**Indigenous Digital Governance:**

**Principles and Practices for Self-Determination and Equity**

**(DRAFT with Editors)**

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**Abstract**

With the insinuation of digital Information and Communication Technologies (ICT) into our lives, a fundamental shift has been happening in the way governance and government is conducted globally. R**eferred to as ‘eGovernance’ (Electronic Governance or Electronic Government) and, more recently, ‘Digital Governance’, this transformation** was greatly accelerated amongst First Nations peoples worldwide during the Covid-19 Pandemic.  In Australia, there is growing pressure on Indigenous incorporated organizations to use ICT for their internal governance and mandatory reporting to governments. Yet, there are significant gaps in our knowledge about the ways in which Indigenous groups are engaging with ICT, and their understandings of what constitutes ‘digital equity.’ We know little about how they are actually using ICT to maximise their self-determination and sovereignty. The underlying hypothesis explored by this paper is that Indigenous Australians are acting as digital innovation agents, not passive recipients or deficit victims. The paper investigates the ways groups are infusing ICT with their cultural logics, creatively remixing and reshaping it in self-determined ways, in order to revitalize collective identities, reclaim cultural knowledge, and exercise their rights and interests.

**Introduction**

“There is a window of opportunity to build the foundations of an equitable metaverse, starting with respect and recognition of First Nations peoples. … By acting early and amplifying successes globally, First Nations peoples … can have a voice and a hand in virtual land and metaverse co-design and ownership.” (Barba, B. et al. 2022, 4).

With the insinuation of digital Information and Communication Technologies (ICT) and Artificial Intelligence (AI) into the most mundane aspects of our lives, a global revolution has occurred in how governance and government are conducted**.** Today, digital tools are applied routinely to a myriad of functions ranging from citizenship representation, participation and voice within their nation states, through to decision-making, accountability, strategic planning, and administration by governments. The ubiquity of this transformation has given rise to the terms **‘eGovernance’ (Electronic Governance) and ‘eGovernment’ (Electronic Government) and, more recently, the umbrella term ‘Digital Governance’ that emphasises the wider range of stakeholders now playing influential roles in governance beyond the nation states.** The COVID 19 Pandemic greatly accelerated thedigitaltransformation of governance (Organisation for Economic Cooperation and Development (OECD 2020; Soto-Acosta 2020) including amongst First Nations peoples (see Drieberg, Smith, and Sutherland 2024).

The ongoing digital revolution not only has implications for how First Nations make choices, carry out their daily transactions, provide services, and implement decisions on behalf of their members, but also for how their citizen members participate in First Nation self-governance and negotiate their collective rights and interests with others (see Brown and Nicholas 2012; Duarte 2017; Dyson, Hendriks, and Grant 2007; Ormond-Parker et al. 2013). In Australia, there is growing enthusiasm amongst First Nations to adopt and customize digital technologies for their own collective purposes. However, there remain significant gaps in our knowledge about how this groundswell of Indigenous digital engagement and collaboration is happening. This paper describes examples of how Australian First Nations are seeking to self-govern the digital windows of opportunity alluded to above by Barba et al. (2022). The intention is to identify the *Indigenous* principles being applied to governing their real-world engagements with ICT and the innovative practices being designed to maximise their digital self-determination. In doing so, the paper argues for a reconsideration of concepts of digital divide and digital deficit, advocating instead for a right-based understanding of equity as Indigenous self-determined digital governance and digital sovereignty.

An underlying argument presented in the chapter is that First Nations people in Australia are acting as digital innovation agents, not passive recipients or subservient mendicants. In doing so, they are remixing and infusing ICT with Indigenous cultural logics and ontologies, to revitalise collective identities, reclaim cultural knowledge and intellectual property, and exercise their legal rights and development interests. The chapter argues digital innovation is a crucial component of Indigenous self-governance and nation rebuilding (Nikolakis, Cornell, and Nelson 2019; Smith et al. 2021). Framing Indigenous people as digital innovators and digital governors does not ignore the very real constraints imposed on their securing equitable access to digital infrastructure and resources. Rather, the paper’s lens of self-determined digital governance and innovation aims to unsettle the accepted public discourse about the ‘digital divide’ in Australia that has automatically positioned Indigenous people as being ‘digital victims’ in need of digital assimilation or digital inclusion into Western ICT practices.

