics from the song, “Welcome to The Internet” by Burnham (2021). The song is about how the internet has something to offer for everyone that is time consuming in an inevitable manner.*

As a millennial born in the 90s, I have spent half of my life on the internet as a digital citizen of the world wide web. Whether my focus is entertainment, social life, education, or work, I cannot imagine going about my day without logging into an application to access services that facilitate tasks across all these domains. However, as I tread on a path of personal discovery and growth in my life, I find it hard to identify myself socially,

legally or formally without some digital identification. Be it social media platforms, financial and e-commerce applications, etc. I find it unsettling that I may have little or no idea about what happens to my data, which makes me uneasy about not having much control over the things I engage with in the future with or without my consent.

Figure 1. The panopticon of the modern age.

Facebook and other social media platforms use panoptic surveillance methods to support their business models. Artwork concept inspired by Jay Crum (n.d.)

As my research will show, the amount of data on offer to governments and corporations might keep rising, and as it does, the Panopticon may emerge as a model once more. The Panopticon is a type of control system devised in the 18th century. The design concept is to allow a single security guard to observe all inmates in an institution without them knowing the security guard is watching them. Today, we can see the Panopticon effect in modern technology rather than in prison towers. According to Zuboff (2015), social media platforms like Facebook and Twitter use the panoptic surveillance

method for marketing. She says platforms offer "free" services to monitor users' behaviour under surveillance capitalism. While the platforms use some of this data to improve services, the great majority is used in advertising or "prediction products". So essentially, the customers package and sell themselves with no share of the profit.

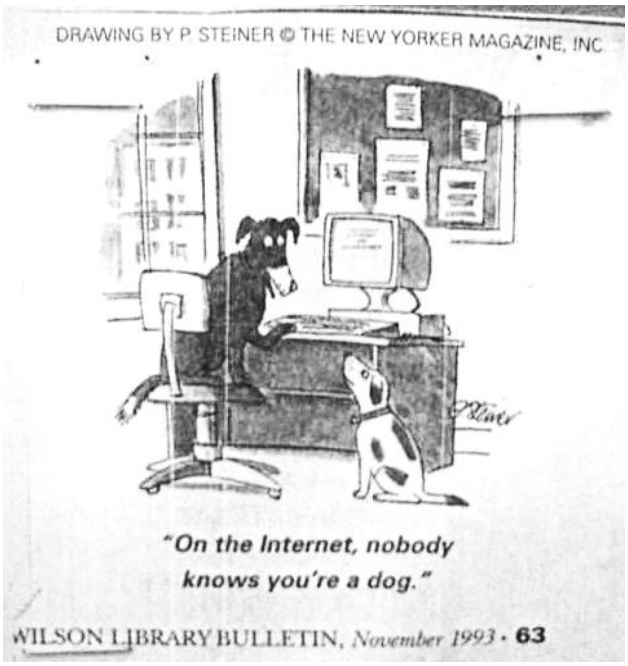


Figure 2. Peter Steiner's cartoon, On the internet nobody knows you're a dog.
©1993 *The New Yorker Magazine*. Reproduced in Smith, M., 2006, *On the Internet, nobody knows you're a dog*.

There is a popular cartoon created by Paul Steiner for *The New York Times* (Steiner, 1993) at a time when the internet was still a mystery, pseudonymity of self was a given, and when anonymity was easier, which shows two dogs behind a computer saying that "On the internet, nobody knows you're a dog". Over time, plug-ins and browsers have incorporated cookies that permit tracking across numerous websites. Websites are becoming less tolerant of anonymous comments and now demand email addresses or other forms of identity verification.

We have reached a critical juncture where we are in need of a reality check on how things have evolved regarding data privacy. There should be no surprise here. The

breadth and depth of this restructuring has been clear as far back as McLuhan and Fiore's unforgettable 1967 volume, *The Medium is the Massage: An Inventory of Effects*:

"The medium, or process, of our time—electric technology—is reshaping and restructuring patterns of social interdependence and every aspect of our personal life. It is forcing us to reconsider and reevaluate practically every thought, every action, and every institution formerly taken for granted." — McLuhan & Fiore, 1967

Our identity is a collection of our past experiences, ingrained and learned ideas and behaviours, and our cultural, family, national, group, gender, or other characteristics. Identity is important because it gives us a sense of who we are and how others perceive us. How we are represented in social, economic and political systems sets the parameters for our daily opportunities and rights. How we represent ourselves (or are represented) online, in turn, affects our real-life behaviours as well. Proteus is a Greek mythological figure who could change his shape at will. Yee & Bailenson (2007) coined the term "Proteus effect". According to this effect, people are urged to conform to what they think other people expect of their digital avatar based on its appearance. For example, someone playing a game as a superhero character is more likely to help others, even outside the game. We benefit from the ability to choose our identities online on a daily basis. Increasingly, our online and offline identities are getting more and more intertwined as we leave traces of ourselves across the digital applications we interact with. We are constantly revealing ourselves in the virtual realms of the internet and beyond. But is it always by choice?

It has been reported widely that the National Security Agency has kept track of information about almost every type of communication and posting that anyone has made online in the US and possibly elsewhere (Electronic Frontier Foundation, n.d). Cartoonist Kaamran Hafeez has been tracking our shift in relationship with online anonymity through his cartoon referencing Peter Steiner's cartoon (Steiner, 1993), in which two dogs are speaking to each other while their owner is using the computer. In the cartoon, one dog says to another, "Remember, when, on the Internet, nobody knew who you were?" (Hafeez, 2015).

1.3 Identity from the lens of intersectionality

Marginalized groups are usually the least likely to have proof of identity. However, they are most likely to benefit from legal protections, rights and access to services that it could provide. Exclusion or marginalization is a process that prevents certain groups or individuals from fully benefiting from or participating in social, economic, spatial, political, cultural, and religious aspects of life. Other non-intrinsic factors contributing to marginalization include residence region, income, political views, literacy level, etc. The factors that trigger exclusion can influence the causes of marginalization or vulnerability in the social contracts of today.

In this research project, digital identities represent real-world identities that may link various legal, social, and physical attributes. Individuals use multiple identities online across different technology use cases, some of which are frequently interconnected. According to Crenshaw (1989) and related work, an individual's experiences are not simply the sum of their parts but rather represent intersections of social power axes. Kimberlé Crenshaw coined the term "intersectionality" in 1989 to describe the experiences of Black women who face multiple forms of oppression and discrimination (racism and sexism). The concept of intersectionality is important to help understand identities from a more holistic lens. It helps to understand the multitude of levels of exclusion, discrimination and other unfair treatment that marginalized groups may face in the highly complex web of the internet. Intersectionality can be visualized as a complex-interconnected Venn diagram of the different attributes (see Figure 3).

Another way to look at intersectionality is through the illustrations of the wheel of privilege and power. Figure 4 depicts the privilege and oppression wheel as the intersection of privilege, dominance, and oppression axes. The horizontal axis represents the axis of domination. As a result, privilege is the power to dominate on a systemic level. At the same time, oppression is the lived, systemic experience of being dominated as a result of one's place on the axes (Morgan, 1996). For a specific axis, the antipodes symbolize peak privilege or extreme oppression. Like this, there are several adaptations of the privilege and

oppression wheel. The illustration in Figure 5 adds more nuance to the privilege and oppression wheel. It illustrates that the further you are from power, the more marginalized you are. Your level of marginalization will likely change between categories as you try to place yourself in them.

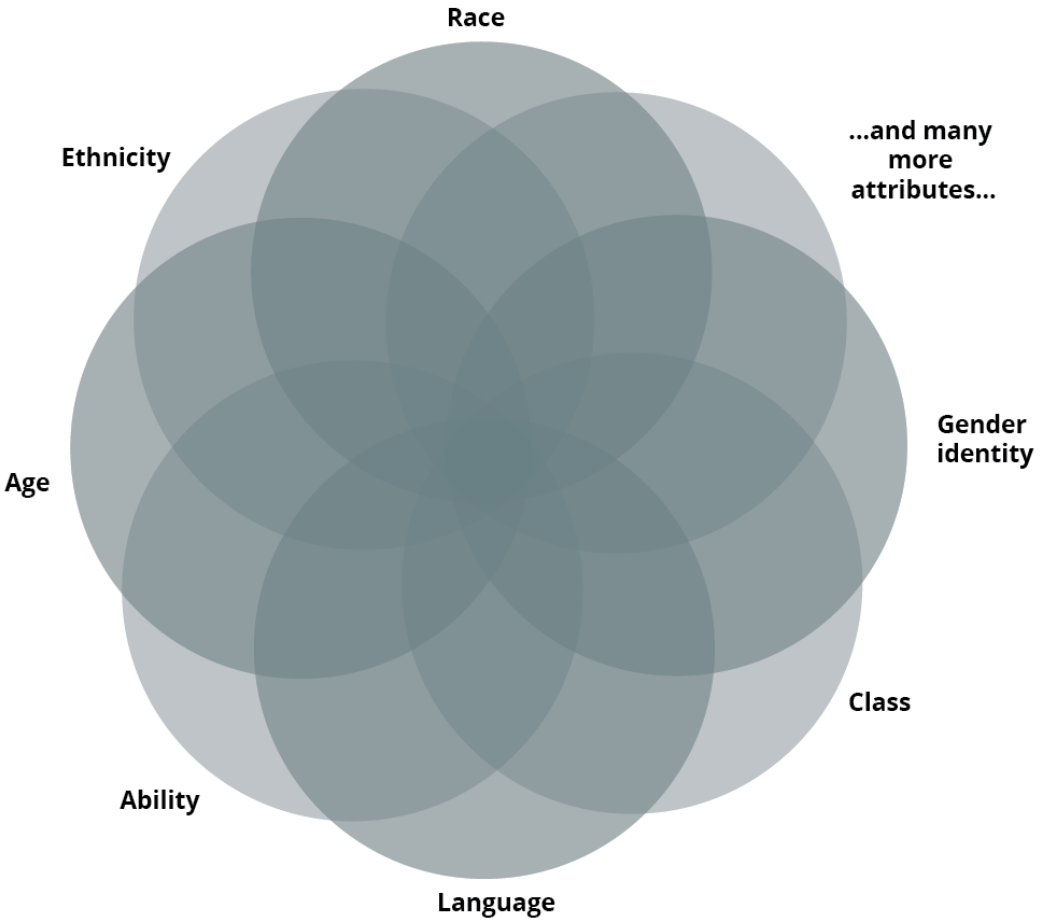


Figure 3. Intersectionality Venn diagram adapted from Sylvia Duckworth (2020a).

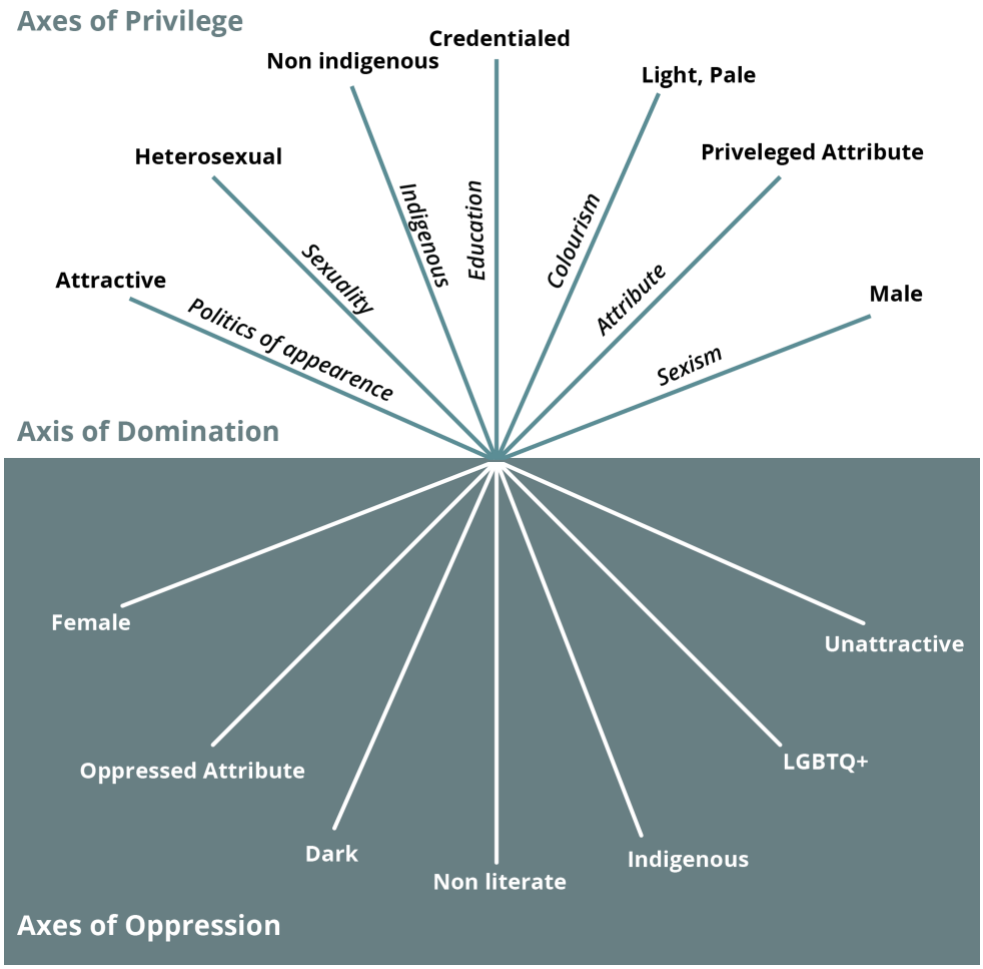


Figure 4. Privilege and oppression wheel adapted from K.P. Morgan (1996).

Figure 5. Wheel of power/privilege adapted from Duckworth (2020b).
The further you are from power, the more marginalized you will be.

When designing products and services, multiple identities, behaviours, and circumstances influence your users. These can vary from moment to moment or over time. To understand this, as designers, we can investigate or develop new tools and methods for upholding our responsibilities toward respectful design practice (Tunstall, 2017) in a relational manner (King, 1990). It is beneficial to acknowledge our privilege and use suitable adaptations of the wheel of power and privilege for your reflection and acknowledgement to gain insight into systems through an intersectional and inclusive lens.

Metaphorically speaking, digital identities can be seen as digital masks of one's image which can have several permutations and combinations of variations based on

attributes which bring with them a certain set of contextual privileges and powers. This research tries to “unmask” the value of these digital masks through critical inquiry and play.

1.4 Recognizing power as an opportunity for change

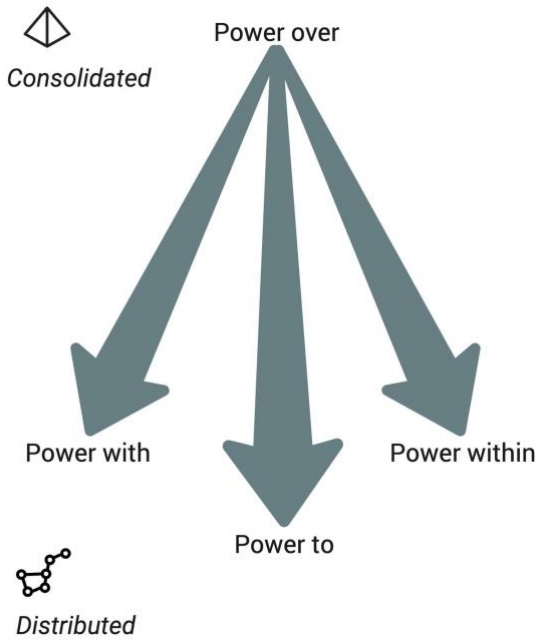


Figure 6. Recognizing power as an opportunity for change.

In the connected world we engage with on the internet today, we live in spaces where power is given and/or taken through different levels of socio-cultural-technical exchange and/or manipulation. Power, in actuality, is dynamic, relational, and multidimensional, shifting depending on the context, circumstance, and interest. Its manifestations and expressions might range from control and conflict to cooperation and reform. This can have many meanings, and it is important to understand different frameworks and dynamics of power that can exist to ideate mechanisms for empowerment for social change.

I have been inspired by the power analysis by Hunjan & Pettit (2011) in this research. See 3.2 for a detailed literature review of power frameworks. They encourage us to shift our perspective to look at power as an opportunity for change. Power is usually thought of as in a coercive manner or as “power over”. Instead of “power over” being the only expression of power, we can look for alternate expressions of power such as “power within” and “power to” with a lens of intersectionality to galvanize change there. In the book “The Power of Giving Away Power: How the Best Leaders Learn to Let Go," Matthew Barzun has developed metaphors for leadership styles, namely “the pyramid” and “the constellation”. The Pyramid represents concentrated power, whereas the Constellation represents distributed power. (Barzun, 2021, cited in Scott, 2021). I have illustrated this suggested paradigm shift in figure 6 (see Section 1.4).

1.5 Summary

In the preceding chapter I provided a brief introduction, motivation, and narrative driving the line of inquiry in this project. The next chapter gives a detailed overview of the research questions, goals and objectives and contributions.

Chapter 2. Research Summary

2.1 Overview

This chapter provides a brief overview of the research, including the problem statement, the research questions, goals and objectives and contributions. It ends with an introduction to all the chapters in this paper.

2.2 Problem Statement

Over the past 2-3 decades, digital technologies (especially Information communication technologies) have become omnipresent in our lives. Our virtual presence in the spaces created by these technologies has allowed us to receive personalized services and imagine ourselves empowering ourselves in new ways. But, as more users interact with digital services, converting the analogue details of their life into digital versions of themselves, the business models of technology companies find opportunities for capital in these endlessly growing data farms in ways that are seldom ethical. Different stakeholders of technology companies offering digital services, like the creators and funders of Big Tech companies, greatly influence power dynamics and outcomes for less powerful stakeholders like marginalized groups of people in the socio-technical, socio-economical, political, and environmental parts of their individual lives. Whether it is the misuse of data of individuals by powerful actors or the missed use of opportunities in the digital realm by the systemically disadvantaged, emerging technologies could become more of a tool of power for elites at the expense of marginalized peoples. This project seeks to critically explore power dynamics in designing new technologies to identify pathways that will assist the development of future digital services that are more inclusive and empowering for systemically marginalized people.

2.3 Research Questions

Primary question

How might we transform the design of digital services that rely on digital identities to be accessible and empowering for people from marginalized communities?

Secondary questions

- In what ways can we engage in an iterative process of transforming digital services for a better future?
- What underlying systems and ideologies shape how we design digital services today?
- Where are our digital identities, what are they and who manages them?
- How do digital services rely on digital identities?
- How can digital identities be more accessible and empowering for marginalized communities?
- How can people from marginalized communities gain more power, autonomy and control of their digital selves?

2.4 Goal and Objectives

Goal

To transform the design of digital services that rely on digital identities to be accessible and empowering for people from marginalized communities.

Objectives

- Objective 1: To deconstruct the power dynamics prevalent in the systems that shape how we design digital services today and to model system behaviours that could galvanize multiple opportunities for change.
- Objective 2: To transform the design processes of digital services to be more ethical, inclusive and accessible for marginalized communities navigating challenges in the

online world by building awareness and curiosity about digital identities and the systems and technologies governing them.

- Objective 3: To explore how a serious game about the futures of digital identities can be designed as a tool to facilitate objective 2.

2.5 Contributions

This work explores systems of digital identities from a critical and creative perspective. It does not, however, aim to define an ideal future system of digital identities or go into the technical architecture or technology design of systems of digital identities.

STATEMENTS	MISSION
- Individuals do not have the same respect and rights for their digital identities and selves as they have for their real world selves.	- To make digital services based on digital identities more accessible and empowering for people from marginalised communities.

		OUTCOMES		
Activities	**Outputs**	**Short term**	**Medium term**	**Long term**
- Secondary research - Interviews with subject matter experts - Designing a serious game prototype to enable conversations on futures of digital identities - Play-testing the game	- Power modelling of system behaviours influencing the future of digital identities - Game prototypes - Research insights	- More inclusive change making conversations about digital identity rights and design of relevant systems enabled	- Increased participation of civil society in advocating for regulations in favour of marginalized populations	- Individuals have more choice and awareness about their digital selves and they recognise their powers and rights in digital worlds.

KEY ASSUMPTIONS	AREAS FOR DEVELOPMENT
- It would be impossible to have access to needed services in the future without digital identities. - If we don't take action now, digital identities will continue to be a tool of control and power for the elite in our society to protect their business interests.	- Refinement of power models to identify more robust leverage points for intervention - Game development and testing

Figure 7. Theory of change model for the project.

Template adopted From Arts & Culture Finance (n.d.)

Interpreting the digital technology ecosystem and its power structures emerges as one of the key outputs of this research. Creative exploration in the form of serious game design of a game prototype to facilitate conversations around digital identities and discover new insights from a relational and foresight perspective is the second key output. This project kickstarts the process of improving the game's design to help collaboratively explore desirable futures. Figure 2 illustrates the theory of change model for this project.

2.6 Paper outline

This paper is divided into four sections:

Part I, Introduction: The purpose of this section is to give a brief overview and background of the entire research project and its activities. It has the following four chapters:

Chapter 1: Motivation
Chapter 2: Research questions
Chapter 3. Literature and Horizon Scanning
Chapter 4: Methodology

Part II, Modelling the present: The purpose of this section is to give insight into the systems and challenges around digital identities in the present through power models. It has the following two chapters:

Chapter 5: Experts insights
Chapter 6: Modelling the story of digital identities

Part III, Gaming the tomorrows: This section is about the design of a serious game prototype with the goal of exploring possible futures in a collaborative manner. It has the following chapter:

Chapter 7. Serious game design to explore alternate futures

Part IV, The road ahead: This section is to discuss and reflect on the outcomes of the project and set the tracks for the future of this project beyond the scope of this MRP. It has the following chapter:

Chapter 8. Conclusions

Chapter 3. Literature and Horizon Scanning

3.1 Introduction

Figure 8 illustrates the domain map and an overview of the literature for this project. 'Empowered digital selves' is the central theme. The first circle indicates: People- This project calls to action design innovation and research teams while envisioning positive outcomes for systemically excluded and marginalized communities; Places- global and local; Things- digital and physical identities, digital services; Environments- virtual spaces that depend on digital identities.

The second circle indicates the primary subject matter relevant to this project: power, digital identity, technology and design ethics, and emerging technologies.

The outermost circle indicates that I have seen everything in the inner rings from a systemic lens covering the following aspects: social, cultural, values, artistic, regulatory, economic, environmental and technological.

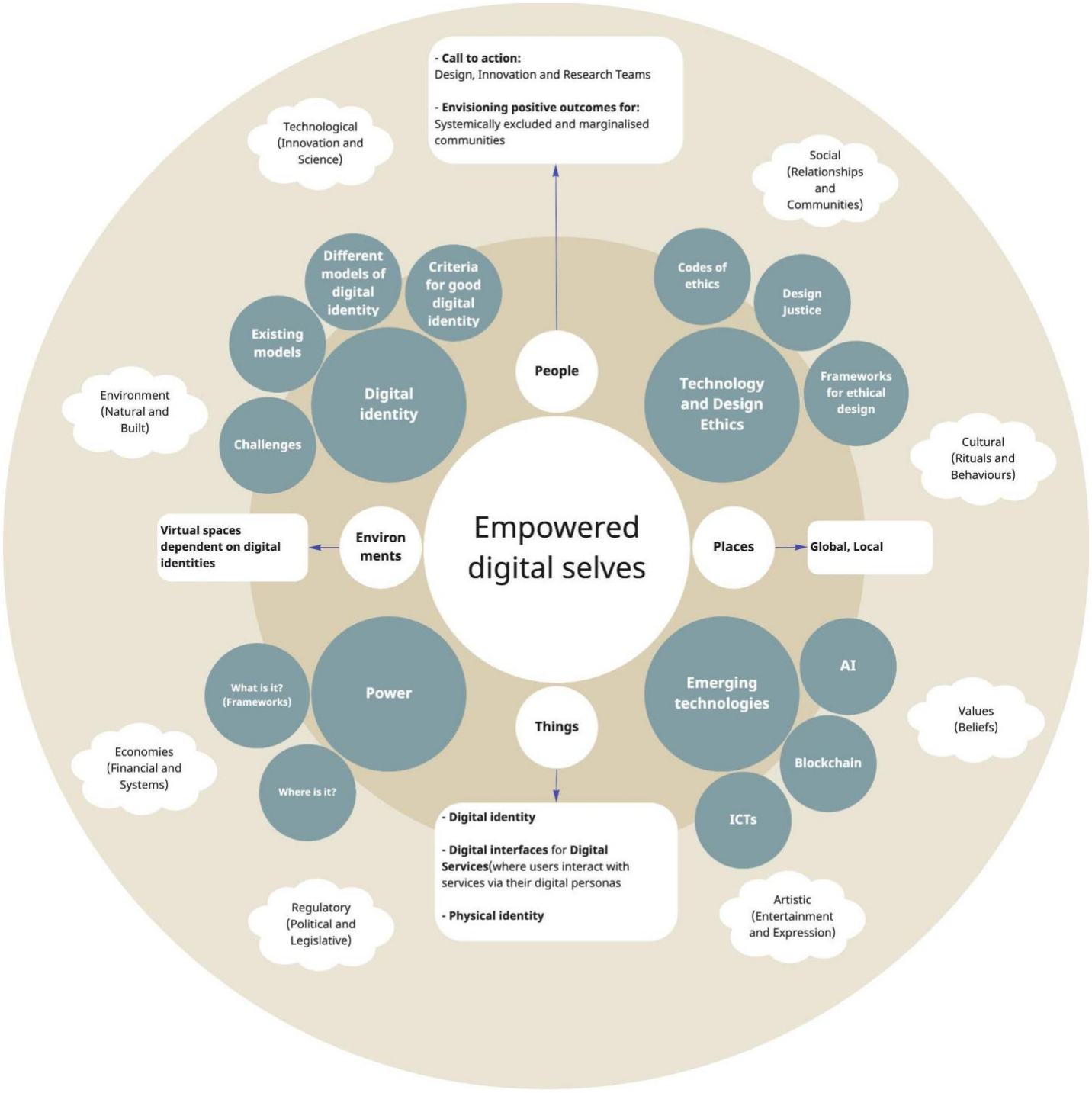


Figure 8. Domain map illustrating scope of relevant literature.

3.2 Power theories

Camacho (2018) argues that that as designers we must we mindful that power is to society what gravity is for physics and paraphrases Herbert Simon's (1969) definition of design to say that, *"Everyone who devises courses of action aimed at changing existing (social) situations into preferred ones is engaged in politics."*

Following is a literature review of different power theories and frameworks that identify how, where and why power lives and grows can help strengthen an intersectional lens on systems we seek to change in an actionable manner.

Forms of power — Expressions of power (Hunjan & Pettit, 2011)

- 'Power over' is how power is most commonly understood. This type of power is built on force, coercion, domination and control and motivates mainly through fear. This form of power is built on a belief that power is a finite resource that individuals can hold and that some people have power and others do not. There are, however, other forms of power that can lead to more positive thinking and action.
- 'Power to' is rooted in the belief that every individual has the 'power to' make a difference.
- 'Power with' helps build bridges across different interests, experiences and knowledge and is about bringing together resources and strategies.
- 'Power within' includes individual or collective sense of self-worth, value and dignity. Enhancing the 'power within' individuals builds their capacities to imagine and raise aspirations about change.

Forms of power — Faces of power (Hunjan & Pettit, 2011)

- 'Visible power': It refers to the aspects of political power that we can see, such as formal rules, structures, institutions, and procedures that influence decision-making. In other words, it is about how those in positions of power use existing policies and systems to exert control over others' actions. Elections, political parties, budgets, and laws are some examples.

- 'Invisible power': It operates in ways that cause people to adopt belief systems created by those in power. Problems and issues are kept off the decision-making table, as well as out of the minds and hearts of those affected by these decisions. Negative stereotypes that limit the roles of certain groups are examples.
- ‘Hidden power’: When influential people and institutions maintain their influence by setting and manipulating agendas and marginalizing the concerns and voices of less powerful groups, this is referred to as "hidden power." Some consultation processes, for example, exclude some voices and set their agenda behind the scenes.

Spaces of power (Hunjan & Pettit, 2011)

- ‘Closed’: When decisions are made behind closed doors, often without providing opportunities for inclusion, spaces are closed. Cabinet meetings, boards of directors, and local government councils are examples.
- ‘Invited’: Spaces are invited when various authorities invite citizens, beneficiaries, or users to participate in decision-making processes. For example, public consultations.
- ‘Claimed: Spaces are created/claimed when less powerful people band together to create their own space and set their own agendas. For example, grassroots campaigns, neighbourhood meetings, and social movements.

Realms of power (Hunjan & Pettit, 2011)

- ‘Public’: The public realm of power concerns aspects of one's public life and what is visible, such as employment or community role.
- ‘Private’: Family, relationships, friends, and marriage are examples of private realms of power.
- ‘Intimate’: It refers to psychological factors such as self-esteem and confidence.

Domains of power (Collins, 2000)

Patricia Collins created the concept of ‘matrix of domination’ in her book, “Black Feminist Thought: Knowledge, Consciousness, and the Politics of Empowerment” from the lens of Black feminism. Racism as a system of power is organized into four interrelated domains:

- Structural domain: organizes oppressions in the form of laws and policies. For example, residential segregation prevents most Black women in the United States from attempting to access certain educational and employment opportunities. Collins suggests that the way to empower in this domain of power is to transform social institutions.
- Disciplinary domain: The disciplinary domain of power administers and manages oppression. Social institutions' organizational practices manage power relations and exert control over specific subpopulations by enforcing laws and policies. Collins suggests that resistance to such practices must come from within the organization for empowerment to occur in this domain.
- Hegemonic domain: Hegemony is defined as a dominant group's system of ideas that justifies their practices and it occurs when and the dominant group's ideology, culture, and consciousness become so dominant it becomes part of everyday life. Culture and media often circulate oppressive ideas. Collins suggests that choosing self-definition over societal definitions of one's personhood results in empowerment within the hegemonic domain of power.
- Interpersonal domain: Individual experiences and intersecting oppressive systems, such as settler colonialism, race/structural racism, gender/patriarchy, class/capitalism, sexual orientation/heterosexism, age/ageism, ethnicity/ethnocentrism, and disability/ableism, are all included in the interpersonal domain. Collins suggests that empowering individuals in this domain looks like adopting a point of view that empowers individuals rather than using one's knowledge to exploit, commodify, or objectify members of marginalized groups.

Laws of Power (Eric Liu, 2017)

Three laws of power in civic life according to Eric Liu in his book, “You’re More Powerful Than You Think: A Citizen’s Guide to Making Change Happen”:

- Power compounds/concentrates: Power or powerlessness feeds on itself and compounds.

- Power justifies itself: People in power invent narratives to legitimize the power that they have.
- Power is infinite: There is no limit to the amount of power people can accumulate.

Stemming from these three laws of power, Liu proposed three rules for action which can be summarized below:

1) Because: power compounds, creates monopolies, and is “winner-take-all” → You must change the game. To change the game, you can:
    a) Adjust the arena.
    b) Re-rig the rules.
    c) Attack the plan.
2) Because power creates a story to justify why it’s legitimate →You must change the story. To change the story, you can
    a) Describe the alternative.
    b) Organize narratives.
    c) Make your fight a fable.
3) Because power is assumed to be finite and zero-sum → You must change the equation. To change the equation, you can:
    a) Act exponentially.
    b) Act reciprocally.
    c) Perform your power.

Politics at the interface (Kannabiran & Petersen, 2010)

Kannabiran & Petersen found the following implications for design through the lens of Foucault's notions of power:

- Designer: The designer is another active stakeholder in negotiating power relations in Foucauldian power analytics. Such an implication acknowledges the influence of other stakeholders as active agents rather than putting sole responsibility for the designed system on the shoulders of the designer.

- Interaction: Interaction between the user and the system is not just a means to achieve a specific result; one can view the mundane activities of interactions as an active negotiation of power.
- Users: Users are active agents rather than passive external parts of a designed system in a Foucauldian power analysis. This shift in attitude allows us to rethink the user's role in power dynamics.
- User behaviour: Emergent relationships and behaviour in the system may be seen as a regular performance and contestation of power relations. This understanding also helps account for the day-to-day activities of users immersed in local contexts and not dismiss them as mundane and insignificant.

3.3 Digital Identity

Defining digital identity

"The future of digital identity" report by Future Agenda (2019) identified five working definitions of the term "digital identity", which all come under the umbrella term of "digital identity":

1. *'Set of me'*: Any or all data we create, or is created about us contributes in some way or the other to the digital self.
2. *'Digital personae'*: Social identities deliberately created by users in one or more digital spaces that may or may not have some relation to the person's real-world identity. E.g., creation of dating profiles on dating applications, creation of characters in video games or a collection of attributes on social media, etc.
3. *'Digital ID'*: Set of verifiable personal data "attributes" that is digitally stored and can be used to identify people or machines in a digital system.
4. *'Digital entities'*: It refers to how "entities" are tracked within a system. Entities could be either human with personal data attributes or devices with identification numbers.
5. *'Authentication tools'*: Tools like username and password combinations, biometric authenticators and more are used to verify account holders, digital entities, owners of data, or attribute sets.

However, it should be noted that these terms are not mutually exclusive, and there are often several overlaps.

Identity spectrum

We have multiple identities of many types across digital systems. Young (2010a) has identified this multiplicity through the "Identity spectrum" (adapted as an infographic in Figure 9).

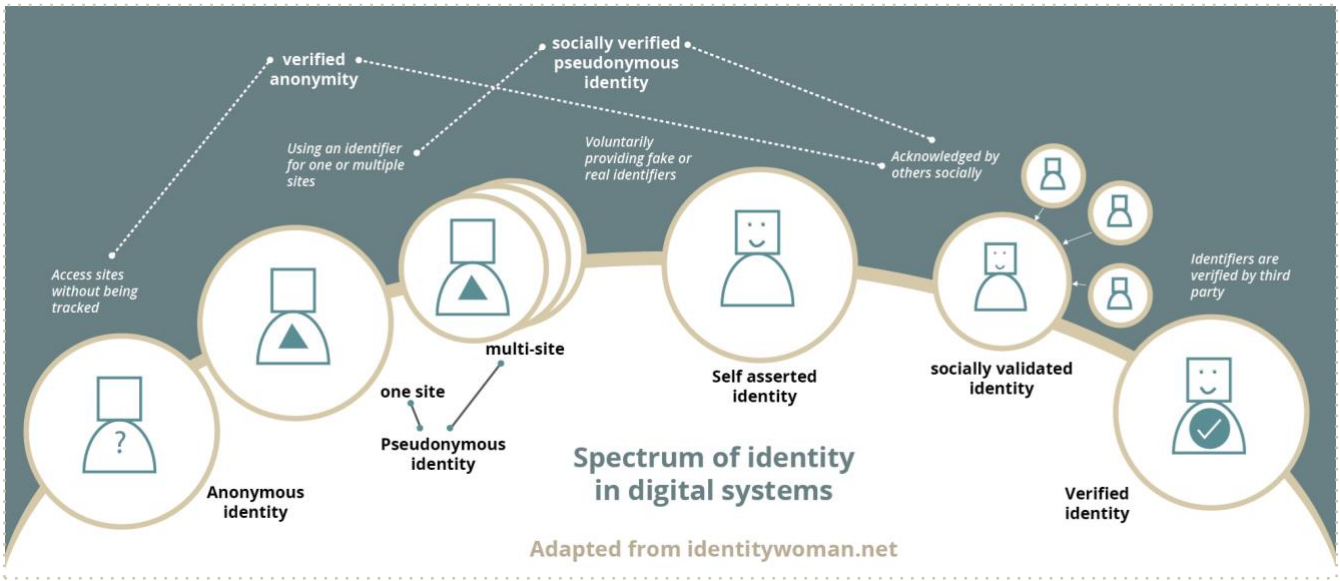


Figure 9. Infographic of Identity spectrum adapted from Young (2010a).

It gives an understanding of the different kinds of identity possible in digital systems.

Defining good digital identity systems

In 2018, at the World Economic Forum's (2018) Annual Meeting in Davos, a community of stakeholders from civil society, government and business came together to collectively identify a set of five key elements of designing user-centric digital identity:

1. *Fit for purpose:* A Fit for purpose identity system provides accuracy (precise in details and up to date); uniqueness (each individual's uniqueness can be established by tools like biometrics or unique identifiers. Biometric data however, is sensitive personal information and if biometrics is poorly designed, it may lead to exclusion);

sustainability (long term financial feasibility and functional longevity is needed, i.e supporting the evolving needs and values of users and technological evolution) and scalability.

2. *Inclusive:* An inclusive identity system allows users to create and use a digital identity without fear of discrimination based on their identity-related data and without being subjected to processes that exclude them. One more factor that designers must take into account is how technology can support widespread adoption without widening the digital divide.
3. *Useful:* A useful digital identity system must offer utility, convenience, ease of use (usability with less friction) and interoperability and portability (working across devices and sectors).
4. *Offers choice:* Individuals should have the ability to choose what data they share for which interaction, with whom, and for how long. The principles for this element include transparency, privacy, data protection and user control.
5. *Secure:* A secure digital identity system must offer protection (cyber security), data integrity and data liability (adequate remediation and responsibility in the event of a security breach).

Digital identity system archetypes

The identity systems of today and emerging identity systems of tomorrow can fall into three main archetypes: centralized, federated and decentralized (World Economic Forum, 2018, p. 12).

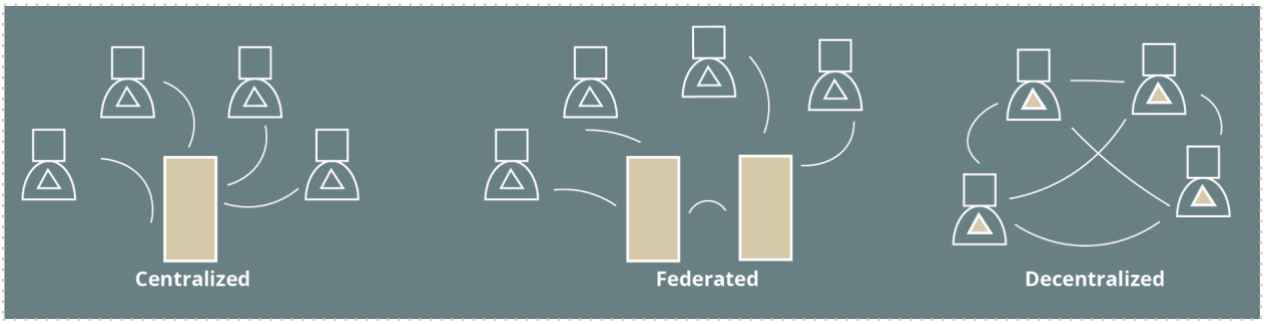


Figure 10. Identity system archetypes.

1. *Centralized identity systems* are those in which a single organization owns and manages the identity. Governments have widely adopted these; in some cases, their use is mandated by law. Social media platforms are another example of a centralized archetype as they provide authentication services to access other digital services. Similarly, banks provide identity systems to access financial services. India's Aadhar program is an example of a successful centralized system adopted by more than 90% of its citizens.

2. A *federated identity system* is one in which two or more centralized system owners establish mutual trust, either by distributing components of proofing and trust or by mutually recognizing each other's trust and proofing standards. For instance, in Sweden's BankID system, many banks accept each other's credentials in a federated system. Like the centralized archetype, Individuals have little choice over how their data is used in this system.

3. A de*centralized identity system* is one in which multiple entities contribute to a decentralized digital identity. Decentralized identity systems consist of an individual-managed digital device and an individual-managed identity data store. This data store, typically the user's device memory or cloud storage, contains attestations from trust anchors (authoritative sources of identity proofing) such as governments, banks, employers, retailers, media outlets, or personal relationships. The individual determines which attestation or data attribute to share and who will have access to it. This archetype is relatively new and has not been widely adopted. One example of use case is, in 2018, the island country of Malta piloted a program where, using blockchain technology, educational institutions could issue credentials to students.

Emerging decentralized digital identity systems

Several alternate decentralized systems have emerged as possible solutions. The digital movement that recognises an individual's right to own and control their identity without the intervention of administrative authorities is known as self-sovereign identity (SSI). Self-Sovereign Identity (SSI) is a decentralized identity layer allowing individuals to

assert their identities. SSI is a set of standards and protocols that can use blockchains to store immutable records or make privately held data available to a small group of people (Vescent et al., 2019). Weyl et al. (2022) proposed the concept of Soulbound Tokens (SBT) .Soulbound tokens are fungible, non-transferable tokens that are displayed in a digital wallet. One soul (person) gives these tokens to another. When an individual obtains an SBT, it is bound to them and is not exchangeable for anything else. However, Edwards (2022) observes substantial concern that implementing SBTs may result in forming a public system of social merit, similar to China's social credit system (Canales, 2021). On the other hand, SSI seeks to address the issues of the future of digital identities with privacy-focused technology, and interest in SSI is already growing. With the EU commission urging that all Europeans have a secure digital identity by 2021 (European Commission, 2021), increasing government funding would assist SSI in expanding into critical global areas such as education and healthcare.

Emerging new identity ecosystems

Almost every emerging technology that is already in use or will be used in the future has digital identity as a core aspect of its mechanics. Identities could become more interoperable across borders such as in the X-Road data-exchange platform used by Estonia and Finland (*X-Road® Data Exchange Layer*, n.d.) and across sectors. How people own and manage their identity-related data may change due to new technologies and architectures, such as distributed ledger technology, like ongoing implementation of the EU digital identity wallet (Paul Mart, 2022). Policy-makers will have to keep pace with the evolving digital identity landscape to shape laws and regulations that enable innovation, while safeguarding data, privacy and other constitutional rights (Thales Group, 2021).

The Trilemma of digital identity

Trilemmas are three goals where all three are not achievable simultaneously. Adapting the *Decentralized Identity Trilemma* from Laskus (2018), White (2022) notes that digital identity has its own trilemma of privacy, Sybil resistance (resistance from a type of online security threat called Sybil attack in which an individual attempts to take over the network by establishing numerous identities, nodes, or machines), and decentralization. In the future, technology companies could constantly find themselves in similar trilemmas,

and it would then be a question of putting the needs of the consumers first without compromising their business models.

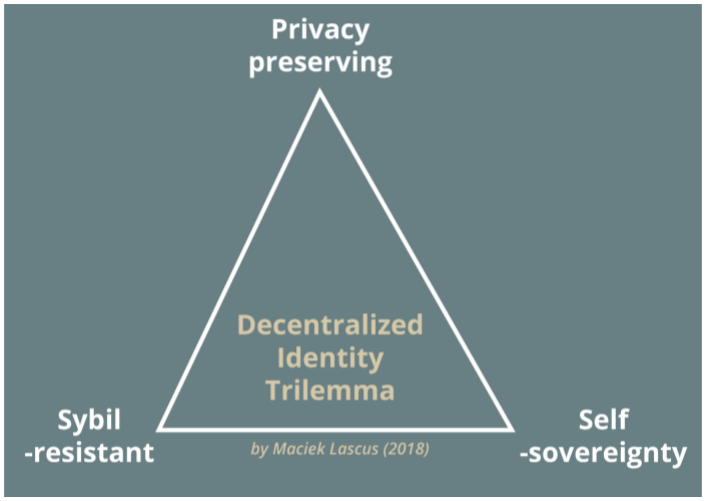


Figure 11. Decentralized identity trilemma by Maciek Lascus (2018).

3.4 Trends in emerging technologies

Emerging technology refers to enabling and innovative technology that has the potential to have a wide range of existing and future applications. The technologies of interest in this study are primarily Information and Communication Technologies (ICTs). The following trends in emerging technologies relevant to the future of users and their digital identities have been identified in this research-

The rise of the informed digital consumer

People no longer seek information; instead, it comes to them as social networks expand in prevalence, leading to the creation of a new type of consumer: the digital consumer (Scriptutex, 2018).

Social media platforms are being used as tools to demand justice for victims of systemic inequity, while others are using it to hold the platforms themselves accountable. On TikTok in 2020, Black users demanded that platforms address their own internal biases

and elevate the content of creators of colour at the same rate as white creators (Rosenblatt, 2020). The app apologized to its Black users, admitted to inconsistencies in what content they would promote on it, and promised to do better in the future.

Another trend driven by informed consumers is the prevalence and use of ad blockers, which are technical methods for automatically removing or changing advertising content on a Web page, such as videos, photos, and text (Blue Onion Media, 2016). There is also an increasing demand for alternatives to technology monopolies such as Google that are more user centric and privacy focused: DuckDuckGo, an Internet privacy company, has launched "App Tracking Protection," which allows users to opt-out of data tracking within apps (DuckDuckGo, 2021). Another of its products is an email protection service that removes hidden ad trackers from incoming emails that can detect and protect your email address's privacy without requiring you to change email services or apps (Iyer, 2022).

There is an increasing demand and advocacy for safer digital futures and accountability and credibility on the part of technology companies offering digital services. Internal Facebook documents leaked by whistleblower Frances Haugen in 2021 revealed that Facebook was aware of the adverse social effects of its platforms and that the company has been negligent in eliminating violence, misinformation and other harmful content from its services (Horwitz, 2021). The leak resulted in reporting from The Wall Street Journal as The Facebook Files series, as well as the Facebook Papers, by a consortium of news outlets, resulting in a Facebook boycott. Whistleblowers highlight issues critical to the organization's success but would otherwise go unnoticed. In the future, more business leaders may see whistleblowers as essential to maintaining good relations with employees, customers, regulators, suppliers, and competitors.

The metaverse: a gold rush of branding

The metaverse concept sees a gold branding rush in the emerging technology space. The COVID-19 epidemic prompted several businesses to transition to virtual experiences, settings, and resources and relocate to the virtual world to stay in business. The metaverse is a proposed/anticipated development in virtual life. It was first introduced by Stephenson (1992) as a person's transition to another virtual world, away from the one we live in now,

made possible by virtual reality equipment. Throughout all conceptions of the metaverse, the function of digital identity is consistent. Our visual and verbal personas within this digital space would become a part of our identity. There has been an increase in metaverse branding of tech companies like Facebook (now known as Meta) and Microsoft, introducing virtual and augmented reality-centric products (Brown, 2021; Kovach, 2022). Making the concept of metaverse possible as a seamless experience and a widely adopted idea in the future would require cooperation among tech giants. Moreover, it would require developing a whole new set of infrastructures accessible to a socioeconomically diverse group of populations.

Growing (and persisting) socio-technical system challenge

Some trends that could continue exacerbating socio-cultural challenges and disadvantages for marginalized populations in emerging digital ecosystems are worth noting.

Various scholars have recently noted discriminatory bias towards marginalized populations in emerging tech (Benjamin, 2019; Buolamwini, n.d.). For example, in AI, social biases influence the data used to "train" computer programmes, which helps entrench inequity. COMPAS, an artificial intelligence technology used in courts across the United States to forecast future crimes, was shown to be discriminatory toward Black defendants in a 2016 ProPublica study (Mattu, 2016).

There is a widening divide in access to communications technology between developed and developing countries, urban and rural people, young and old, men and women, which causes significant disparities in access to resources, healthcare, products and services, and education. Some users manage their identity data under strict privacy or security measures; on the other hand, some users have no digital identity. An article by Desk & Zaobao (2022) highlights how the elderly in China struggle to integrate smartphone usage into their lives to access services. EngageMedia (2022) reported that the economically marginalized in India struggled to navigate digital adoption in India amid the unplanned lockdowns during the COVID-19 pandemic.