These are complex and consequential issues for the future. As Indigenous peoples globally and in Australia fight for treaty-based recognition of their sovereignty, the digital revolution poses both exhilarating opportunities and formidable challenges for self-determination and self-governance. If First Nations and their organizations in Australia are to grab and governthe ‘window of opportunity to build the foundations of an equitable metaverse’referred to by Barba et al. (2022, 4), then the purported challenges and opportunities of digital engagement need to be urgently unpacked. To contribute to that goal, this chapter is presented in three broad parts. The first unpacks the concepts surrounding digital ICT and related debates about digital divides, equity, and inclusion. The concept of ‘Indigenous Digital Governance’ is introduced as an intercultural ‘contact zone’ (Pratt 1991) and ‘cultural interface’ (Nakata 2006) where emergent transformation and innovation are taking place. The second part provides snapshots of how this is being done in three digital initiatives by Australian First Nations and their organizations. The aim in this part is to identify the underlying Indigenous governing principles and practices for their purposeful digital engagement. The final part of the chapter synthesizes important commonalities amongst Indigenous principles and practices to propose a more broadly relevant framework for understanding Indigenous self-determined digital governance and advocates a deeper concept of ‘digital equity *with* culture and identity.’ Lastly, the issue of Indigenous digital sovereignty is raised for consideration.

**Unpacking the Digital Power Words**

Concepts of ‘eGovernance’ and ‘eGovernment’ emerged in the 1990´s to highlight modes of governing via Information and Communication Technologies (ICT) (Grigalashvili 2022). Just as there are diverse definitions of ‘governance’ (Ansell and Torfing 2022; Hunt et al. 2008; Kooiman 2003), there are varied conceptual approaches to electronic modes of governance (Coleman 2008; Erkut 2020; Grigalashvili,2022; Grondlund and Horan 2005). Furthermore, ICTs and their digital platforms are not bias neutral. Rather, they are powerful cultural constructs privileging particular societal values, behaviors, and prejudices, which directly ‘affect the shape of technologies’ (Nissenbaum 2001, 120). In cross-cultural contexts, this is a crucial issue. For while digital technologies provide new means to advocate and exercise human rights, they can also undermine and suppress them. Accordingly, these concepts need to be critically interrogated, along with others frequently used in conjunction such as ‘digital divide’, ‘digital deficit,’ and ‘digital inclusion.’

‘E*Government*’ generally refers to the use of ICT by governments to exercise jurisdiction over a country or region, whether those be nation-state or First Nation governments, and for the provision of online public administration, service delivery, and citizen participation. It now involves a proliferation of digital technologies and processes for eTaxes, eEducation, eHealth, eTransportation and eWelfare services, eVoting, eSurvey, and eConsultation (Lindner and Aichholzer 2020; Luna-Reyes 2017; OECD glossary n.d.; Pina, Torres, and Acerté 2006; United Nations 2005; United Nations Educational, Scientific and Cultural Organization (UNESCO) 2021). ‘E*Governance*’ refers to the use of ICT to transform and support the processes, institutions (rules of use), and structures of any governing system. The literature generally agrees that it is a broader concept than that of EGovernment, because it encompasses not only digital government, but also the digital governance roles of wider citizen groups, NGOs, and the private sector (see Bannister and Connolly 2012, 2015; Calista and Melitski,2007; Engvall and Skiftenes 2022; Grigalashvili 2022; Ravšelj et al. 2022). Some consider it to be a more incisive concept than ‘EGovernment.’ since it can bring about a change in the way citizens relate to governments, to each other, and to wider actors, potentially bringing forth new rights, responsibilities, and concepts of citizenship. “Its objective is to engage, enable and empower the citizen” (UNESCO 2021).

The definitional ambiguity is not surprising given the boundaries between nation-state governmentality and societal governance are fraying under the onslaught of the digital revolution. For instance, there are now virtual forms of cross-nation engagement, such as cloud computing, Bitchain and Bitcoin currencies and investments, virtual-world governmentality, and virtual market economies. There are also powerful non-nation state actors hosting privatized digital platforms. All these fundamentally challenge the sovereignty of the Westphalian nation-state and suggest “the traditional coupling of concepts of sovereignty, territoriality and the state, of jurisdiction and borders, must be rethought” (Douzet 2020; Glasze et al. 2022, 1; Pistor 2020).