3.5 Design justice

Monteiro (2019), in his book, *Ruined by Design: How Designers Destroyed the World, and What We Can Do to Fix It,* wrote an open source code of ethics for designers in efforts to create a tool of responsibility such as the Hippocratic oath that other professions like doctors have. He argues that design is a political act and what we choose to design, or not to design, or what we choose not to include in our design process are all political acts. Costanza-Chock (2020, pg. 23) describes Design justice as a framework for analysis of how design simultaneously distributes both penalty and privilege to individuals based on our location within the matrix of domination. (Collins, 2000). According to the Costanza-Chock, Design justice is *"a growing community of practice that aims to ensure a more equitable distribution of design benefits and burdens; meaningful participation in design decisions, and recognition of community based, Indigenous, and diasporic design traditions, knowledge and practices."*

There is a growing design justice community. The Design Justice Network hosts a living document of design justice principles noted below (The Design Justice Network, 2018). It also invites designers to show their commitment by being signatories to the principles:

- *"Principle 1: We use design to sustain, heal, and empower our communities, as well as to seek liberation from exploitative and oppressive systems.*
- *Principle 2: We center the voices of those who are directly impacted by the outcomes of the design process.*
- *Principle 3: We prioritize design's impact on the community over the intentions of the designer.*
- *Principle 4: We view change as emergent from an accountable, accessible, and collaborative process, rather than as a point at the end of a process.**
- *Principle 5: We see the role of the designer as a facilitator rather than an expert.*
- *Principle 6: We believe that everyone is an expert based on their own lived experience, and that we all have unique and brilliant contributions to bring to a design process.*

- *Principle 7: We share design knowledge and tools with our communities.*
- *Principle 8: We work towards sustainable, community-led and -controlled outcomes.*
- *Principle 9: We work towards non-exploitative solutions that reconnect us to the earth and to each other.*
- *Principle 10: Before seeking new design solutions, we look for what is already working at the community level. We honor and uplift traditional, indigenous, and local knowledge and practices."*

3.6 Summary

The key learnings from this chapter was a background literature review on the key themes of this project on power theories, digital identity, trends in emerging technologies and design ethics. The next Chapter, "Methodology" is about the methods, tools and process of the research project.

Chapter 4. Methodology

4.1 Overview

The project methodology can be characterized into three phases: The knowledge gathering phase, the game design phase and the evaluation and future work phase(see figure 4).

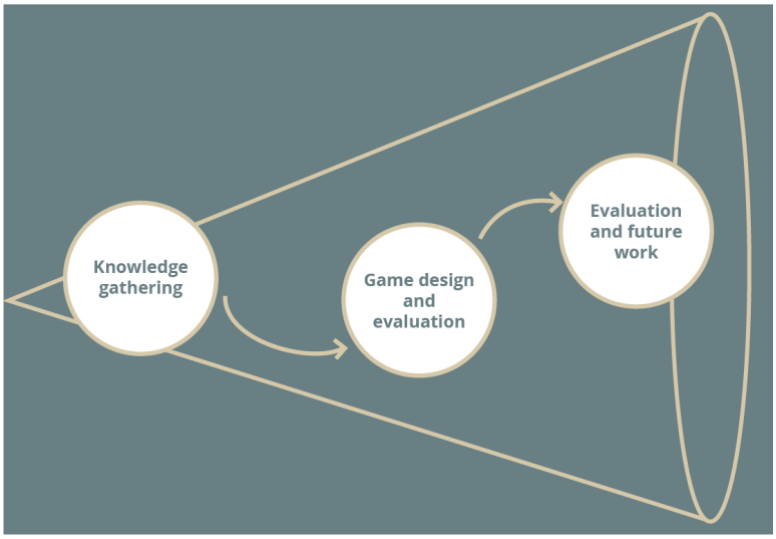


Figure 12. Overview of methodology described in sections below.

4.2 Knowledge gathering

The knowledge gathering phase includes the motivation, literature review, boundary framing for the research work and pursuing deeper understanding of the system under study.

Domain map and literature review

(see Chapter 3)

The research began with the exploration of the digital self and unpacking the meaning of identities and digital identities. I studied systems shaping the problem, and a simple domain diagram of the area of focus was created as a guide to evolve throughout the study with the help of a thorough background literature review (Hines & Bishop, 2015).

Scanning

(see Chapter 3)

The goal of scanning is to identify developments that have the potential to fundamentally change or disrupt the issue or system under study (Policy Horizons Canada, n.d.). Weak signals of change were found and key trends were identified that could shape the future of digital identities.

Experts interviews

(see Chapter 5)

I conducted semi-structured interviews for 60-90 mins each with three subject matter experts working in different parts of today's technology ecosystem (See Appendix A). My goal in conducting interviews was to understand challenges in the digital identity systems and discover where designing for autonomy and inclusion of digital selves lie in the future work of designers.

Based on the preliminary project research questions, an interview discussion guide was created to guide the semi structured interviews (See Appendix B).

The interview transcripts were analyzed using thematic analysis, which involved coding different parts of the transcript and then affinity mapping the coded blocks to glean insights from them.

Modelling complex system behaviours

(see Chapter 6)

Iterative inquiry

(see section 6.2)

Iterative Inquiry is a tool for understanding system hierarchy and investigating the purpose, functions, structures, and processes associated with each subsystem. It establishes the boundaries of analysis and power relations, the interpretation of the social meaning and the value implications of the choices made. Several iterations of the iterative inquiry framework (Jones & Ael, 2022) were done based on literature review to find the system boundaries and intersecting domains of interest.

Systemigram

(see section 6.3)

Systemigrams are a communication tool allowing compact graphical depiction of a single complex system, problem, or event. We can use them to tell the story of an entire system or focus on individual system components (Boardman & Sauser, 2008). Systemigram was used in this project to identify patterns of actors, processes, and effects in ecosystems relevant to the digital services we use and digital identity pertinent data circulated to multiple parties for profit.

Stakeholders needs matrix

(see section 6.4)

To identify the system's key stakeholders, I performed a stakeholder analysis. The needs of stakeholders were then prioritized by this analysis and listed, followed by the discovery of interdependences between the various needs of stakeholders. This analysis helps visualize how the needs and priorities of stakeholders are interdependent and the levels of influence the stakeholders may have.

Story loop diagrams

(see section 6.5)

I constructed story loop diagrams based on the preliminary findings of the project research. A Story Loop is a causal loop diagram that is built and presented in the form of a system narrative (Jones & Ael, 2022). It is an effective tool for making sense of social complexity and developing a shared understanding of the most critical issues, interdependencies, and causal relationships among system variables

among stakeholders. Some system archetypes (system archetypes are common, dysfunctional patterns within organizational systems that frequently recur) were identified in the story loops and conversely created and added to the story loop diagrams.

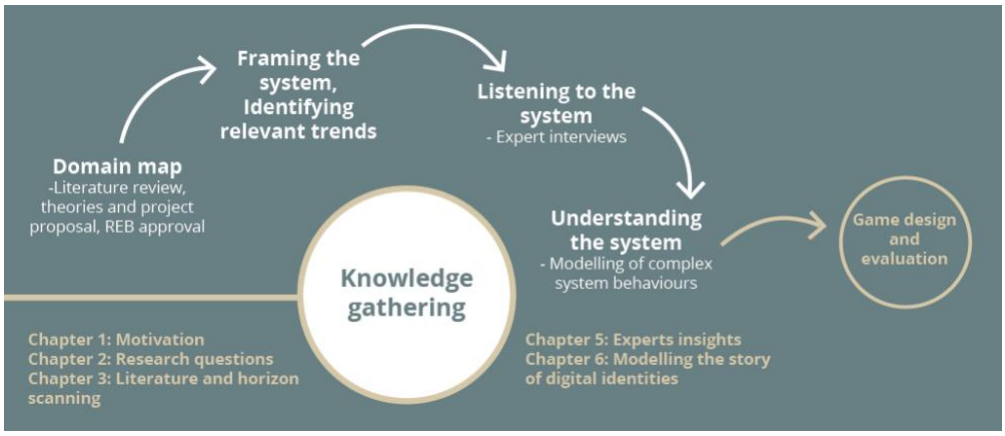


Figure 13. Overview of knowledge gathering section of methodology.

4.3 Game design and evaluation

(see Chapter 7)

Serious game design literature review

Serious games are games that serve a purpose other than entertainment. They are used to promote learning and behaviour change. Serious gaming is used in various settings, including education, healthcare, marketing, and other businesses and industries. A review of the literature behind the design of serious games was conducted. Additionally, several serious games in design and foresight were reviewed for the purposes of learning.

Prototyping

After selecting a game design method and several inspirations and metaphors for the game design, the game mechanisms were prototyped using pen and paper, and then on an online collaborative software, Miro.

1st phase of game development and testing

The game was playtested with workshop participants that were recruited by me. Insights from the workshop were then used to develop and iterate on the game design and create a third prototype.

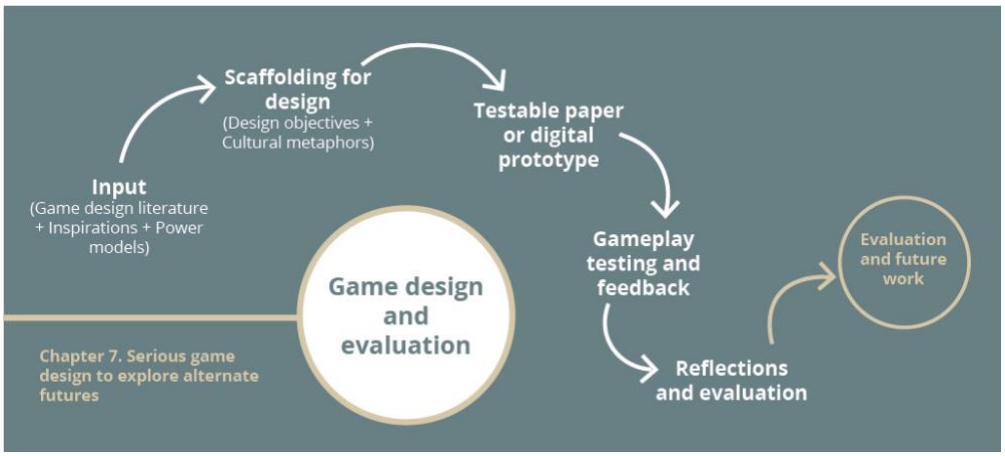


Figure 14. Overview of game design and evaluation section of methodology.

4.4 Future work

Second phase of testing and game development

The focus is on the phase 1 prototype in the bounds of this MRP. The game will continue to be developed further through several more rounds of testing and game design. As more and more stakeholders will engage with the game, it will help germinate more conversations around digital identity and hopefully inspire change.

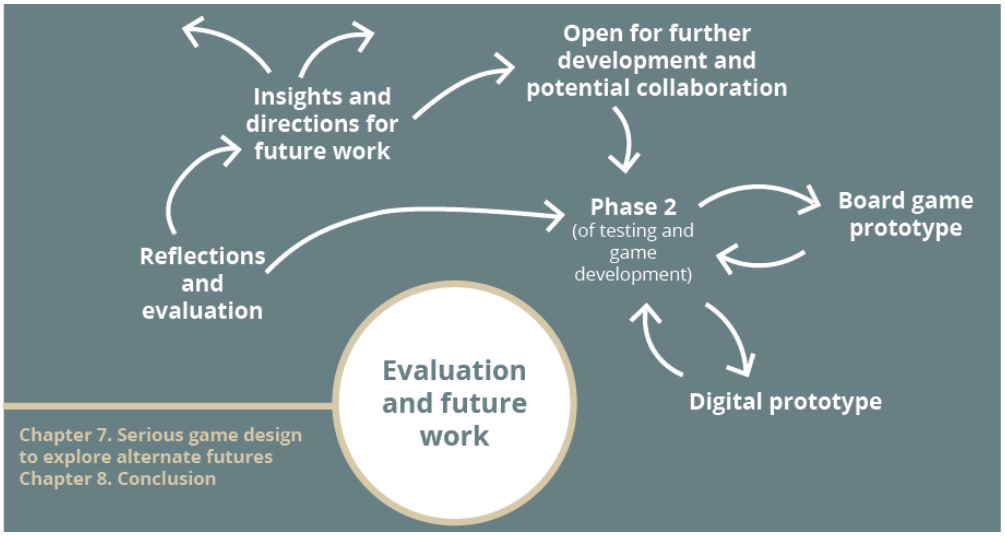


Figure 15. Overview of evaluation and future work section of methodology.

PART II: MODELLING THE PRESENT

“

What happens when we understand the data as a body? If we take what we understand about bodily autonomy and think about what it means for our digital twins or digital representations to be treated with that same dignity and respect as opposed to alternative models or metaphors where some are proposing that we see personal data as property that can be bought and sold. But we've decided we can't buy and sell people and we certainly aren't buying and selling pieces of ourselves so why would we be buying and selling pieces of our digital representations of ourselves

”

- Kaliya Young (The Stoa, 2020)

Chapter 5. Experts insights

5.1 Overview

I obtained learnings from three experts into the ground reality of challenges in the tech innovation and digital identity ecosystem through semi-structured interviews with three industry subject matter experts. The methodology for the interviews and their analysis has been described in Chapter 4.2. (See Appendix A, for expertise of the subject matter experts and see Appendix B for the interview discussion guide). I was able to learn more about the possible answers to the following three questions:

- What would be a tech ethics approach to the design of future digital services where users have greater power to manage and affect the outcomes of their digital identities?
- What systemic challenges must we address in digital identity systems from the point of view of technical communities developing infrastructure for digital identity?
- How might we influence the design and innovation side of digital services to be more inclusive of the digital identities of vulnerable and marginalized populations?

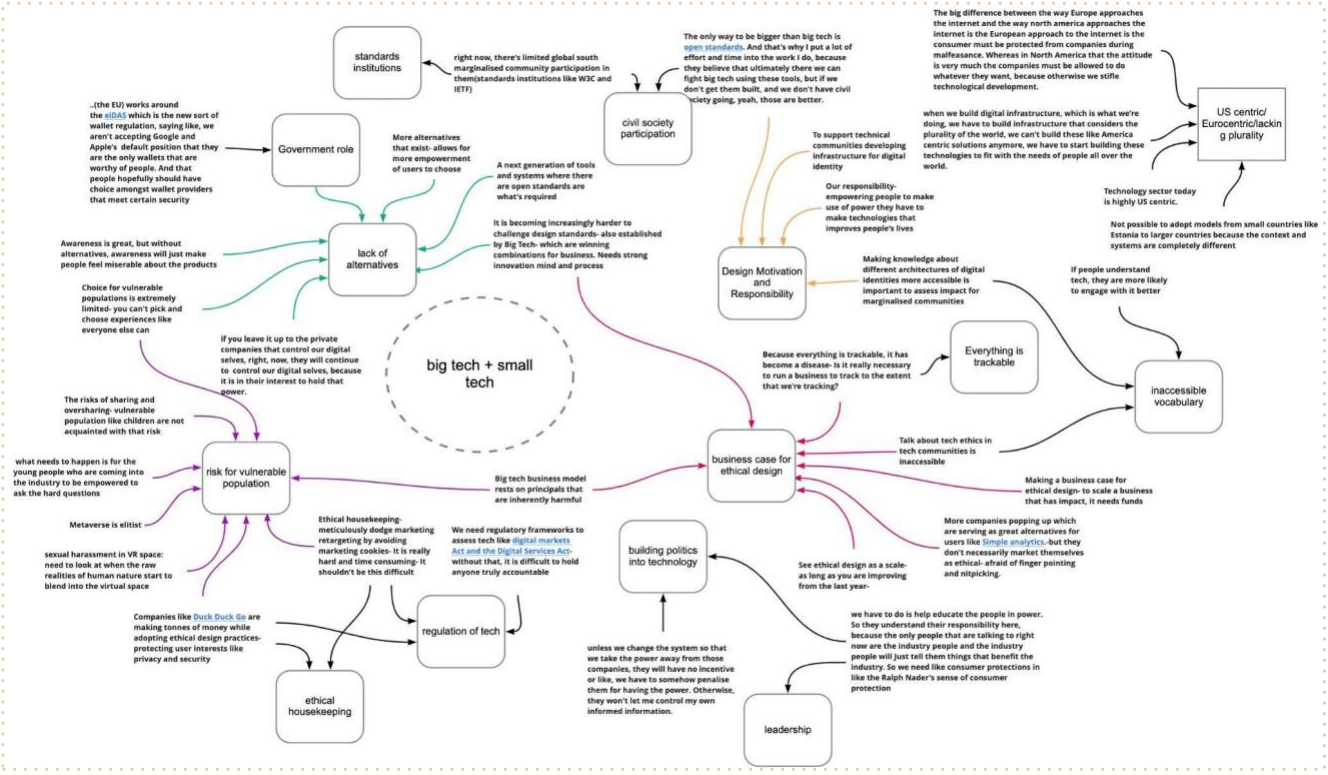


Figure 16: Snapshot of one of the resulting affinity maps from the experts interview analysis.

5.2 Insights

Here are the key learnings from the analysis:

1. Literacy on tech ethics is inaccessible in tech communities
2. Lack of literacy on architectures of digital identities
3. Burden of ethical housekeeping
4. Lack of plurality in tech
5. Lack of alternatives
6. Small tech: making the business case for ethical design
7. Civil society participation
8. Politics of technology
9. Regulation of tech

1. Literacy on tech ethics is inaccessible in tech communities

"...the people who tend to talk about ethics are people like me, and the way we tend to talk about ethics makes it inaccessible to people who don't have a background in it." (Morten Rand-Hendriksen, subject matter expert interview, July 2022)

Most tech education does not include ethical training. Literacy on tech ethics could give a solid foundation for those who want to do the right thing to have informed conversations about ethical questions and do their jobs more ethically

2. **Lack of literacy on architectures of digital identities**

"Digital identity isn't one thing...different architectures are different. And it's that discernment about what the actual architecture is that is critical before becoming both as part of an analysis of whether it's potentially good or bad for marginalized communities." (Kaliya Young, subject matter expert interview, July 2022)

Making knowledge about different architectures of digital identities more accessible outside the tech community is important to assess the impact for marginalized communities.

3. **Burden of ethical housekeeping**

Meticulously dodging targeted marketing by avoiding marketing cookies is hard and time-consuming. It should not be this difficult to feel in control of our digital realities online. For example, whenever you use Google services such as Search, Maps, Gmail, and YouTube, they record your information from beginning to end. Alternative search engine, DuckDuckGo, allows you to search without aggressive online tracking. It does not use cookies to identify you or your searches (Holly Habstritt Gaal, 2019). Rather than identifying you personally, user data gathered by DuckDuckGo is only used to improve the service with things like flagging common misspellings.

4. **Lack of plurality in tech**

"...the whole technology sector as it is today, is extremely US centric...Other Western nations, modify the standards, but there's still modifications over the theme that like they're variations on the same theme that the Americans have set out....if you go to India or Pakistan, where there's a lot of remote workers who work for us tech companies, they then have to adopt that hyper Americanized way of thinking about things which does not fit with how things

work in those regions. But that's where the money is." (Morten Rand-Hendriksen, subject matter expert interview, July 2022)

The technology sector today is highly US-centric. Silicon Valley (home to Big Tech companies) in the USA dominates most of the digital economy today globally. Several scholars, like Sareeta Amrute (2020) and Michael Kwet (2021), define this problem as "digital colonialism" or "tech colonialism," which is the use of digital technology for political, economic, and social dominance over another nation or region.

To challenge this problem, when we build digital infrastructure, we have to develop infrastructure that considers the plurality of the world. Adopting models from small countries like Estonia to larger countries (or vice versa) is not feasible and sustainable in the long run because the context and systems are entirely different and constantly evolving locally. We have to start building these technologies to fit the local needs of people around the globe.

5. Lack of alternatives

"Awareness is great, but without alternatives, awareness will just make people feel miserable about the products" (Trine Falbe, subject matter expert interview, July 2022)

As more alternate digital products and services exist besides those offered by Big Tech, the availability of more solutions will empower the users to make choices. More choices will be crucial for marginalized and vulnerable people with an even narrower width of accessible choices compared to the more privileged members in relation to the individuals' contexts. More companies like Simple Analytics are popping up, serving as great alternatives for users. But they don't necessarily market themselves as ethical and are not as visible a choice as they should be.

"...The only way to be bigger than big tech is open standards. And that's why I put a lot of effort and time into the work I do because they believe that ultimately there, we can fight big tech using these tools, but if we don't get them built, and we don't have the civil society going- yeah, those are better." (Kaliya Young, subject matter expert interview, July 2022)

One way to increase plurality in tech is through open standards. An open standard is a set of specifications and rules that describe the design of something, such as a programme or device, and are accessible and usable by anyone. These rules are typically standardized by an independent international standards body to ensure they are best to practice while being fair

to both users and creators. This can lead to healthy competition and cooperation between different tech companies.

6. Small tech: making the business case for ethical design

Trine Falbe writes in her book, “The Ethical Design Handbook” (Falbe et al., 2020) that surveillance capitalists, or Big tech, are inherently unethical by the design of their business models. Even if we push for regulation against them, at best that will limit the harms of the current systems, but fail to prevent harms inherently being built into future technologies. She highlights the Small Technology initiative which essentially says that the best antidote to Big tech is Small tech. The Small Technology Foundation (*About*, n.d.) defines Small tech as “everyday tools for everyday people designed to increase human welfare, not corporate profits''. It is the individuals who own and control small tech, not corporations or governments.

However, designers are struggling to challenge the business model established by Big Tech, which rests on inherently harmful principles. It takes a robust collective innovation mind and process ingrained into the values of a business on an organizational level to enable transformation. More companies are popping up, serving as great alternatives for users like Simple analytics. Still, they don't necessarily market themselves as ethical, fearing finger-pointing and nitpicking if they claim to be ethical. Designers need to be able to talk about ethical design without it coming across as you're failing unless you're at 100%. There's a scale for improvement in ethical design, and as long as you've improved from last year, you're improving on that scale.

7. Civil society participation

“Right now, there is limited global south & marginalized community participation in standards institutions like W3C and IETF...And I think these standards institutions are one place that isn't understood (as a venue to impact the future), where often people aren't showing up to participate.” (Kaliya Young, subject matter expert interview, July 2022)

We see little advocacy by grassroots social justice organizations focusing on the technical aspects of digital identities. There is potential for a more integrated civil society approach to advocacy in this area. Based on a research project investigating civil society advocacy on and around digital ID systems across the globe, a report by The Engine Room (2022, pg. 4) finds that currently, civil society responds reactively rather than proactively.

Instead of being able to proactively campaign for a system that could suit the needs of their communities, groups find themselves fighting for change inside dysfunctional plans and procedures. Civil society organizations have limited engagement with the literacy of technical specifications of digital identity systems. More participation could provide opportunities for governments to collaborate with civil society to develop mechanisms and frameworks for assessing the potential impact of digital identity systems on marginalized communities before digital service providers implement them.

8. **Politics of technology**

Currently, the only people leaders of technology companies are talking to are the industry people, who will just tell them things that benefit the industry. We need to educate people in power to create technologies that improve people's lives so that they understand their responsibility towards the people influenced by the technology platforms they run.

9. **Regulation of tech**

Big tech's business model rests on inherently harmful principles. We need regulatory frameworks to assess technology like the EU Digital markets Act and the Digital Services Act without which, it is difficult to hold anyone truly accountable.

5.3 Summary

The key learnings from this chapter were the challenges and opportunities in the current system surrounding an individuals' digital identities in the digital services ecosystem of today from the point of view of subject matter experts currently working towards alternative and inclusive futures. The next Chapter, "Modelling the story of digital identities" is about giving a visual overview of the current system and to help identify leverage points for change.

Chapter 6. Modelling the story of digital identities

6.1 Overview

This chapter is about modelling the present story of digital identities. It gives a comprehensive understanding of the different system stakeholders, their interactions, and their activities. First, an Iterative inquiry was made to help outline the scope and boundaries of the system under study. A stakeholder needs matrix was created to demonstrate the different stakeholders and the relationships between their needs. Then a Systemigram presents a system map showing how individuals' data are circulated while the individual interacts with digital services daily. A story loop diagram, essentially an amalgamation of causal loop diagrams of various phenomena under study, was made to understand the system's continuous sources of problematic effects. The Power matrix summarizes the key learnings from this chapter.

6.2 Iterative inquiry

An iterative Inquiry is used to map out an existing system's structures, processes, and functions before a project. I began by modelling a hypothetical journey of an individual who interacts with a digital service. For example, login with personal data to access a financial application. I then worked towards evaluating more prominent features of the system and set boundaries for the study.

- The Micro layer shows what is happening on the front end and is most visible. It shows how an individual gets access to digital services by signing in and giving data about themselves.
- The Meso layer moves outward to the identity providers and aggregate data repositories, where the identification data is verified before being approved for service.

- At the Macro layer, the relying parties, or the entities that need user credentials verified, provide service to the individuals and see business models in action.
- The Exo layer encompasses a broader tech ecosystem that provides digital services and policies fueling the system. It also shows the competing purposes of surveillance capitalism versus digital inclusion, accessibility, justice and equity for all users, especially those marginalized in today's social contract.

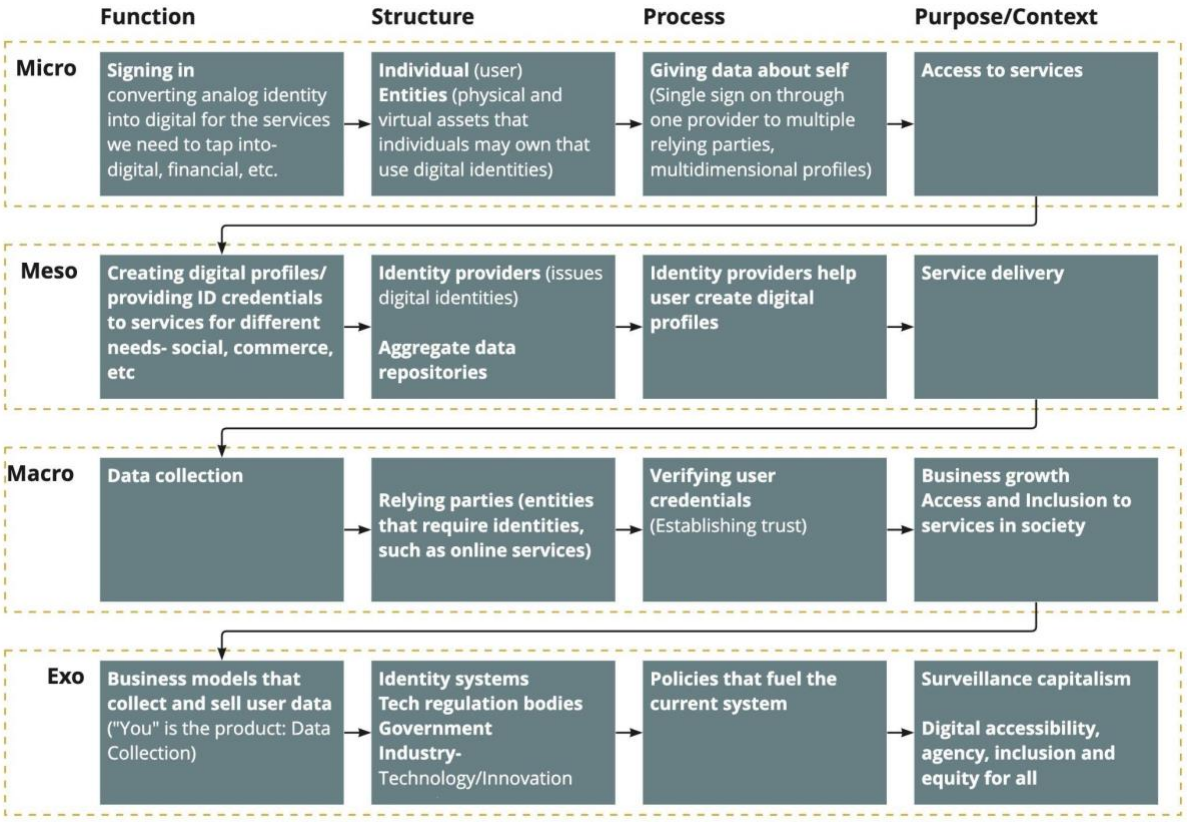


Figure 17. Iterative inquiry mapping the existing system structure.

6.3 Systemigram

A Systemigram usually contains three kinds of elements: entities/components and their characteristics, interconnections between them and a function, purpose or narrative that emerges:

1. The elements

Figures 10–15illustrate the elements, namely: individuals, relying parties, governing bodies, civil society, data broker industry and data collectors.

2. The interconnections

The interconnections and symbols illustrated in this Systemigram are derived from the power frameworks in Chapter 3.2 (Hunjan & Pettit, 2011). Figure 16 shows a legend of symbols denoting expressions of power, faces of power and spaces of power.

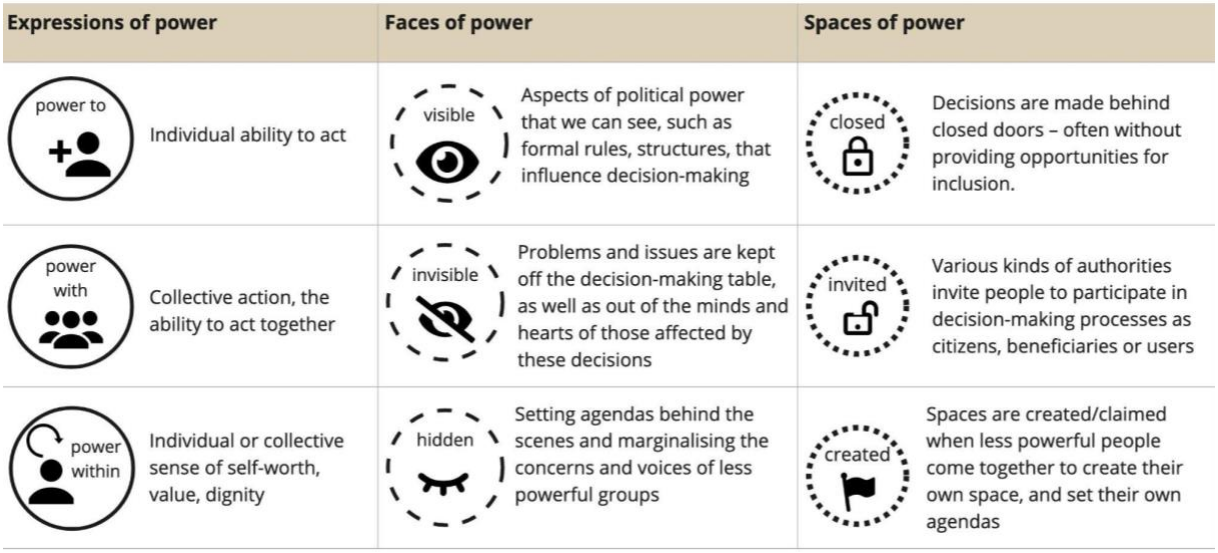


Figure 18. Legend based on power theories for Systemigram adopted from Hunjan & Pettit (2011).

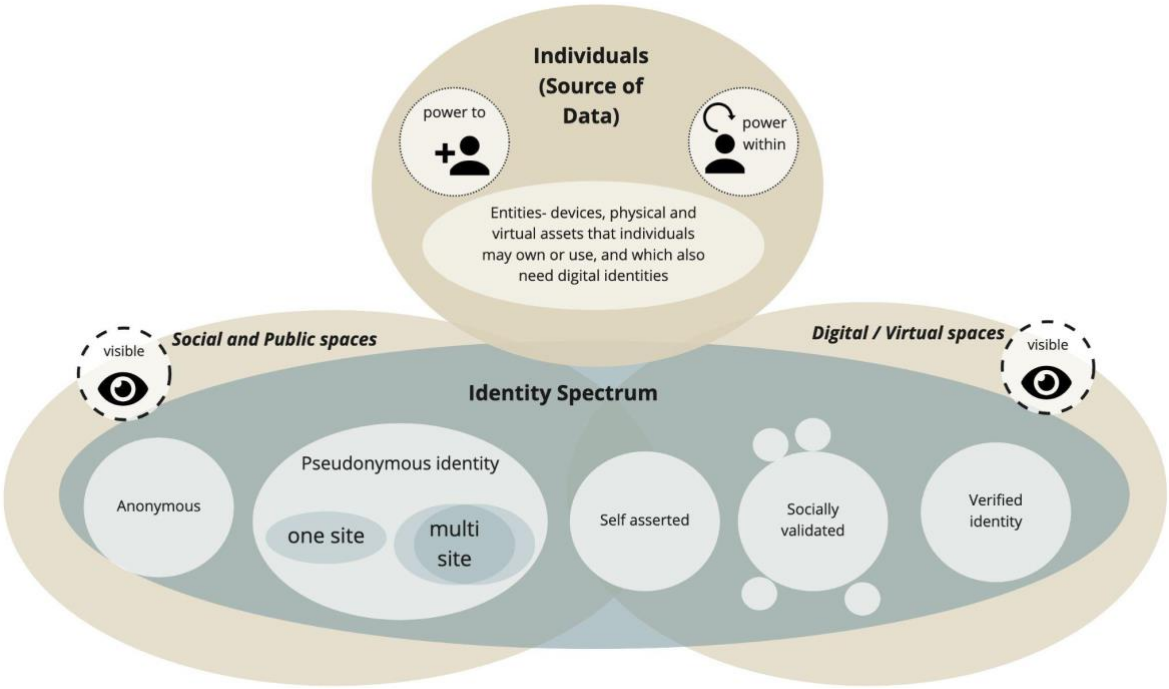


Figure 19. Systemigram detail: The individual who is using a digital service.

The identity spectrum refers to the spectrum of digital identities that exist (Young, 2010). Individuals are the source of the data being provided to other elements in this system. The individual's identity spans across both digital/online spaces and social and physical places. The expressions of power identified for the individuals include: power to, power within, and the face of power identified is visible power because individuals have the visible power to demand for better policies and systems from necessary authorities. Note: Identity spectrum illustrated in the diagram is adopted from Young (2010a).

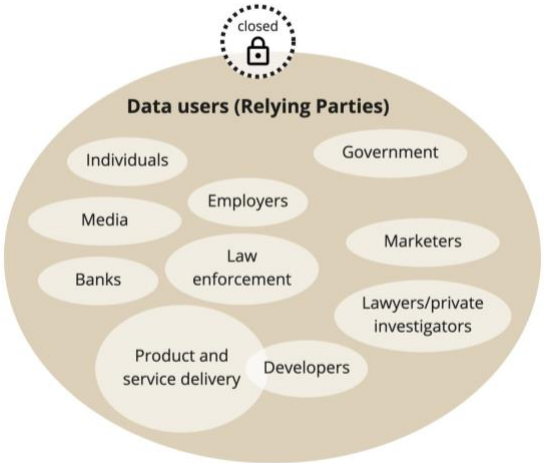


Figure 20. Systemigram detail: Some examples of relying parties.

A relying party is an individual, organization, or device that wants to determine the identity or some information about the subject (individual, organization of device) to transact with that subject digitally and trust (or depend on) the information received. They are closed spaces.

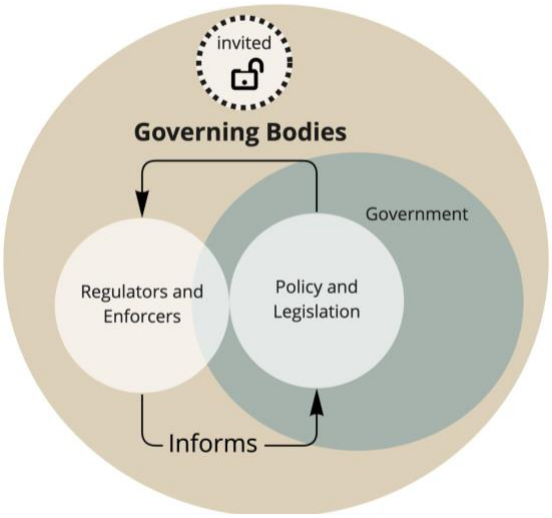


Figure 21: Systemigram detail: Governing bodies.

Regulators and enforcers inform policy and legislation within the government. Governing bodies are invited spaces.

Figure 22: Systemigram detail: Civil society.

The term "civil society" refers to the collection of non-governmental organizations and institutions representing citizens' interests and desires. Civil society has “created” or

"claimed" spaces where less powerful people with common interests come together to set goals and activities to benefit their community.

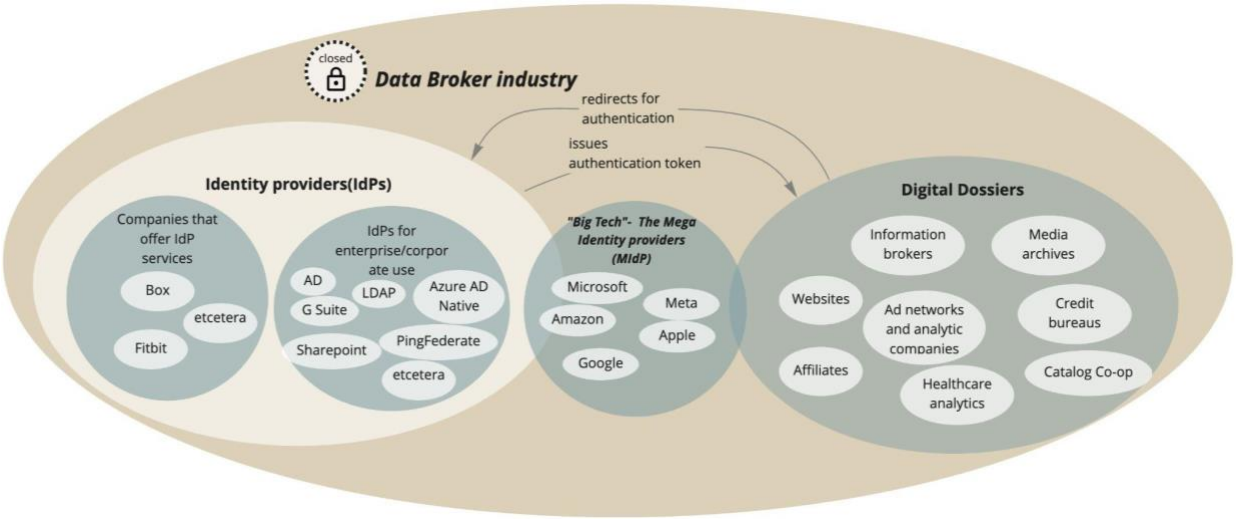


Figure 23. Systemigram detail: The data broker industry.

An identity provider is a system component (person, organization, or device) that contains information about the subject that the subject may wish to share with relying parties. An identity provider gives login credentials to an end user to confirm that the entity is who or what it claims to be across numerous platforms, apps, and networks. They can be either enterprise-based (G-suite, Sharepoints, etc.) or social-based (Google, Microsoft, Facebook, Apple, etc). For example, when a third-party website encourages end users to check in using their Facebook Account, Facebook Sign-In serves as the identity provider. It so happens that Big Tech are the most widely adopted identity providers in the technological landscape today.

A data broker is an individual or company that collects personal data from public and private sources and sells or licenses such information to third parties for various purposes. This is a closed space of power, where discussions about the individuals' data is made behind closed doors, without inclusion.

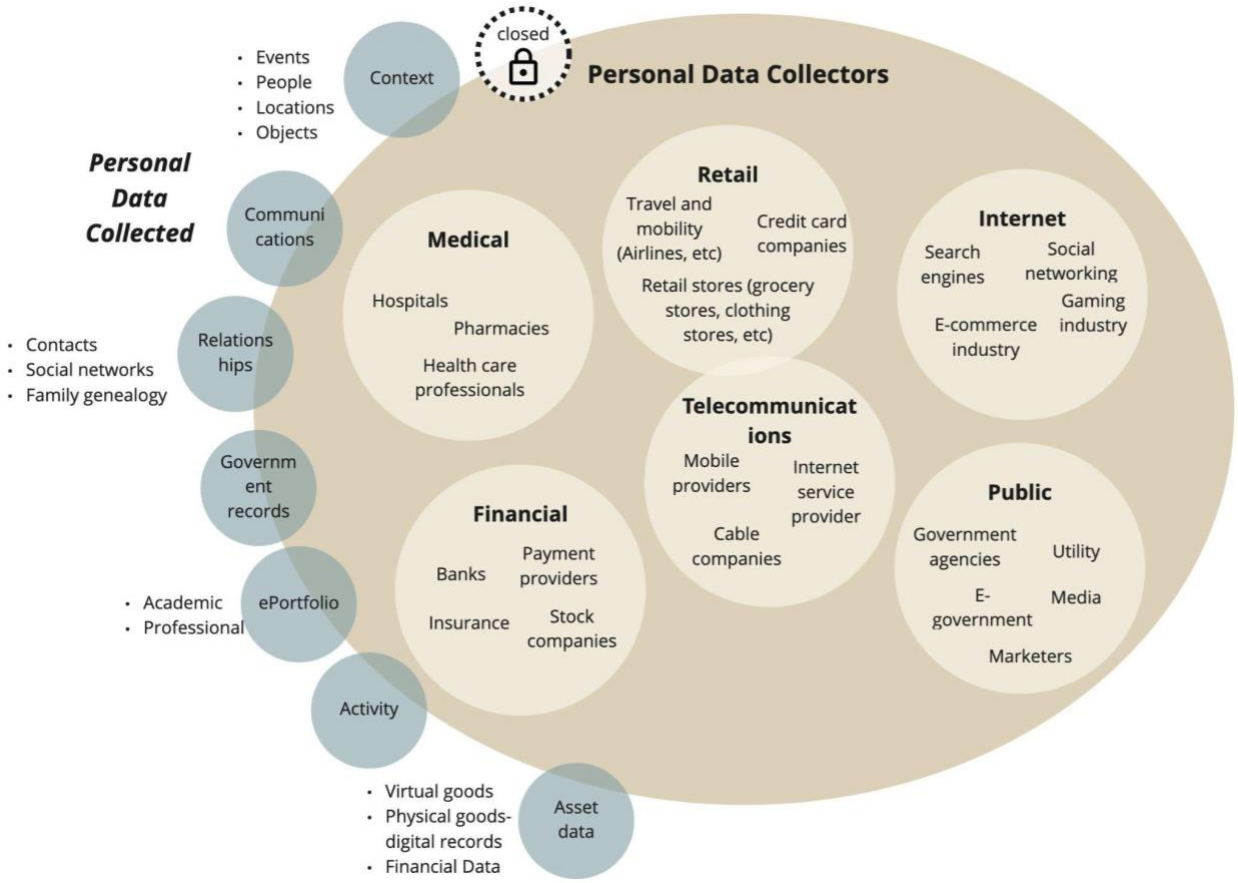


Figure 24: Systemigram detail: Personal data collectors.

They are the different entities and actors that the individual interacts with on a daily basis. For example: Financial, medical services. The kind of data collected ranges from data about an individuals' social networks and relationships to what assets they own virtually or physically.

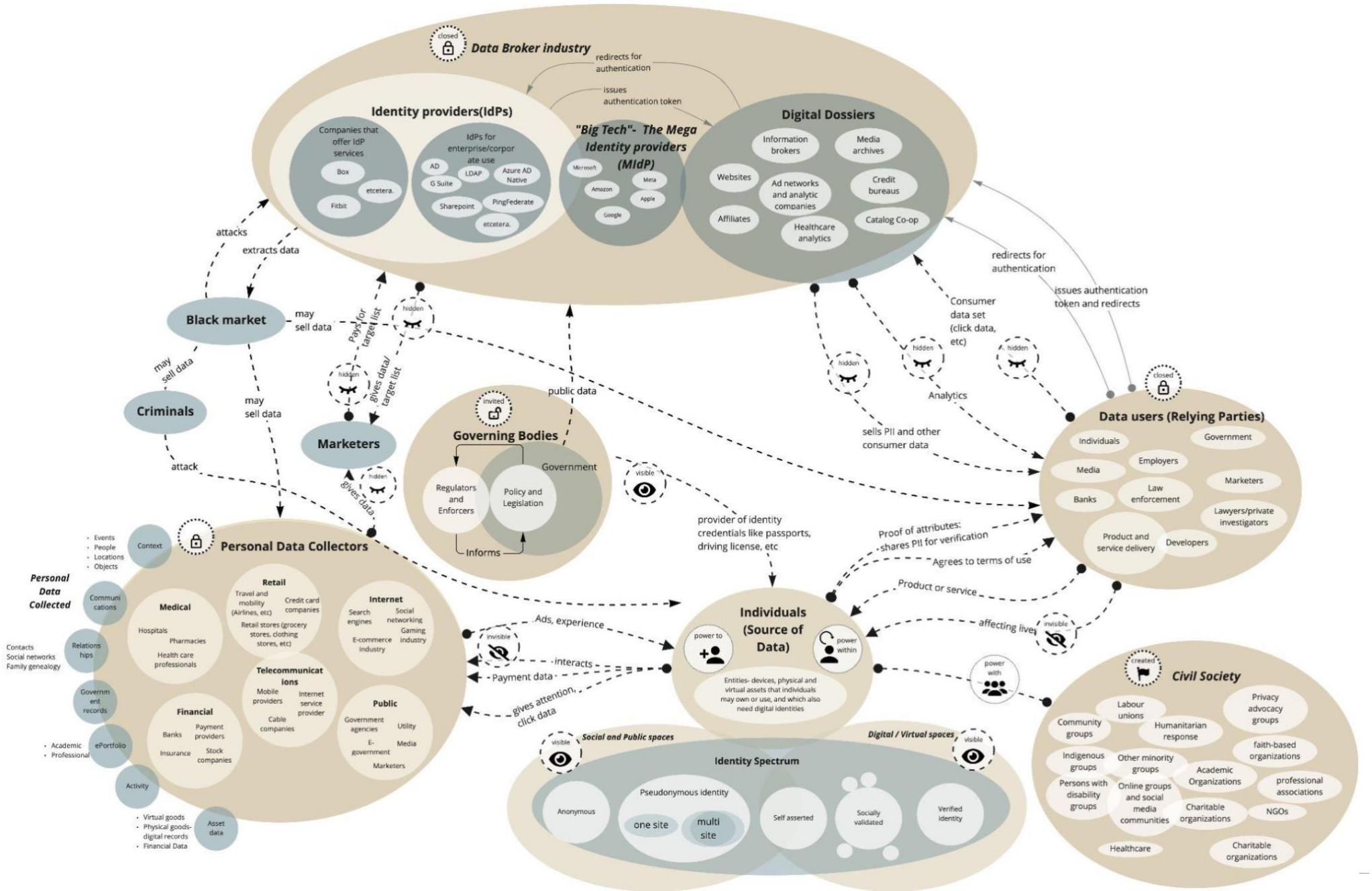

Data Broker industry
closed
redirects for authentication
issues authentication token
Identity providers(IdPs)
Companies that offer IdP services
Box
etcetera.
Fitbit
IdPs for enterprise/corporate use
AD
LDAP
Azure AD Native
G Suite
Sharepoint
PingFederate
etcetera.
"Big Tech"- The Mega Identity providers (MIdP)
Microsoft
Meta
Amazon
Apple
Google
Digital Dossiers
Information brokers
Media archives
Websites
Ad networks and analytic companies
Credit bureaus
Affiliates
Healthcare analytics
Catalog Co-op
attacks
extracts data
Black market
may sell data
Pays for target list
hidden
may sell data
Criminals
may sell data
gives data/ target list
Marketers
attack
gives data
public data
invited
Governing Bodies
Government
Regulators and Enforcers
Policy and Legislation
Informs
visible
provider of identity credentials like passports, driving license, etc
redirects for authentication
issues authentication token and redirects
Consumer data set (click data, etc)
Analytics
sells PII and other consumer data
Data users (Relying Parties)
closed
Individuals
Government
Media
Employers
Marketers
Banks
Law enforcement
Lawyers/private investigators
Product and service delivery
Developers
Proof of attributes: shares PII for verification
Agrees to terms of use
Product or service
affecting lives
invisible
Personal Data Collectors
Context
Events
People
Locations
Objects
Personal Data Collected
Communications
Relationships
Contacts
Social networks
Family genealogy
Government records
Academic
Professional
ePortfolio
Activity
Medical
Hospitals
Pharmacies
Health care professionals
Retail
Travel and mobility (Airlines, etc)
Credit card companies
Retail stores (grocery stores, clothing stores, etc)
Internet
Search engines
Social networking
E-commerce industry
Gaming industry
Telecommunications
Mobile providers
Internet service provider
Cable companies
Financial
Banks
Payment providers
Insurance
Stock companies
Public
Government agencies
Utility
E-government
Media
Marketers
Virtual goods
Physical goods-digital records
Financial Data
Asset data
Ads, experience
interacts
Payment data
gives attention, click data
invisible
Individuals (Source of Data)
power to
power within
Entities- devices, physical and virtual assets that individuals may own or use, and which also need digital identities
power with
Social and Public spaces
Digital / Virtual spaces
visible
Identity Spectrum
Anonymous
Pseudonymous identity
one site
multi site
Self asserted
Socially validated
Verified identity
created
Civil Society
Labour unions
Privacy advocacy groups
Community groups
Humanitarian response
faith-based organizations
Indigenous groups
Other minority groups
Academic Organizations
professional associations
Persons with disability groups
Online groups and social media communities
Charitable organizations
NGOs
Healthcare
Charitable organizations

Figure 25. Digital identity Systemigram.

Shows power relationships between actors and demonstrates how data usage by data users in the system is impacting people's lives in ways they are not aware of and/or have not consented to.

3. **The resulting narrative**

Data users' usage impacts people's lives in ways they are unaware of or have not consented to. We need a way to identify the power dynamics in the system and adopt alternative expressions of power to enable change.

6.4 Stakeholder needs matrix

I created a Stakeholder needs matrix (see Figure. 18 in Section 6.4) which is a matrix of hierarchical needs, to help illustrate where each stakeholder's needs and priorities lie in relation to themselves and others. Their unmet needs are highlighted in green and call for more investigation under the radar for future work for this project. The stakeholders mapped are:

- Individual or digital service users including marginalized populations: children, differently abled persons, etc.
- Digital service providers (who are also relying parties in this context) such as banking applications, ecommerce applications, etc. In this context. (see description of Fig. 18 in Section 6.3 for definition)
- Identity providers (see description of Fig. 21 in Section 6.3 for definition).
- Civil society advocacy groups such as Women in Identity, World wide web foundation, Digital Identity Alliance, Privacy international, etc.
- Regulatory bodies relevant to digital services such as Canadian Radio-television and Telecommunications Commission (CRTC), Telecom Regulatory Authority of India (TRAI) etc.
- Standards institutions such as World Wide Web Consortium (W3C), International Telecommunication Union (ITU), etc.

After mapping the stakeholders' needs in descending order of priority, we observed that an individual or digital service user has rights and needs that are as important in the digital world as they are in the physical world. In addition to that, their vulnerable situation seemed more visible as their unmet needs of privacy and security emerged, but the need for accessing services digitally meant giving up priority of their needs of privacy and security. The central insight was that an individual's needs are primarily unmet because they are forced to support the business models of digital service providers and other stakeholders in the tech ecosystem depicted in the matrix.

The map also shows how supporting the needs of certain stakeholders can prove to be leverage points for systemic change. For example, Standards institutions can hold stakeholders in the data broker industry- digital service providers and identity providers accountable for their actions, which can help them meet the needs of the users in a more ethical manner.

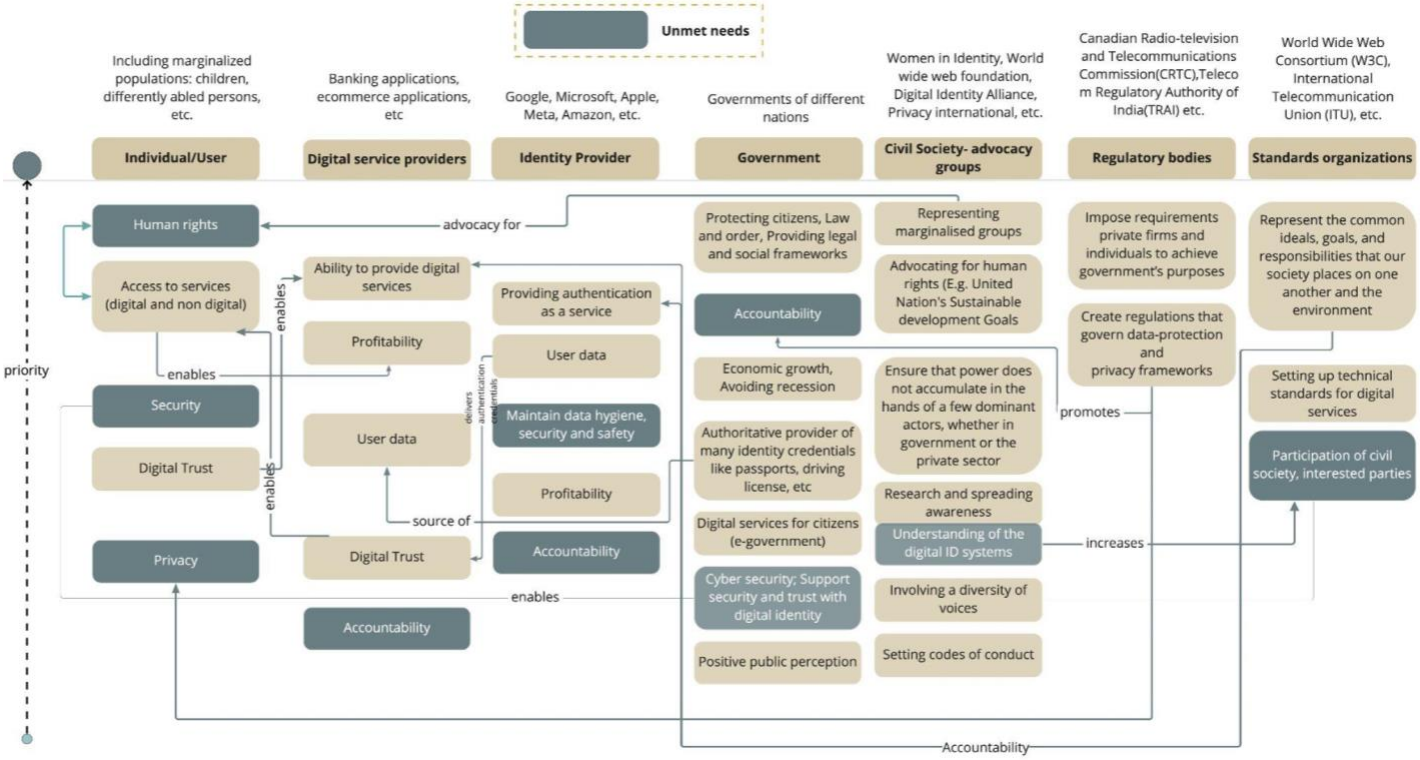


Figure 26. Stakeholder needs matrix.

Needs of stakeholders are mapped in relation to themselves and one another. It highlights that individual's needs are being unmet largely because they are conditioned to support the business models of digital services providers and other stakeholders in the tech ecosystem shown in the matrix.

6.5 Story loop diagram

Causal loop diagrams

To illustrate the continuous sources of problematic effects in the system, I created a story loop diagram, a set of causal loop diagrams constructed and presented as a shareable system narrative. I also identified some system archetypes (Braun, 2002).

In the causal loop diagrams below, if parameters grow in the same direction, no notation has been used on the connecting arrows and if they grow in the opposite direction, "O" notation has been used. "II" indicates a delay.

Table 7: Causal loop diagrams

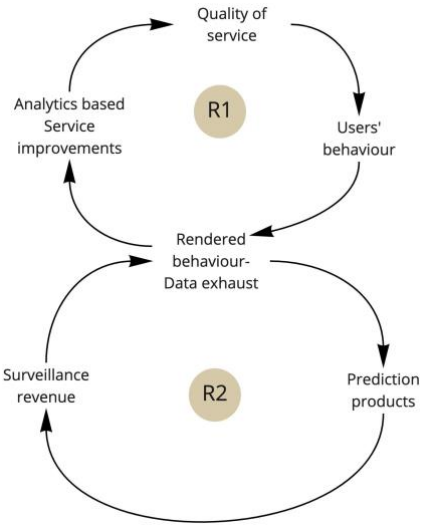
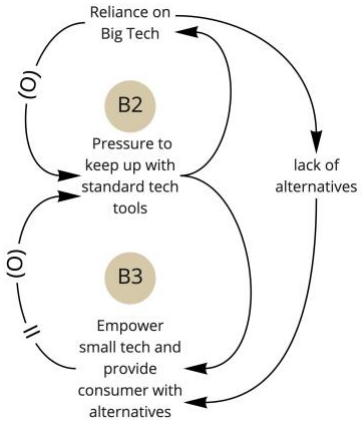
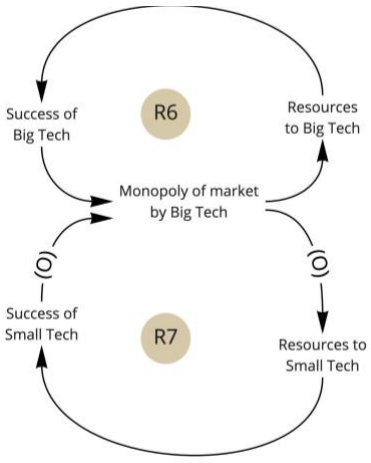
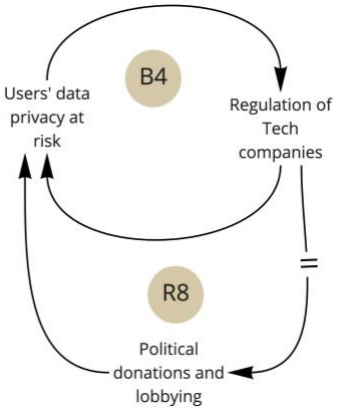
Surveillance Capitalism	
As tech companies offer digital services, they use analytics for service improvements, which improves service quality. The users' behaviour with the digital services generates lots of data to be put into their prediction products to generate surveillance revenue.	

	Figure 27. Causal loop diagram of Surveillance Capitalism.
Lack of Alternatives	Archetype: Shifting the Burden
As Big Tech scales, the tech tools they create become everyday use in the market, and that causes a lack of availability of alternative digital services. A more fundamental solution to the lack of alternatives would be to empower small tech companies.	 Figure 28. Causal loop diagram of Shifting the burden archetype: Lack of Alternatives.
Monopoly of Big Tech	Archetype: Success to the Successful
Big Tech has monopoly in the market which makes it hard for smaller technology companies to compete.	 Figure 29. Causal loop diagram of Success to the Successful archetype: Monopoly of Big Tech.
Failed Regulation of Big Tech	Archetype: Fixes that Fail

While strict regulation of technology companies helps protect users' privacy and other rights in the digital world, it fails to be an effective solution. With its influence and power, Big Tech can garner support in their favour through lobbying efforts.	 **Figure 30. Causal loop diagram of Fixes that Fail Archetype: Failed Regulation of Big Tech.**

Resulting story loop diagram

These archetypes and loops combine to show the broader system story loop diagram that reinforces the underlying problems surrounding the digital identities of users and their data. Figure 26 shows an initial story loop diagram which will be developed further in future work.

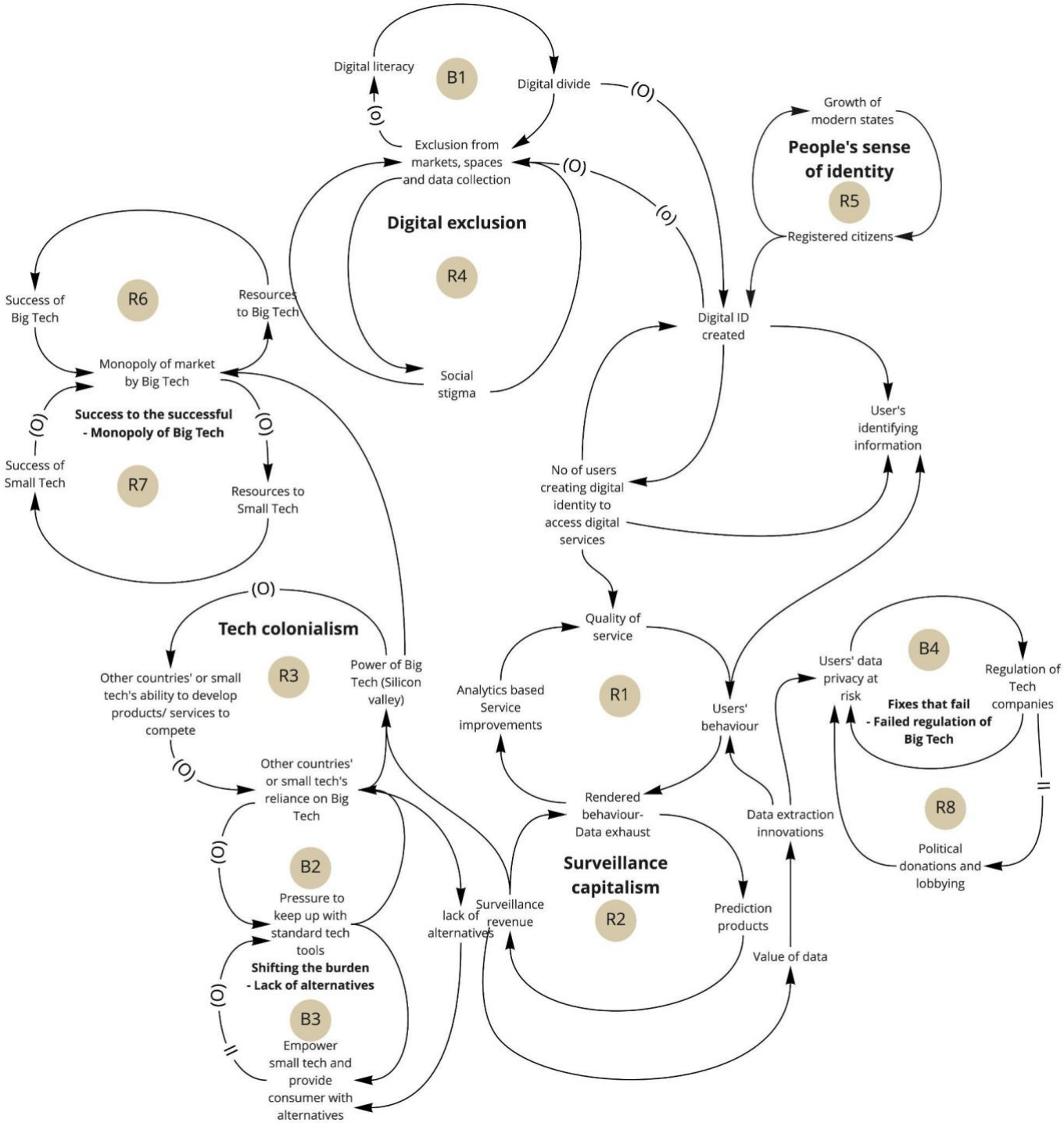


Figure 31. Resulting Story loop diagram.

Causal loops of the system under study combine to create this story loop diagram. This story loop diagram currently highlights the monopoly of Big tech (loops R6 and R7) and the

extreme power imbalance produced by the current system. The loop of surveillance capitalism (loops R1 and R2) feeds into the loop of technology colonialism (loop R3), further exacerbating the problem of limited availability of service alternatives and increasing dependency on Big Tech companies, which seems to be fueling more of their economic interests rather than the users. While this system is problematic, there is also the loop of failed regulation of Big Tech (loops B4 and B8). This story loop also shows how today's technology ecosystem affects users on a socio-economic level as it shapes people's sense of identity (loop R5), while making it hard to exist outside the existing power dynamic (digital exclusion- loops B1 and R4). Note: This is an initial story loop diagram which will be developed further in future work.

6.6 Summary

In this chapter, I have illustrated various stakeholders' power relationships and capabilities in the digital identity and digital services ecosystem through an iterative inquiry, a systemigram, a stakeholder needs matrix and a story loop diagram. The next chapter is "Serious game design to explore alternate futures", which entails an ongoing creative and collaborative exploration of how we can enable conversations around the future of digital identities via serious game design through the use of an intersectional and systemic lens.

PART III: GAMING THE TOMORROWS

“

I want gaming to be something that everybody does, because they understand that games can be a real solution to problems and a real source of happiness. I want games to be something everybody learns how to design and develop, because they understand that games are a real platform for change and getting things done. And I want families, schools, companies, industries, cities, countries, and the whole world to come together to play them, because we’re finally making games that tackle real dilemmas and improve real lives.

”

— Jane McGonigal, Excerpt from the book “Reality Is Broken: Why Games Make Us Better and How They Can Change the World” (McGonigal, 2011)

Chapter 7. Serious game design to explore alternate futures

7.1 Overview

This chapter discusses the ongoing process of designing a serious game prototype to explore possible futures collaboratively. It is a creative exploration of how those in the design and innovation teams, including industry roles that centre around the design of emerging technological systems, can find the conversation around the future of digital identities to be more accessible and inclusive via serious game design. First, the “Motivation and opportunity area” section introduces the purpose of engaging in this design activity, followed by an explanation of the methodology employed to create serious game prototypes. Then, design criteria for serious game design were set by me using the triadic game design framework. Then, I document the game's design and its iteration and the learnings from the workshop facilitated by me to playtest the game designs.

7.2 Motivation and opportunity area

Clark C Abbot coined the oxymoron "serious game". He defined it as a game with an explicit and carefully thought out educational purpose, not intended to be played primarily for amusement. Still, he also acknowledged that serious games don't need to exclude the provision of entertainment (Abt, 1987). People from many fields use serious games to provide an engaging, interactive and self-enhancing context to educate, inspire or motivate the players. It has found applications in health sciences, as a scientific tool, for exercise therapy, policy design, advertising, youth education, product creation, foresight, design research and much more. Serious games can be of any genre, designed for any platform, and leverage any game technology.

Professionals and academicians use serious games in foresight for a variety of purposes. For example, the popular foresight game "Thing from the future" by The Situation Lab helps players imagine how "things" might look in alternate futures based on Dator's four futures archetypes (Situation Lab, n.d.). The game "IMPACT" by Idea Couture is a role-playing foresight game that empowers players with prompts and tools to imagine and think critically about how new technologies will impact society in the future (Idea Couture Inc, n.d.).

By raising awareness and curiosity about digital identities and the systems and technologies that govern them, I hope to be able to transform the design processes of digital services to be more ethical, inclusive, and accessible for marginalized communities navigating challenges in the online world. This game is for all audiences involved in the design of future technologies. By helping change the mental models of those designing our socio-technical systems, we could transform future business models and design decisions about our digital selves.

In the game I developed, the role-playing aspect allows players to experience different perspectives and power dynamics within a game world that is separate from real-life relations but capable of illumination through reflection. It enables players to "rehearse" situations and alternatives in fictional spaces. By entering a game world, we can offer a safe space to level the playing field in an organization's hierarchal system of professionals while speaking of sensitive topics such as the impacts of discrimination due to marginal intersectional identities in digital services.

7.3 Methodology

The key activities in the methodology can be summarized using the double diamond framework below:

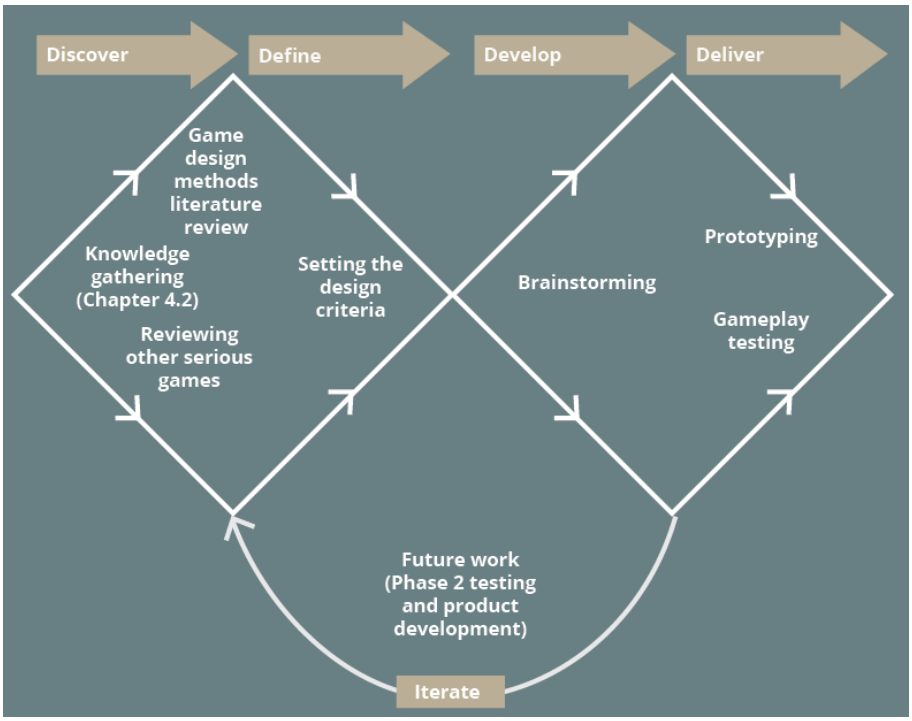


Figure 32. Methodology adopted for game design adapted from Design Council (2019).

Reviewing serious games

I reviewed other serious games used in foresight and social design.

Game design frameworks literature review

I reviewed several methodologies for designing games. I have used the Triadic game design method by Casper Harteveld (2011) to help me design a serious game. According to the framework, a game's design poses a challenge in a design space involving three equally important worlds: Reality, Meaning, and Play. A game needs to be related to the domain and subject (Reality), it needs to attain a value beyond the game (Meaning), and it needs to have elements that characterize play and make it a powerful tool to use (Play). Each world has its own "people," "disciplines," "aspects," and "criteria" for creating a game. Various tensions can arise within and between the three worlds, forcing designers to make trade-offs. Keeping these three worlds in balance is critical to creating a game that accomplishes its functional purpose. Harteveld & Bergh (n.d.) have provided worksheets for a half-day workshop where you can work through various vital questions in the three categories of

reality, meaning, and play. These worksheets helped me establish the design criteria for my game.

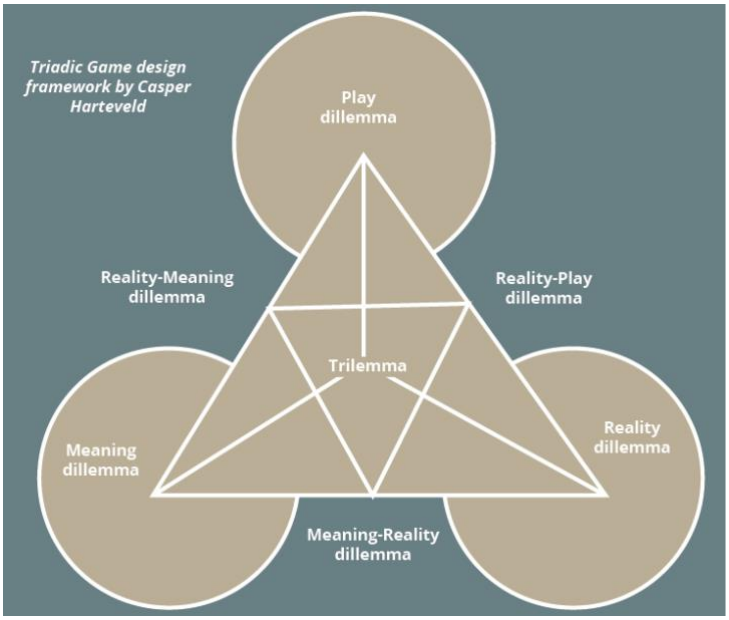
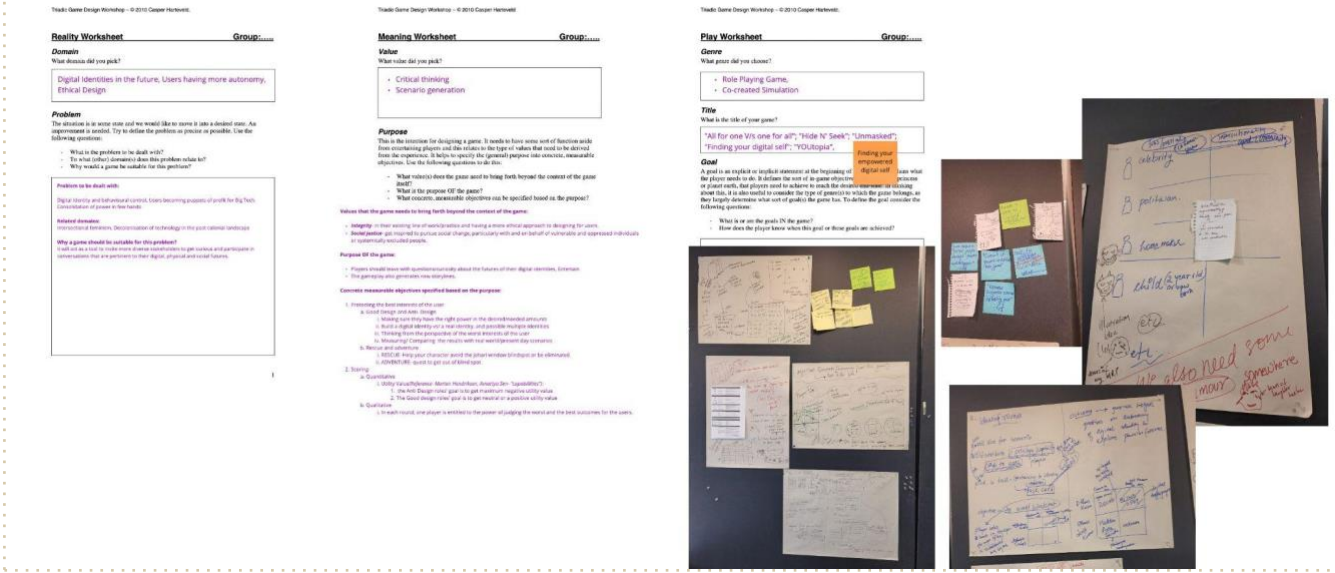


Figure 33. Triadic Game Design Framework adopted from Harteveld (2011).

Setting the design criteria

The knowledge gathering (Chapter 4.2) in this research



set the foundations for the design criteria. The design criteria are the goals for the game design. The design criteria was set using the Triadic game design framework.

Figure 34. Screenshot showing filled up worksheets from the Triadic game design workshop and some photographs of brainstorming.

Brainstorming

Using inspirations from foresight frameworks and the research work in this project, I brainstormed several ideas for the game.

Prototyping

I used an online collaborative and whiteboarding software called Miro to digitally prototype my game.

Participant recruitment for gameplay testing workshop

I recruited participants using professional networks of designers and academicians. Appendix C shows the social media post I used to recruit my participants.

Gameplay testing workshop design and facilitation

Gameplay testing workshop was facilitated by me in a workshop setting with workshop participants. Valuable feedback obtained from the testing was used to improve upon the game and produce subsequent iterations.

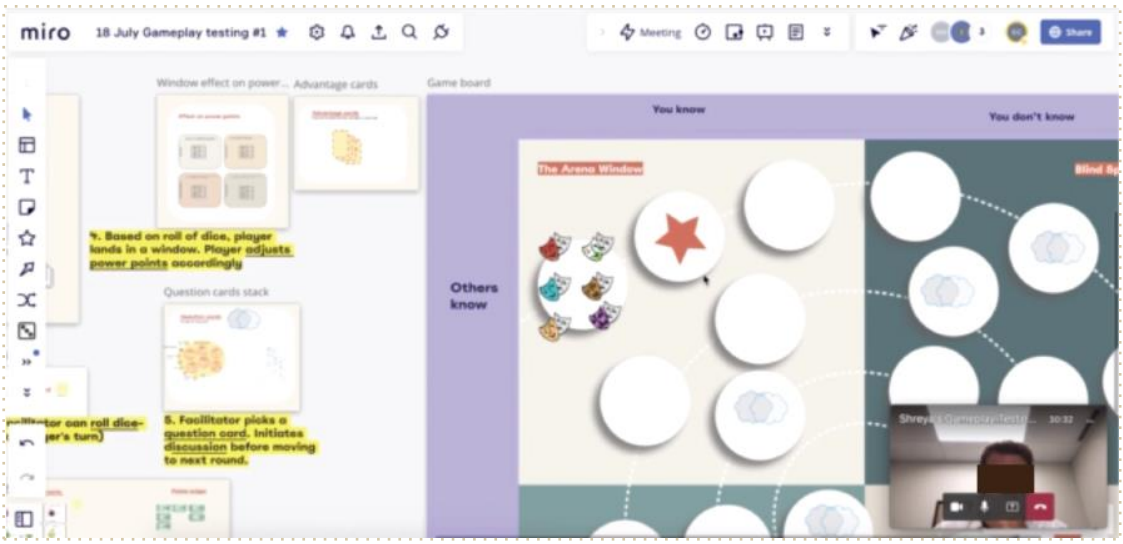


Figure 35. Screenshot of participants engaging in gameplay from the playtesting workshop.

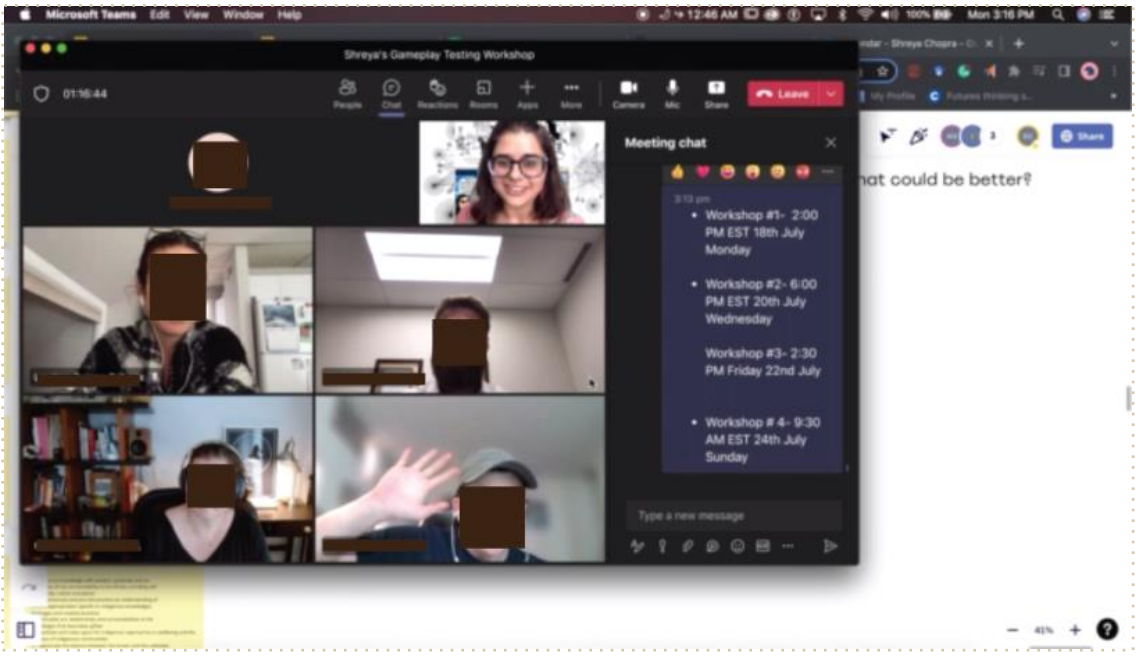


Figure 36. Screenshot of Participants discussing the game after the gameplay testing and giving feedback to the researcher.

Future work (Phase 2 testing and product development)

Beyond the scope of this MRP, the future work for this game involves engaging in many more playtesting and design iteration rounds. There is a possibility of the game being developed commercially, both in digital or physical board game format.

7.4 Design Criteria

The game is a role playing game which can be played by a minimum of 2 people and a maximum of 8 people. The game design criteria were set using the Triadic Game Design workshop:

Table 1. Game design criteria set using the Triadic Game Design workshop.

World of reality	
Which "domain" does the problem belong to?	Digital Identities in the future, Users having more autonomy and control over their data while using digital services, Ethical Design
Problem to be dealt with	Digital Identity and behavioural control, Users becoming puppets of profit for Big Tech, Consolidation of power in few hands
Related domains	Intersectional feminism, Decolonisation of technology in the post colonial landscape
Why should a game be suitable for this problem?	It will act as a tool to invite more diverse stakeholders to get curious and participate in conversations that are pertinent to their digital, physical and social futures.
World of meaning	
Value of the game	Critical thinking, Scenario generation
Values that the game needs to bring forth beyond the context of the game	● Integrity- in their existing line of work/practice and having a more ethical approach to designing for users. ● Social justice- get inspired to pursue social change, particularly with and on behalf of vulnerable and oppressed individuals or systematically excluded people.

Purpose of the game:	● Players should leave with questions/curiosity about the futures of their digital identities, Entertain ● The gameplay also generates new storylines.

Concrete measurable objectives specified based on the purpose	● Protecting the best interests of the character they are playing.
	● Scoring-
	  O Quantitative
	  O Qualitative

World of play	
Genre of game	● Role Playing Game, ● Co-created Simulation
Title of game	Explored in sections below
What are the goals in the game? How does the player know that their goals in the game are achieved?	Explored in sections below

7.5 Game version 1

Game components

The game components for the first prototype are shown and explained in the figures below:

Table 2: Components for Game version 1

Component	Description
Game board	The game board is based upon the following concepts:

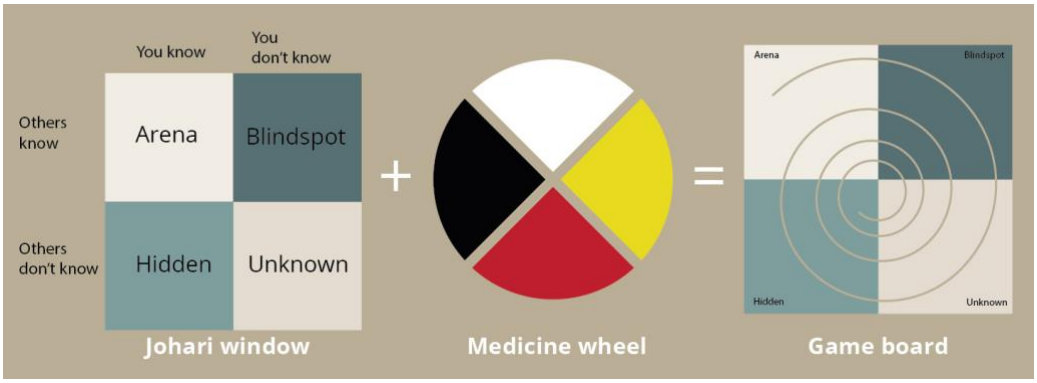


Figure 37. Illustration showing how the game board is made by adopting the concepts of Johari window and medicine wheel.

Johari window

The Johari window is a psychological tool developed in 1955 by Luft & Ingham (1961) which later came to be a popular heuristic tool to speculate about human relations. The model is used to understand and train self-awareness, personal development, communication improvement, interpersonal relationships, group dynamics, team development, and intergroup relationships. The Johari window has four quadrants:

- Open/Arena: things that are known to the individual, and by others too.
- Blind/Blindspot: things that others know, but the individual does not know.
- Unknown: things that others don't know and the individuals don't know.
- Hidden/Facade: things that others don't know, but the individual knows.

While there may be people in our community that sit in various quadrants, when it comes to our relationship with the digital services we use today, we sit mostly in the blindspot. Big Tech sits behind advanced technologies dedicated to mine the data of individuals on the interweb. Even worse, they invest heavily in gleaning data from us from the "Hidden" or "Facade" window as well, where they get more data from us than we want to reveal to them.

In this game design, the concept of Johari window seemed fitting to incorporate into the narrative as players move through their journeys in the game.

Indigenous medicine wheel

	The indigenous medicine wheel is a circular symbol divided into four areas or quadrants, each of which is coloured differently: yellow, red, black, and white (MALLORY / CATEGORY CULTURE, n.d.). Numerous different nations have different medicine wheel teachings based on their stories, values, and beliefs. Each of the four areas of the wheel has its own set of attributes, such as the four directions and the four seasons. The circle represents how everything in life is interconnected. It represents- ● The circle of life- everything flows in a circle, and life continues indefinitely. ● Self-awareness circle- our awareness of ourselves and our state. ● The circle of knowledge is the personal power that each of us possesses to learn about and control our states of being. The circular nature of the wheel has been adopted to show the players' journeys on the board are interconnected and as they move ahead, with every rotation of the circle, they build upon their self awareness and knowledge about their digital bodies. **Prompts on the game board** As you move along in the game board by rolling the die, you may come across several prompts- for Advantage cards(shown as orange stars) and for Question cards(shown as clouds).

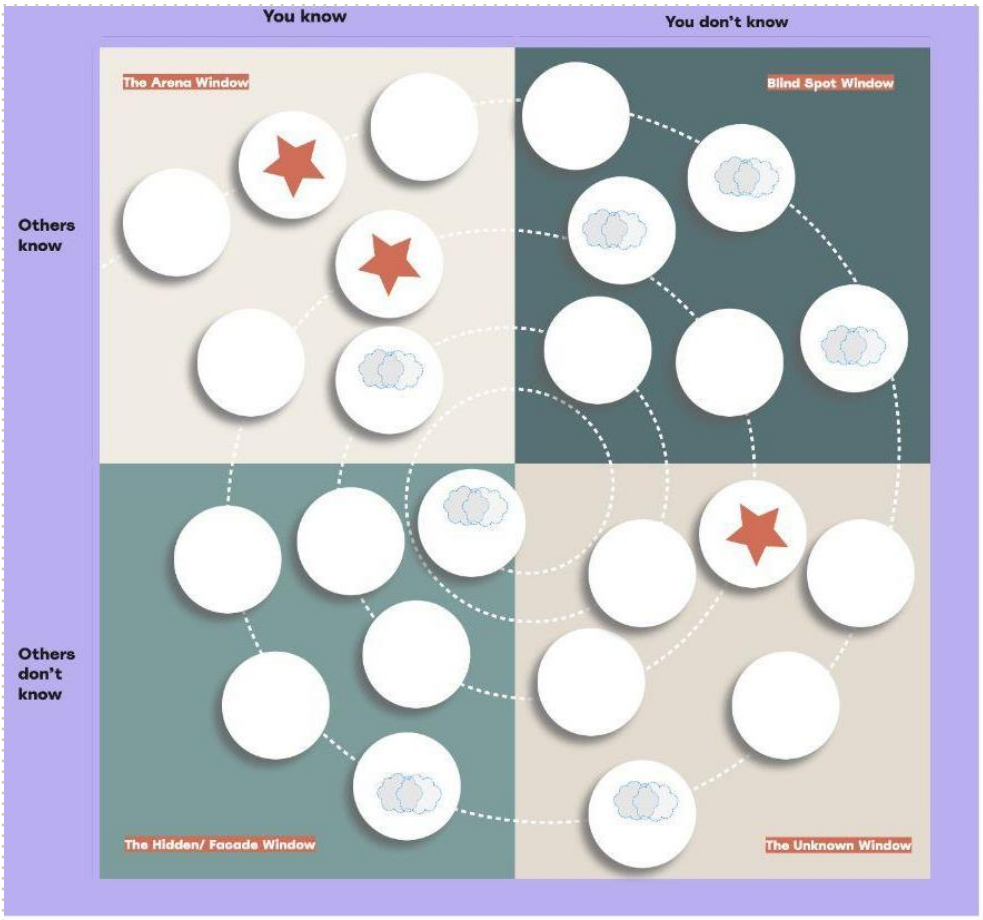


Figure 38. Screenshot of the game board (version 1).

Attribute cards	The attribute cards contain ● The Attribute and its category ● The corresponding attributes in the category and their rank ● the "Power points" that come with the attribute The attribute cards are based on intersecting axes of privilege, domination and oppression in the privilege wheel (explained in Chapter 1.3). The attributes above the axes of domination have more points than the ones below. They are in different colours based on their hierarchy and number of power points they bring with them: green, yellow, red and blue (Green is the colour with most power points and blue is the colour with the least power points).

<table>
<tr>
<td></td>
<td>


Figure 39. Attribute cards.
</td>
</tr>
<tr>
<td>Power point cards</td>
<td>The power point cards are like currency- of power. But, this currency also runs negative.
They can vary according to
● Attributes
● Situations
Power points come in both negative and positive values.</td>
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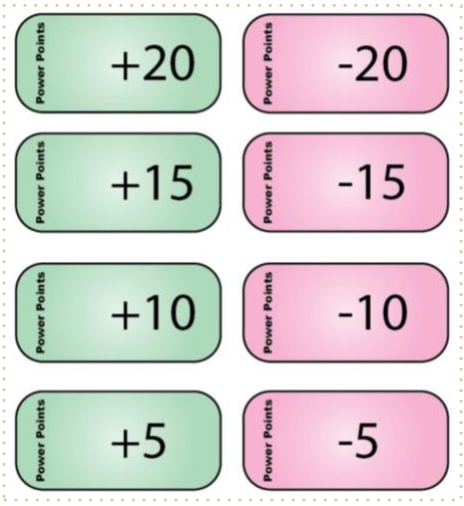
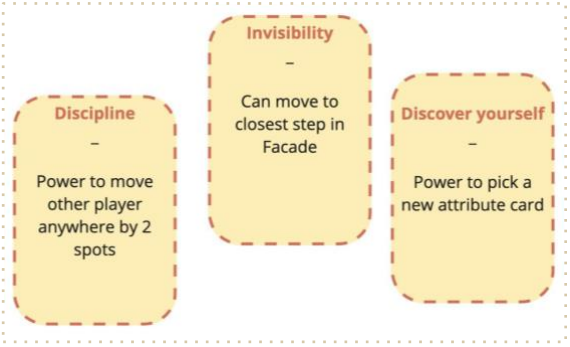
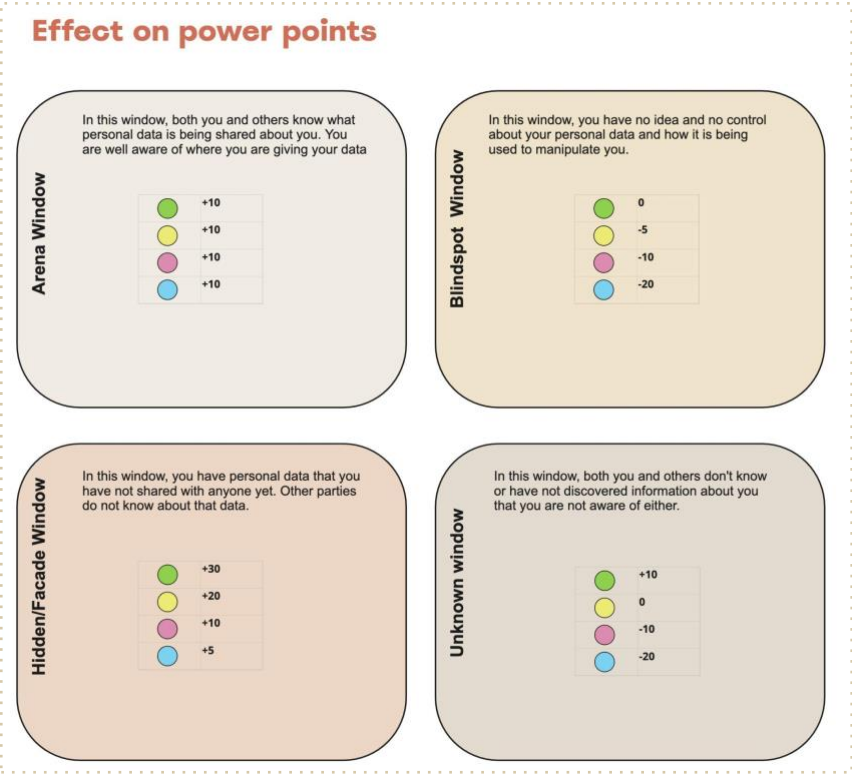
	 Figure 40. Power point cards currency.
Advantage cards	If you come across this card, you get an advantage  Figure 41. Advantage cards.
Question cards	Challenges/prompts for discussion

	 Figure 42. Question cards.
Window cards	These cards are made specifically in response to the four quadrants of the Johari window on the game board. They show how being in a particular quadrant or section of the board's Johari window affects the player's power points. Each section of the Johari window has an impact on the power points of the player. When a player lands in a particular quadrant or section, they lose or gain power points.

	 Figure 43. Johari window cards.
Pawns	These are player pieces that they use to move on the game board.  Figure 44. Pawns.
Dice	A die is rolled to determine how many steps forward the player can make.  Figure 45. Die.
Player ledger	A player ledger is where a player keeps record of their journey in the game.

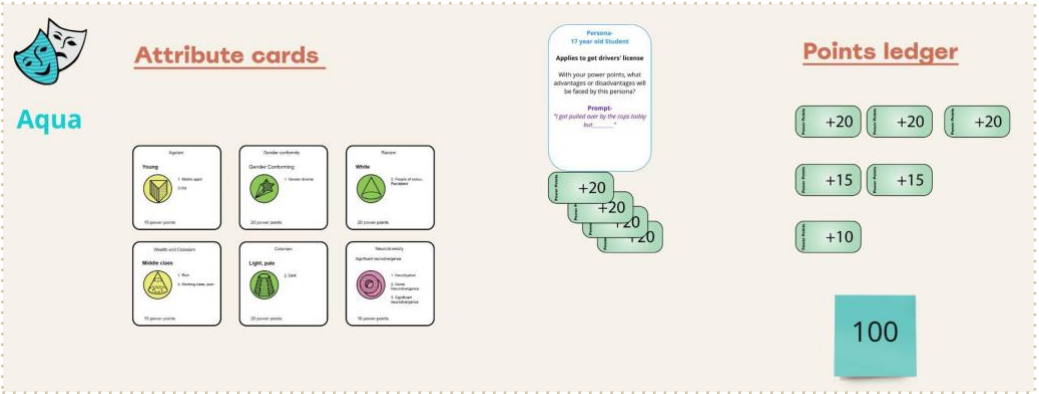


Figure 46. Player ledger.

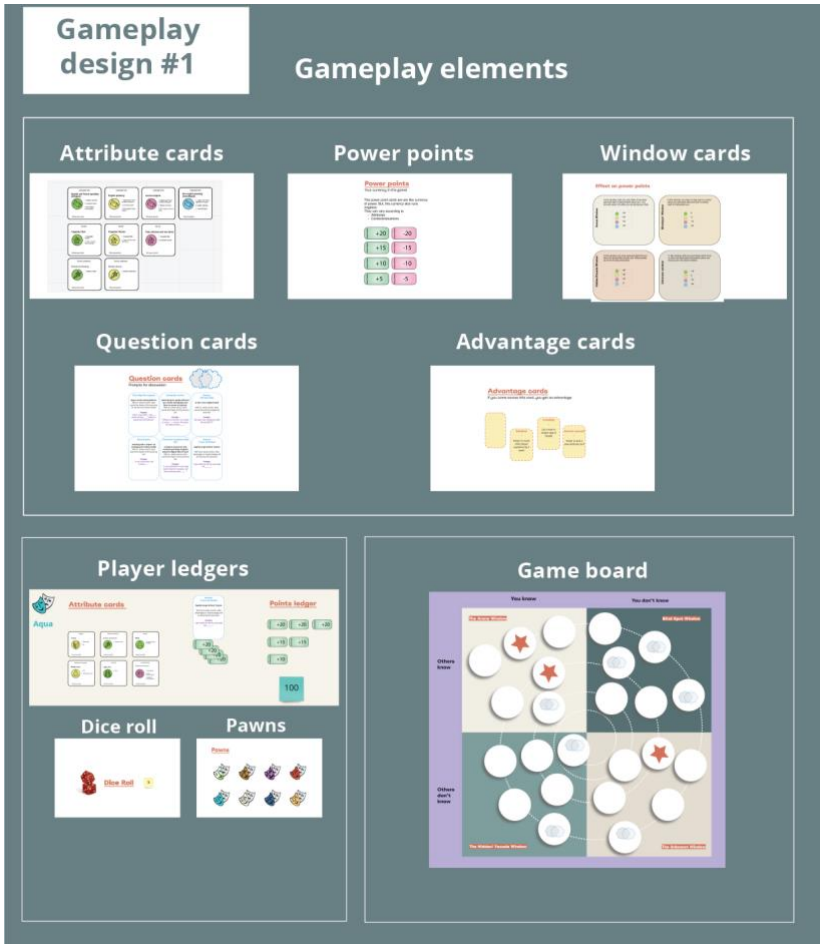


Figure 47. A brief visual summary of all the components of Game version 1.

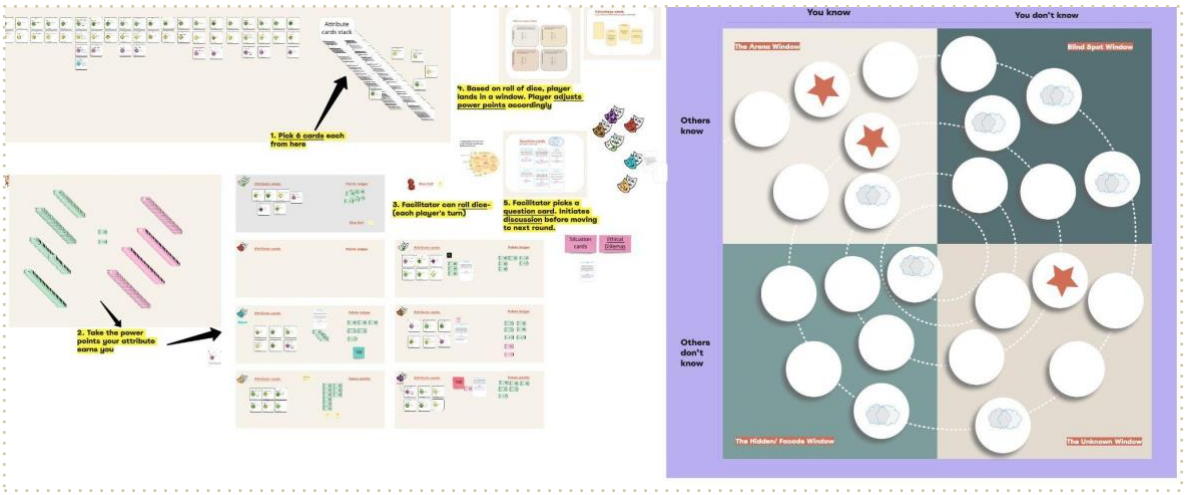


Figure 48. A screenshot of how the game looked like on the software used to facilitate the gameplay testing.

Game play rules

The suggested rules of gameplay as directed to participants were as follows:

1. First each player picks 6 cards each from the “Attribute cards” stack.
2. Then they pick up the “Power points” that the attributes are worth.
3. To begin a round, players then roll the die when it’s their turn in the round.
4. Based on the roll of the die, the player lands in a “Window”. They pick up a window card which tells them how many “Power points” they earned or lost. The player adjusts power points accordingly.
5. If a player lands on the “Question card” position of the board, they have to pick up the card and answer the prompt. Other players engage with the prompt and exchange thoughts on how while one situation might be beneficial to one player, it might not be advantageous or it may be harmful for another player with disadvantaged attributes.
6. If a player lands on an “Advantage card” they gain an advantage they can use to progress in the game.
7. In the end, you will have some players with high power points and some players with low power points and they will reflect upon their journey in the game.

7.6 Playtesting, feedback and evaluation

Playtesting workshop design

The following is an excerpt from the workshop facilitation on how I introduced the game to the gameplay testing workshop participants:

"Welcome to the Quest for the Empowered Digital Self, a serious game for everyone in the design and innovation space and, the game where you have infinite power to bend history at will. The only limit is your imagination...

In this prototype, you role-play different characters with different attributes as you progress along different stages of your digital life. You will come across several challenges in your future digital life, and you may gain or lose power. The ultimate aim of the game is to see that, in the end, who can be more digitally empowered. Through critical thinking and self-reflection, the game will give players an experience and insight into some of the challenges threatening our digital identities in the future and also envision alternate scenarios throughout the gameplay."

To playtest the game prototype, this is how the workshop was facilitated:

2:00 PM - 2:05 PM EST	Welcome and Introduction
2:05 PM - 2:20 PM EST	Introduction to game/ presentation
2:20 PM - 2:30 PM EST	Game set up
2:30 PM - 3:30 PM EST	Round 1 starts. Round 2 and Round 3 if time permits.
3:30-4:00 PM	Reflections and Feedback (or add break here based on how the participants feel)

Figure 49. Screenshot of the itinerary of the workshop that was shared with the workshop participants.

Feedback

To facilitate the feedback session with the participants after the gameplay in the workshop,

- I shared with them OCAD University's Indigenous Learning Outcomes (OCAD University, 2019)
- I guided them to structure their feedback as "Tips"(What worked) and "Tops"(What could be better)

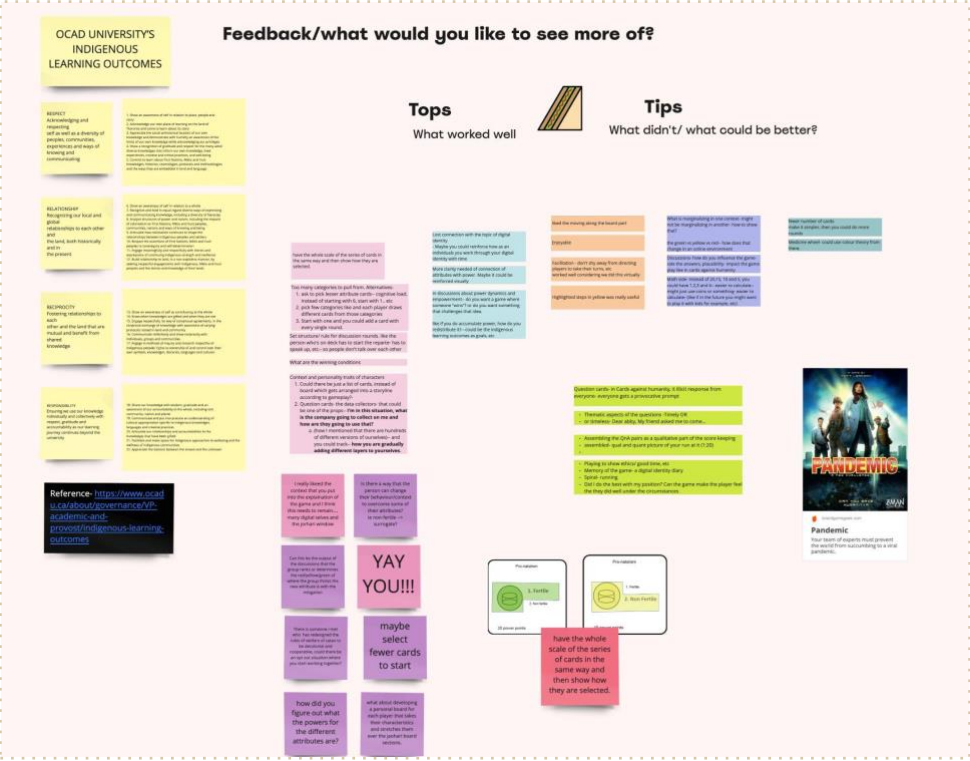


Figure 50. Screenshot from the playtesting workshop where participants gave feedback.

Following is a summary of primary feedback from workshop participants:

- There were too many categories to pick from in the Attribute cards. The participants suggested the following alternatives:
    - Ask to pick lesser attribute cards for a minimal cognitive load. For example, instead of starting with 6, start with 1

    - Start with one attribute card, and then add a card with every single round
- Question cards could be improved by adopting the concept in the popular card game *Cards against Humanity*, in which each round of game play elicits a response from every player; everyone gets a provocative prompt.
- The participants suggested setting structure/rules for discussion rounds. For example, the person who's on deck has to start the reparte – has to speak up – so people don't talk over each other.
- Participants found that they lost connection with the topic of digital identity; they suggested that I could reinforce in the game's design the way each player individually works through their digital identity over time.
- They felt that more clarity was needed in connection of attributes with power; for example, it could be reinforced visually.
- They suggested thinking about how an action that is experienced as marginalizing in one context might not be marginalizing in another; how to show that?
- One participant suggested developing a personal board for each player that takes their characteristics and stretches them over the Johari Window board sections.
- In discussions about power dynamics and empowerment, participants asked, 'Do you want a game where someone "wins"? or do you want something that challenges that idea? For example, if you do accumulate power, how do you redistribute it?'

Evaluation

I chose to evaluate the overall performance of the game design using the Art of Serious Game Design framework by Digital Education Strategies et al. (n.d.) illustrated in Figure X below. The framework states that serious game design has four important elements namely: learning, storytelling, gameplay and user experience. The interconnected nature of components within these elements has been shown with double ended arrows. Learning refers to the learning objectives or the content to be learned by the game players. Storytelling refers to the background story of the game, the characters and the goals of the game. Gameplay refers to the mechanisms through which the players interact with the game or with each other. User experience refers to the player's experience which includes their emotions and attitudes. The framework also depicts the relationship between the

game designers and the player. This has been illustrated through three concentric rings or layers in the figure below. The innermost layer, called the Design layer, refers to the story and the design created by the designer, which is the only thing they are in control of during the gameplay. The middle layer, called Play, represents the mediated experience between the game's design and the player's experience. The outermost layer, the Experience layer represents the experiences that players have based on the choices and actions made in the gameplay.

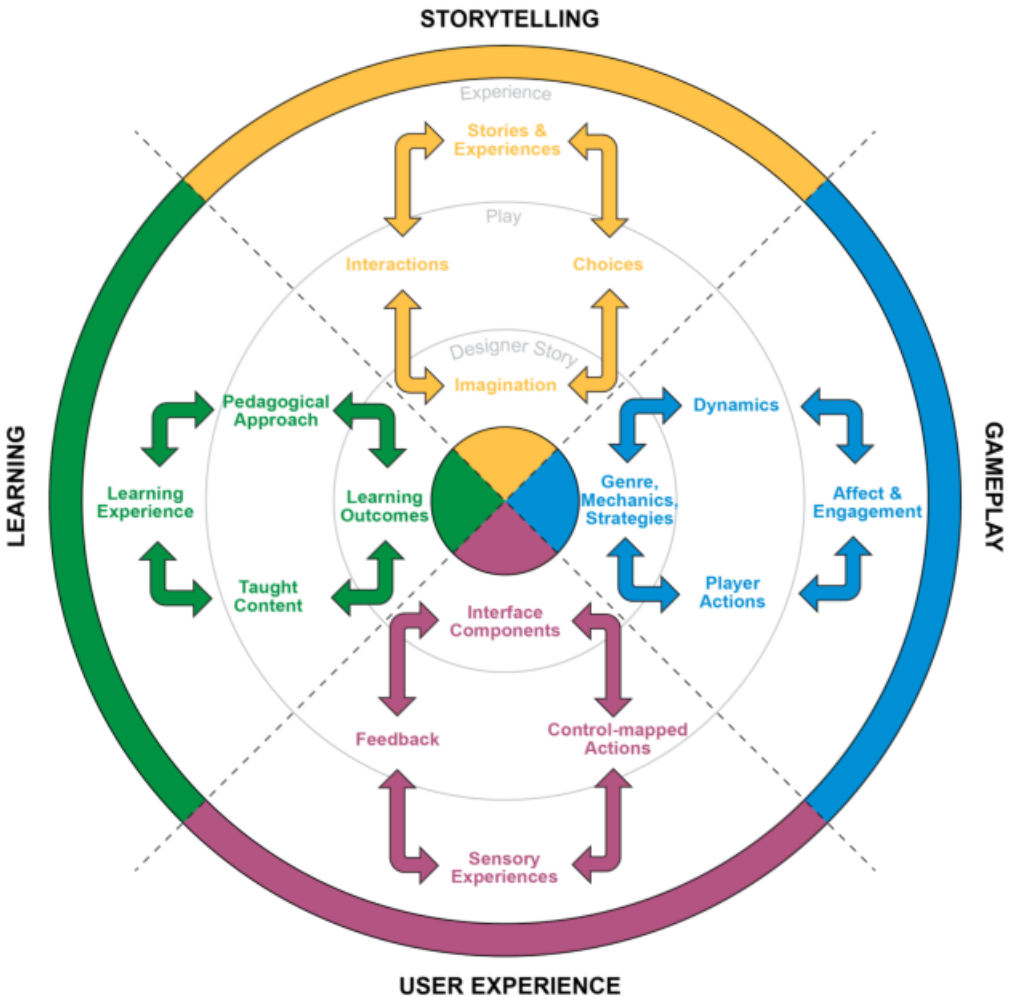


Figure 51. The Art of Serious Game Design methodology circle from Digital Education Strategies et al. (n.d).

Below is a table using the Art of Serious Game Design methodology circle as a guide to structure my evaluation of the game. I have scored each section on a scale of 1-5.

Table 3. Evaluation of Game version 1 using the Art of Serious Game Design framework (Digital Education Strategies et al., n.d).

	Designer's story	Play	Experience
Learning	1/5 (The challenges around digital identity could be highlighted more.)	3/5 (The participants were able to engage in conversations about alternate futures of digital identities.)	1/5 (the participants reported that they lost connection with the topic of digital identity, but understood how various elements of the game made sense in the context of the research.)
Storytelling	1/5 (The story of the game needs to be made richer and more accessible to include concepts about digital identity systems and power relations between stakeholders.)	2/5 (The storytelling and content of the game were not developed and incomplete.)	2/5 (The participants suggested that the content of the game could be made richer.)
Gameplay	3/5 (The genre of the game was roleplaying and several aspects of power were designed into the game. However the content still needs development and the storyline of digital identities needs to be made more evident through writing.)	3/5 (The game's rules were clear to the participants with the facilitator's guidance.)	2/5 (The participants got to calculate "power points" as they progressed in the game and engage with each other to build on the storylines of their journey in the game. But there was no clear way to document that journey.)
User experience	3/5 (The interface components were	3/5 (The game's content, collaborative and	2/5 (There was some significant cognitive load

	designed on an online whiteboard software which allowed all players to engage with the game virtually, but with an experience of playing a board game.)	interactive features allowed participants to have a good user experience.)	on part of the participants to build on the storyline of the game as it was not rich in content.)
			Overall score= 26/60

The overall performance of the game prototype was poor, but several elements of the game showed potential for development. The most significant limitation in the game's story was the lack of time and experience in game development and limited knowledge and insights on the challenges with digital identities in the digital services ecosystem. More work needs to be put by the researcher into the writing of the game content, i.e., the cards need more stories and scenarios and the development of components that allow the players to document their journeys and see how they are progressing through the gameplay.

7.7 Game version 2

The next step for the process of game development is to develop the second version of the game prototype and playtest it. Some of the game components for the second prototype are shown below. All of these components will be subject to further development before the next round of gameplay testing.

Table 4. Game components for Game version 2.

Component	Description
Game board	**Improvement from Game version 1** **Medicine wheel** Like the first version, this game board is also adapting the concept of the medicine wheel. The first ring of the spiral is in a timeframe of 5 years from

now. The second ring is ten years into the future, the third ring of the spiral is 20 years into the future and the fourth ring of the spiral is 50 years into the future. The infinity symbol in the middle of the board suggests that the spiral is infinite and keeps going into the future. Players can repeat the spiral from the beginning to play the game a bit more into the future.

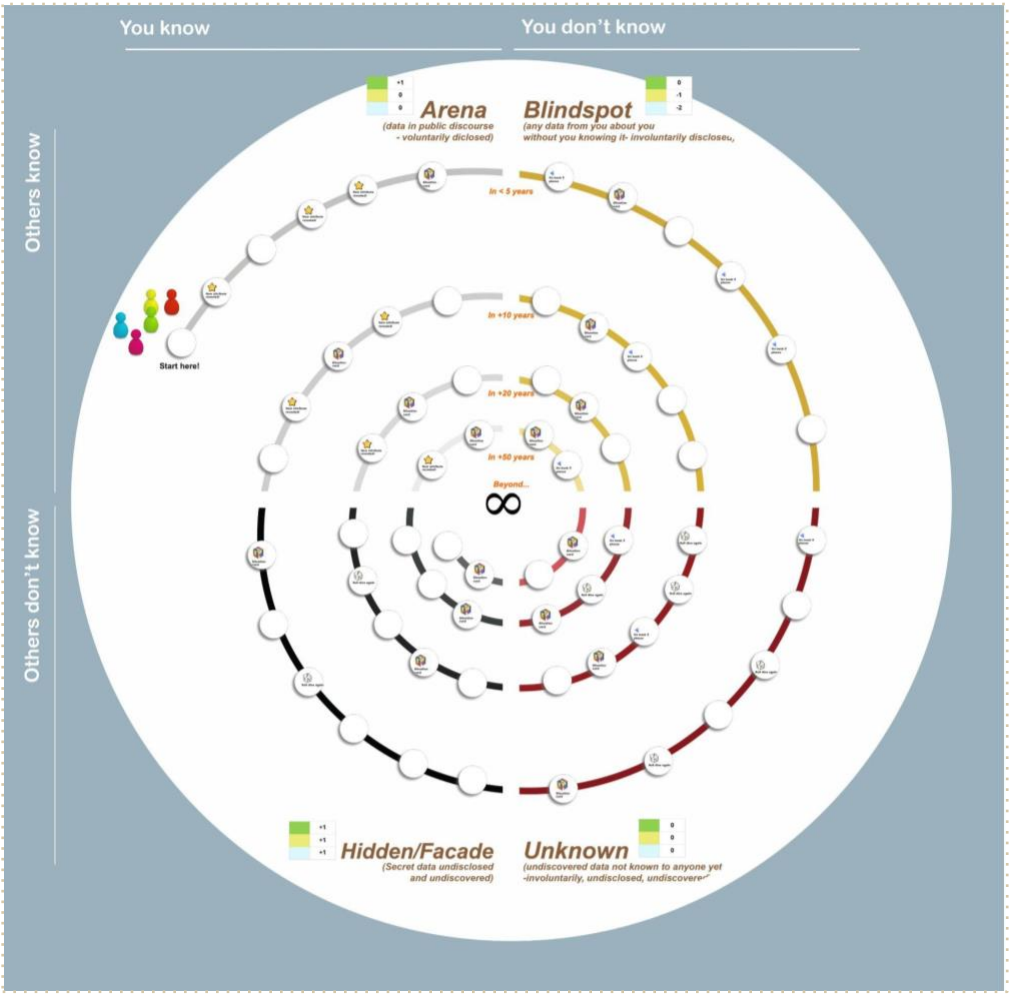


Figure 52. Snapshot of game board for Game version 2.

Johari window

It also adopts once again the concept of the Johari window and being indifferent quadrants of the board influences the player's power points. Explanation of how user's data is being used or protected has been added as an explanation for each of the windows.

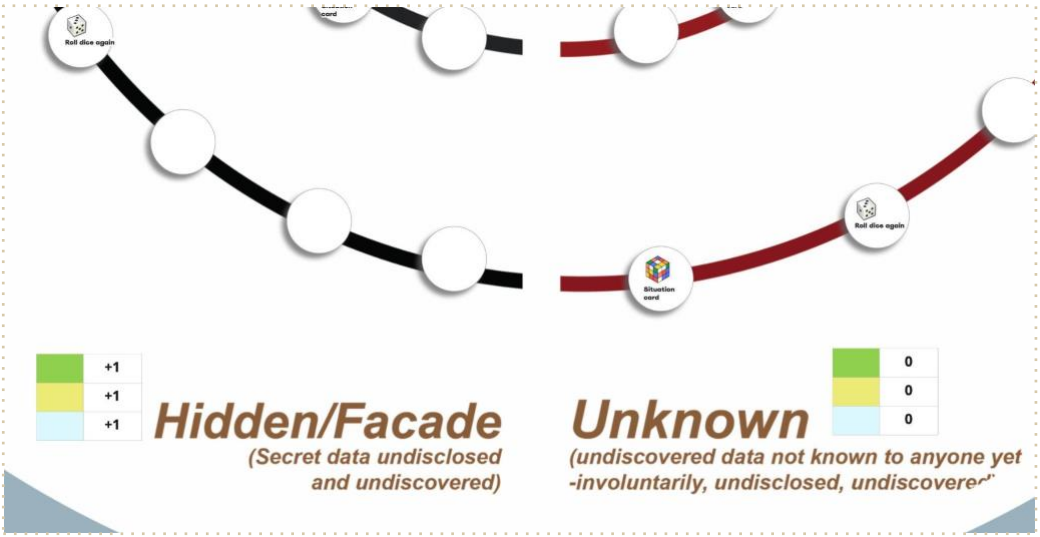


Figure 53. Magnified snapshot of game board to show the sections of the Johari window and the legend of the power points affected by them.

Prompts on the game board

As you progress in the game, you come across the following prompts:

- Situation cards: Situation cards are scenarios and prompts based on the Window.
- New attribute revealed!: Player picks up one attribute card.
- Go back 3 places: Player goes back in time by 3 places.

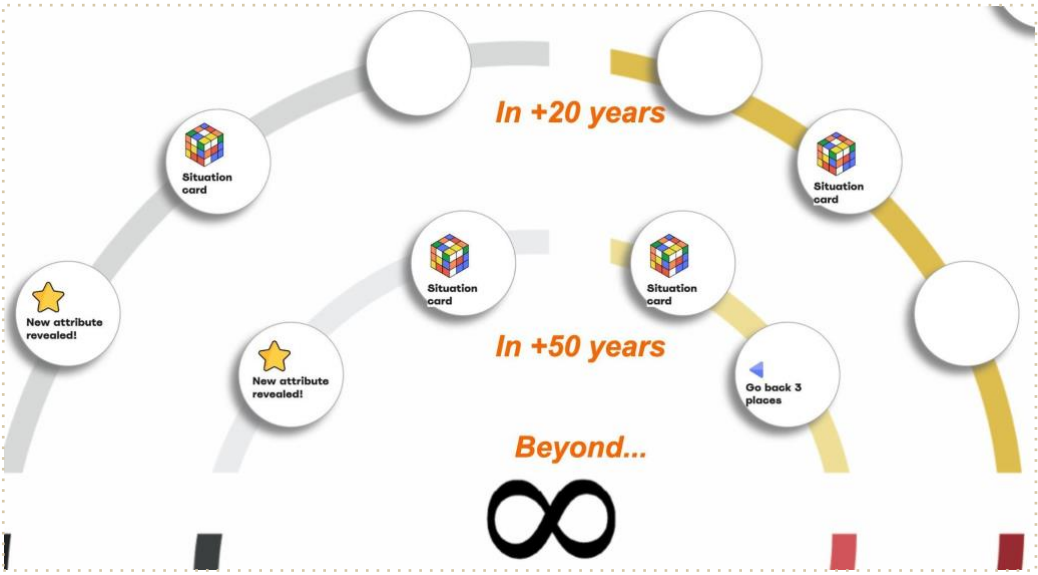


Figure 54. Magnified snapshot of the game board showing the various prompts in the game.

Attribute cards	**Improvement from Game version 1*- Under development* Each player starts with one attribute card. The attribute card in game version 2 will be similar to the attribute card in game version 1. The only difference is that the power points will not be indicated on it. Attributes will influence the gameplay when they are contextually relevant to the *Situation cards* (described below).  **Figure 55. Prompt for player on the game board to pick up one attribute card.**
Player archetypes	**New addition*- Under development* Carl Jung, Swiss psychologist and psychiatrist, employed the archetype concept in his theory of the human psyche (Jung, 1959). Building on Jung's work, Pearson (2015) identified 12 universal, mythic character archetypes that represent the spectrum of basic human motivations. I have made use of twelve archetypes (Pearson, 2015; Jung, 1959), with the various stakeholders in the digital identity ecosystem. Below is a wireframe for the Archetype card prototype. It contains the following features: ● Visual token- An illustration based on the archetype's features. ● Archetype characteristics. ● Eligibility to use powers. ● Allies: What other archetypes are allies for this archetype. Each player gets one archetype card in the game and they play as that character archetype.

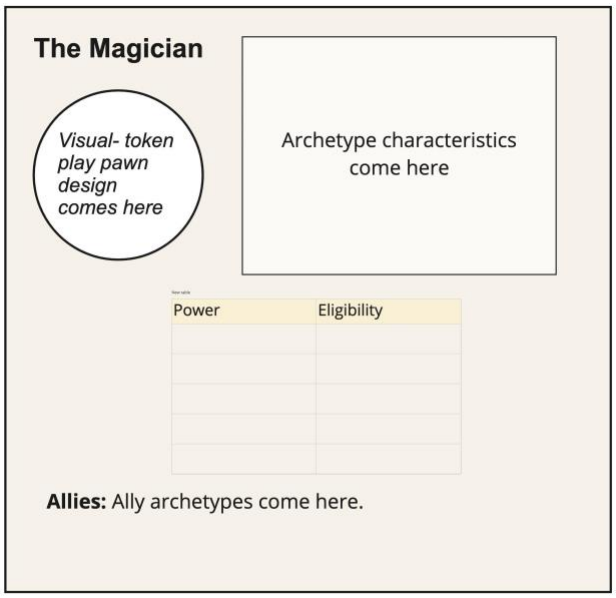


Figure 56. Snapshot of player archetype card.

Power cards

**New addition*- Under development*

Use these to enact your power towards your archtype's goals.

Each player gets one power card at the beginning of the game. The card's wireframe has been shown below. The powers are based on Eric Liu's (2017) laws of power and strategies to change the equation of power. Here are the main components of the power card wireframe:

- Cost to use power in the form of power points. This currency of this cost is called *"power realization points"*. These points are also affected based on which window the player is in in the gameplay.
- Name of the power.
- Action that power allows you to do.

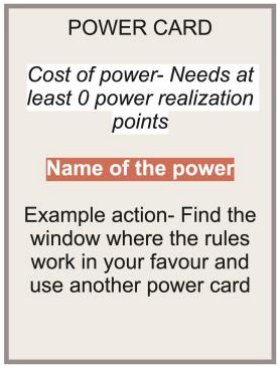


Figure 57. Wireframe of the power card prototype.

Situation cards	**New addition*- Under development* The situation cards are prompts for various scenarios that come up along the board.

Figure 58. Prompt for player on the game board to pick up one situation card.

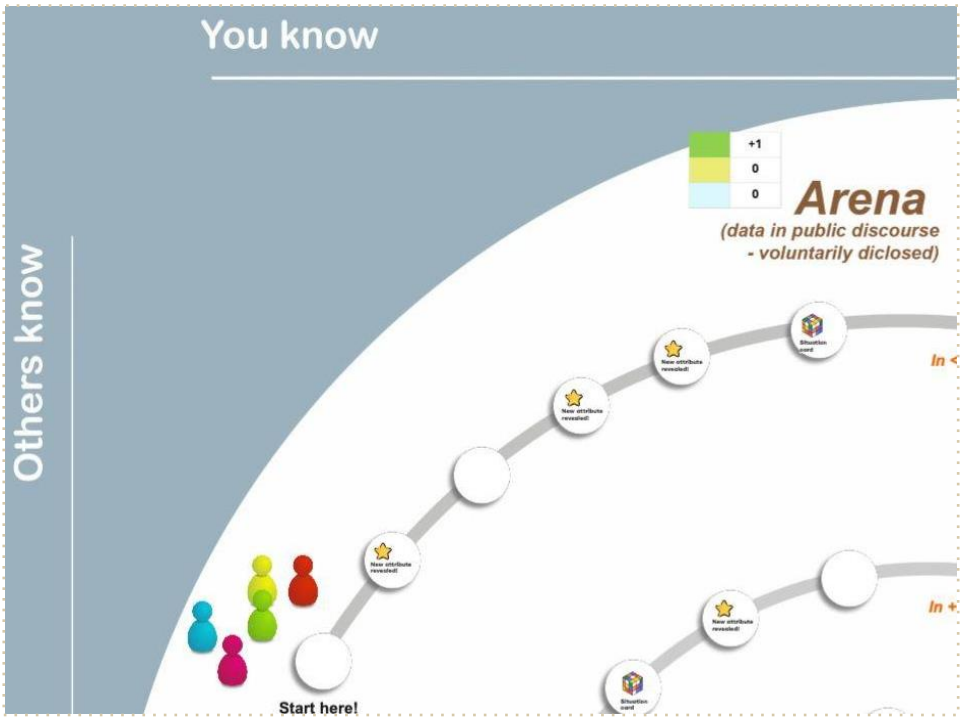


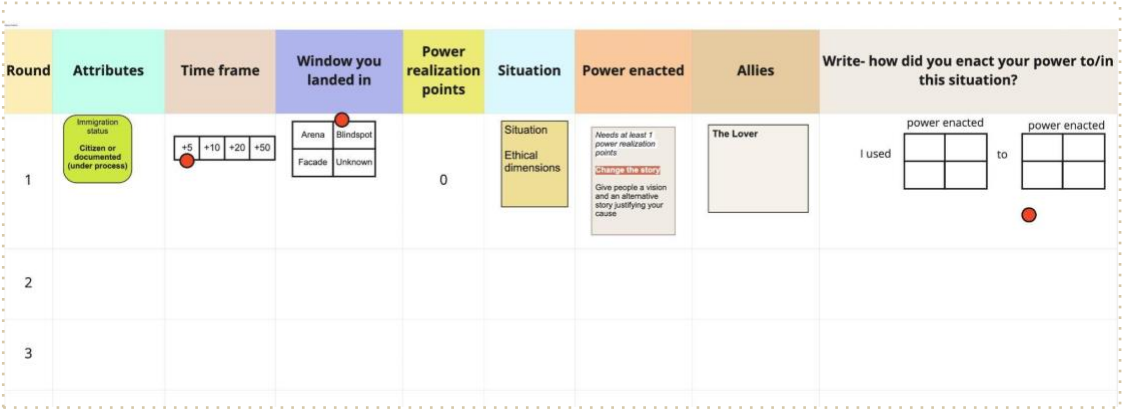
Figure 59. The magnified section of the game board shows the situation card prompt, which in this case, is located in the “Arena” of the Johari window.

	The scenarios for the situation cards are currently under development. The method of generating the scenarios has been illustrated in the figure below. The situation cards will be coloured according to the window they are in. The method of scenario generation is to intersect each of the aspects of the 4 windows- *Arena, Blindspot, Unknown and Facade* of the Johari window with Social, Technology, Economic, Environment, Political, Values aspects. The resulting content on the cards would be the description of the scenario and the *ethical dilemma* that the players will have to respond to based on the scenarios described.

	Arena	Blindspot	Unknown	Facade
Social	Situation Ethical dimensions	Situation Ethical dimensions	Situation Ethical dimensions	Situation Ethical dimensions
Technology	Situation Ethical dimensions	Situation Ethical dimensions	Situation Ethical dimensions	Situation Ethical dimensions
Economic	Situation Ethical dimensions	Situation Ethical dimensions	Situation Ethical dimensions	Situation Ethical dimensions
Environment	Situation Ethical dimensions	Situation Ethical dimensions	Situation Ethical dimensions	Situation Ethical dimensions
Political	Situation Ethical dimensions	Situation Ethical dimensions	Situation Ethical dimensions	Situation Ethical dimensions
Values	Situation Ethical dimensions	Situation Ethical dimensions	Situation Ethical dimensions	Situation Ethical dimensions

Figure 60. Method of scenario generation for Situation cards.

Player ledger	**New version- improvement from game version 1** The player ledger is a living record of the player's journey in the game . It records the players turn in a round of play and records the following aspects of play to reveal a new scenario or story of a possible future:

	- “Attributes”: The attribute cards that the player started with or picked up along their turns in the game play - “Time frame”: Here the player can mark which ring of the spiral they are in to indicate the timeframe they are in: +5 years, +10 years, +20 years or + 50 years - “Window you landed in”: This is to record which part of the Johari window the player lands in. - “Power realization points”: This is to record the power realization that the player has. - “Situation”: This is to record which situation card the player picked up - “Power enacted”: This is to record which power card the player chose to use in this situation. - “Allies”: Allies are other archetypes that players can loop in their turn if they feel that their ally has a power that could help solve the ethical dilemma that they are in. - “Summary”: This section is to record the overall story of the turn (this is indicated in the figure below as “write- how did you enact your power in this situation”. There will also be a place to make additional notes.  **Figure 61. The player ledger shows the story or situation the player experiences with each round of game version 2.**
Pawns	**New addition*- Under development* The pawns will be designed to reflect the personality of the archetype cards. When a player joins a game, they are given an archetype card and the corresponding pawn which they role play as they move through the game.
Dice	**Same as Game version 1**

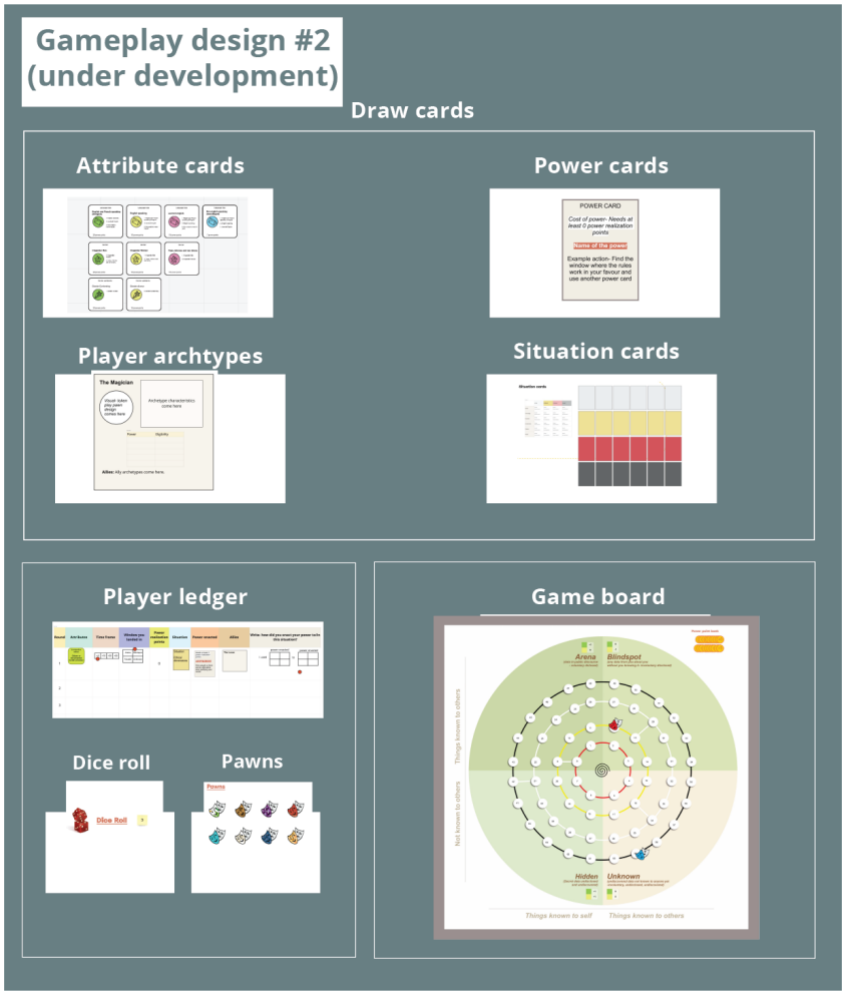


Figure 62: A brief visual summary of all the components of Game version 2.

Tentative game play design and mechanics for Game version 2

I named the game in this version-" Pandora's box of digital pluriverses" (Pandora's box is a popular idiom which means to uncover an unsuspected pandemonium of problems. Digital pluriverses refer to multiple possible alternate digital futures. So the name suggests that by playing the game, we are discovering/creating new alternate scenarios where digital versions of ourselves could live).

The suggested (tentative) rules of gameplay for the second version of the game prototype are as follows:

Like game version 1, game version 2 will also require between 2 to 8 players.

1. Each of the players is given one attribute card each in the beginning of the game. Then, they pick up one random “power card” each from a stack of power cards. Lastly, they pick up archetype cards and the corresponding pawn associated with the archetype card.
2. To start a round, a die will be rolled and a number between 1-6 will be the number of places the player can move their pawn ahead in the game. With each round, they will record their progress on the player ledger as described above. They will progress into the future with every rotation of the spiral in the board as described above. If they come across:
    a. No prompt- Nothing needs to be done except to adjust the amount of power realization points that the player has based on the window they land in.
    b. “Situation card”- They pick up a situation card based on what part of the Johari window they land in. In the situation card there will be a scenario and an *ethical dilemma* that the player will have to respond to by enacting a power card by themselves, or finding an ally with a desirable power and then using that power to solve the *ethical dilemma*. The player may choose to skip their turn.
    c. “New attribute revealed!”- Player gets to pick up a new attribute card.
    d. “Go back 3 places”- Player has to go back 3 places.

The result will be that all players will have different stories recorded in their payer ledgers with ethical dilemmas and some strategies to solve them.

7.8 Summary

In this chapter I documented a creative and ongoing exploration of a serious game with foresight elements to imagine alternate futures with digital identities. I described the methodology of game design, the design elements and gameplay mechanics of the game and documented feedback, insights and evaluation from playtesting the game in a workshop. I also documented the version of the game currently in development, i.e, Game version 2 and its mechanics. The next chapter is “Conclusions“ which provides reflections and directions for future work in this project.

PART IV: THE ROAD AHEAD

“

“In this brave new digital world, reality is plastic, and your identity is whatever you wish it to be. As is your future: Wish it, build it, live it.”

”

– Dean Koontz, The Silent Corner (2017)

Chapter 8. Conclusions

8.1 Reflection and evaluation

Through my journey in this MRP, I have briefly discovered stories of power relations in the digital services ecosystem that supports people, communities, and their digital identities. I have also started a conversation on the future of digital identities that invites myself, my peers in the design and strategic foresight community and others. We often consider certain user groups while designing digital services and systems. This MRP prompts readers to consider including additional stakeholders in their design process: the digital "bodies" of user data and the user's multiple and intersectional digital identities interacting with a multiverse of applications and digital worlds.

The resulting work in this MRP was centred around three key domains- digital identities, power models and game design.

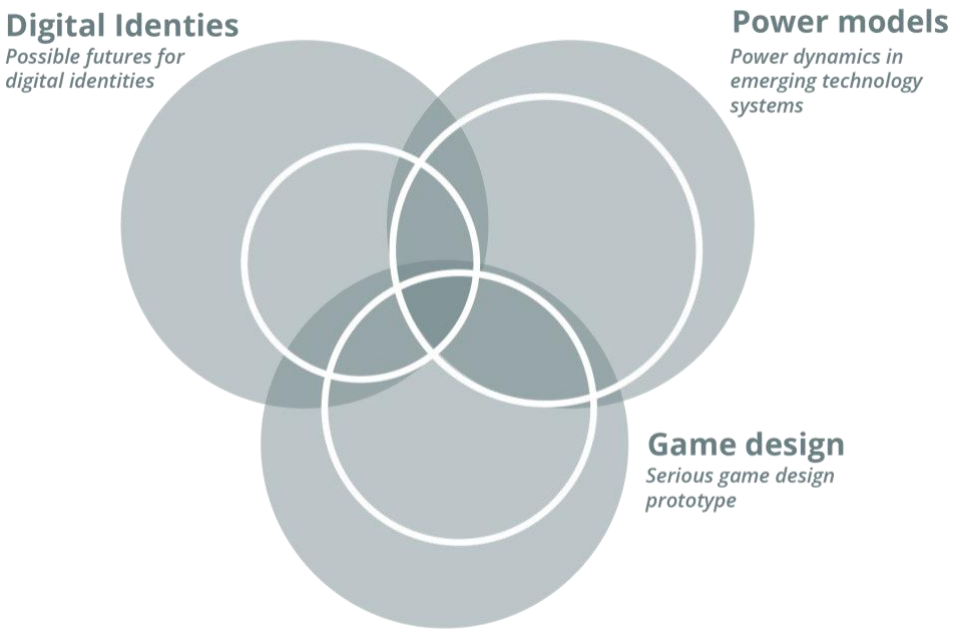


Figure 63. Evaluation: Trillium venn diagram for evaluation inspired by Trillium flower symbolism (Staff, 2022).

Trillium is a three-petaled flower native to North America, often symbolizing balance and transformation. This radar graph evaluates the project in three domains: digital identities, power models and game design. The green circles in the background show balance. The area of the white circles represent the level of accomplishment in each of the domains.

1. *Possible futures for digital identities:* Literature review and horizon scanning revealed several trends and problem spaces concerning digital identities. However, the work lacks depth of knowledge on the challenges behind the design process of digital services using digital identities. A deeper line of inquiry is required into how emerging digital identity systems could compromise the futures of marginalized populations.

2. *Power dynamics in emerging technology systems:* Several theories and frameworks of power were explored and used as tools to illustrate the challenges we need to attempt to solve today. It successfully showed the diversity of ways power exists and how it might be possible to use power as a leverage point for change on a macro level. However, there is a need for further investigation into the subsystems that exist within the larger systems of power.

3. *Serious game design prototype:* Within the bounds of this MRP, the serious game design process had several limitations. Firstly, time availability was a minimal resource for designing and playtesting the workshop. The lack of time also influenced my ability to develop scenarios and storylines for the game that could significantly improve the play experience. Lack of skill and expertise in designing tough games also served as another challenge for this work. I learned that serious game design is a very collaborative process. Each time workshop participants in my research playtest a serious game, the gameplay insights help create new future scenarios and are richer. It is also worth mentioning that it is possible to produce the game commercially in various digital or board game formats.

I hope that the short-term impact of this work (0-5 years) will be to facilitate more inclusive change-making conversations about digital identities, and the design of systems supporting them. In the medium-term, (5-15 years), the work aspires to increase participation by civil society in the advancement of marginalized populations. Further down the road (15-30 years), beneficiaries of this work should be able to make sound choices and have excellent levels of awareness about their digital selves — or digital "bodies" — and recognize, demand and fight for their powers and rights in the plural digital worlds of the future.

8.2 Areas for future work

This project stands to benefit from more intensive and nuanced investigation of specific types and levels of challenges faced by people in marginalized communities around their unique digital identities. For example, we want to discern between the nature and nuances of "missed use" of digital identities due to digital divide VS "mis-use" due to attributes such as gender, age, race, etc.

A synthesis map might be a valuable further development. It is a large format, graphical communication artifact that visually interprets and illustrates numerous knowledge views to reveal socio-technical issues and challenges that exist inside a complex system scenario (Jones & Bowes, 2017). This artifact could prove as a valuable tool when communicating with an audience of diverse expertise and backgrounds, when discussing the possible future alternative digital identity ecosystems and the relevant stakeholder stories associated with them.

The game development process is very collaborative, so the game will benefit from several more rounds of workshop playtesting and prototype iterations. In parallel, serious game design can be further investigated and experimented with as a viable foresight scenario-generating tool for evolving technology systems.

8.3 Parting thoughts

The goal of this research paper has been to inform and thereby influence the reform of designing digital services to be accessible and empowering for people from marginalized communities with digital identities spread across these services. In this project, I have attempted to unpack and understand challenges in technology ecosystems that run on digital identities, by unpacking insights from horizon scanning, literature review, subject matter expert interviews and system maps.

By designing a serious game prototype, I have attempted to start an ongoing process of creative collaboration and explore the ethical dilemmas that we may face with emerging technologies as our digital selves navigate alternative futures.

Through my work, I hope to influence the design processes of digital services to be more ethical, inclusive and accessible by creating conditions in which we all can potentially bring more creative challenges to our mental models as players and professionals, in designing and using emerging digital ecosystems. By building awareness and curiosity about digital identities and the systems and technologies governing them, my intent is to help designers to recognize power as an innate capability in individuals, communities, systems and spaces.

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Appendices

Appendix A: Subject matter experts

Table 5. Subject matter experts.

The Experts	Insights about:
Expert 1: Morten Rand-Hendriksen Technologist, Designer and Tech Ethics expert	What would be a tech ethics approach to the design of future digital services where users have greater power to manage and affect the outcomes of their digital identities?
Expert 2: Kaliya Young Leader in the emerging technology of Self-Sovereign Identity or Decentralized Identity,	What systemic challenges must we address in digital identity systems from the point of view of technical communities developing

• Author of book “Domains of Identity”(Young, 2020) and co-author of a “Comprehensive guide to Self-Sovereign Identity”(Vescent et al., 2019) • Hosting participatory conferences called the Internet Identity Workshops since 2005 to help solve issues with digital identities	infrastructure for digital identity?
Expert 3: Trine Falbe Ethical Design and UX specialist Co-author of “The Ethical Design Handbook”(Falbe et al., 2020)	How might we influence the Design and Innovation side of digital services to be more inclusive of the digital identities of vulnerable and marginalized populations?

Appendix B: Semi-structured Interview Discussion Guide

I. Warm up

Purpose: To warm up the participant, get them comfortable and open. To gather information to help interpret his or her responses.

- Introduction to research and interview goals
- Housekeeping: ensuring consent form is reviewed and signed and permission to record
- To start, I would like to hear a word or two about what are your goals in doing your work. What motivates you?
- I'd like to hear a little bit about your journey to the world of tech ethics/design/digital identity, especially in designing for vulnerable user groups like children.
- What was one time you tried something that didn't work, and what happened then?

II. Systemic overview

Purpose: To gather insights into participants' understanding of the challenges in the tech ecosystem.

- Regarding your point about _____, how do you see this system working now?
- In terms of digital identities and the representation of the self (such as identity systems, masks, avatars, social profiles, etc.) What do you think we are overlooking or not talking about enough in today's digital ecosystems?
- What do you think is happening right now that we don't have enough of?
- What are the biggest challenges you face on an individual and team level doing your work?

III. Digital Identity Futures

Purpose: seek a better understanding of fallacies in existing identity systems, discover leverage points in the system to bring about positive change in the design process, and discover where designing for autonomy and inclusion of digital selves lie in the future work of designers

- In regards to the futures of digital identity and the uncertainty that lies ahead, what ideas or patterns do you see driving significant change into possible futures?
- What kinds of things would you like to be able to do that you still can't? Think ahead five years - how will what you are doing be different? How might you or are your family/friends different because of this?

- Do you see a future where those not necessarily digitally able---marginalised communities- children born into the digital age, people with disabilities and people experiencing racial and social discrimination can be empowered through their digital identities?

IV. Wrap-up

Purpose: Thank the expert for their time, summarizing and wrapping up the interview.

- Before we finish, do you have any questions for me, or do you think I missed out on asking any important questions?
- Would you be open to speaking with me again in the future?
- Who else should I talk to?
- What are one or two things I should know about you as a person?
- If there were three key takeaways from our discussion today, what would they be?

Appendix C: Recruitment material for workshop playtesting

The following material was used to reach my followers in professional communities on social networks like Google groups, Linkedin Groups, Slack groups. For example- OCAD SFI Google Group. I also sent them to gatekeepers or members of similar communities via email with a request to circulate the invites further:

“Hello, Network!

As part of my final major research project (MRP) for my Master of Strategic Foresight and Innovation program at OCAD University, I am inviting participants to participate in (virtual/online) gameplay testing workshops for my project, "Unmasking Power: Alternative Futures for Empowering Our Digital Identities".

The research in this study would help create a game prototype for design and innovation teams to critically examine power dynamics prevalent in emerging technologies and support the creation of future technologies to be more inclusive and empowering for marginalized people. The graduate researcher will ask participants to playtest a game prototype, and the workshop will take approximately 1.5-3 hours.

I plan the workshops for the weeks of July 18th 2022- July 31st 2022. If you have interest and availability to be considered for this process, kindly register for the event by clicking here.[This is a link to a Microsoft form which will take less than 2 minutes to fill], or feel free to message or email me directly at shreya.chopra@ocadu.ca. I'd be happy to connect!

Eligibility:

You are eligible to participate in this workshop if you:

- *are over 18 years old*
- *have interest in future of your digital identities, serious games for futures thinking*
- *Are currently working in or plan to work in design and innovation teams in the future*

This student-led research study has been reviewed and received ethics clearance through the Research Ethics Board of OCAD University [# REB approval no.]. Please feel free to share this message with anyone who may be interested. I appreciate your support!

#futuresthinking #digital #design #digitalidentity #designjustice #seriousgames"

Figure 64. Poster shared with the social media post for recruiting participants.