In this hyper-mutating global environment, it is not particularly productive to insist upon strict conceptual distinctions. The term ‘digital governance’ is therefore used in this paper to encompass the digitally imbricated fields of both EGovernance and EGovernment. It refers to the lines of authority, responsibility, and accountability established for the automation or computerization of a governing system, that, in turn, prompt adapted styles of leadership, stewardship, and representation, new mechanisms for participation, decision-making, and voice, and new ways of transacting and negotiating. The conceptual boundaries of the phenomenon will continue to evolve as the technopolitics play out. The more pertinent questions addressed in this paper are: Where does *Indigenous* self-determination and self-governance fit in this brave new digital world? Who gets to make the decisions? Whose rules and standards apply? Whose outcomes and priorities are being privileged?

While the United Nations, the World Bank, global industry, and influential think tanks often promote the universal positives for governance promised by the uptake of ICTs, the OECD (2020, 2) has suggested a more nuanced view, warning that the COVID 19 Pandemic has:

…raised the stakes around digital access and engagement, reinforcing… that connectivity and use of digital technologies are dynamic goals…. As governments adjust their strategies in response, they should keep in mind that increased reliance on digitalisation could risk opening new digital divides and/or exacerbating those that have proved persistent….

In the absence of global and nation-state laws to protect individual privacy and rights and monitor algorithmic bias, new vulnerabilities arise for marginalized groups, exacerbating inequalities (see Letch and Carroll 2007; and also Ravselj et al. 2022). A growing body of research reports that digital transformations have not always delivered expected cost savings or improved inclusion or participation (Dugdale et al. 2005; Taylor 2004). Inequitable digital consequences are particularly apparent at the cultural interface, which operates as a ‘contact zone’ where “cultures, meet, clash and grapple with each other, often in contexts of highly asymmetrical relations of power…” (Pratt 1991, 37). For First Nations in Australia, the digital contact zone is a space of complex power relationships, social transformations, and creative innovation that have far-reaching implications for their self-determination and sovereignty into the future (Drieberg, Smith, and Sutherland 2024; Dyson 2004; Dyson, Hendriks, and Grant 2007; Luna-Reyes 2017; Smith 2016; Smith and Field 2024).

**Digital Divide or Digital Equity?**

At first glance, the available Australian national data seem to suggest that the conditions for self-determined digital engagement for many First Nation communities in Australia are heavily constrained. Certainly, there are major impediments for them in digital access, affordability and quality of supply, compared to other Australians (Australian Digital Inclusion Index (ADII) 2021; Australian Government 2023; World Vision Australia 2021). The extent of these inequities is such that it is said to be producing an entrenched ‘digital divide,’ which Australian governments seek to address through policy goals of ‘digital participation,’ ‘digital equity,’ and ‘digital inclusion’ (Australian Government 2023).

According to the 2016 Census conducted by the Australian Bureau of Statistics (ABS 2016), in the lead up to the COVID 19 Pandemic, almost one in four Indigenous households did not have internet access. This was notably less than the access to the internet for all Australian households: 75.3% of whom had internet access versus 85.8 % of all households in Australia (Thomas et al. 2019). This access gap continues. The Australian Government’s National Broadband Network (NBN) initiative, which attempted to upgrade internet access across the country was not extended to many remote Indigenous households. Higher costs continue to compound the digital disparity, with Indigenous Australians spending a greater proportion of their household income accessing the internet.

While digital services in remote and rural Indigenous communities are said to be slowly improving (Featherstone et al. 2022; Kral 2012; Rennie, Thomas, and Wilson 2019; World Vision 2021), they still lag significantly behind those provided to other Australians and in urban locations. Furthermore, it is not simply a matter of supply and costs, but of the low quality of services provided to Indigenous communities (World Vision 2021). The national Australian Digital Inclusion Index (ADII) survey presents the “three elements of digital inclusion – access, affordability and ability.” The Australian Government (2023, 7) defines access as being “how and where telecommunications services are accessed and the reliability of these services. The types of devices used to access telecommunications, and the ability to effectively access critical services to support daily living.” Affordability is “the financial barriers to accessing digital technology, including access to service connections and data allowances.” Finally, they define digital ability as “an individual’s capacity to engage effectively and safely with digital technologies.” Based on these definitions, the Australian Government (2023, 4) recently concluded that,

“First Nations people have a relatively low level of digital inclusion…The digital inclusion gap…is evident across the three elements of access, affordability and digital ability. ADII case studies have shown that digital inclusion for First Nations people, particularly in relation to access and affordability diminishes with remoteness.”

Nevertheless, according to current government policy predictions, by 2026 “First Nations people will have equal levels of digital inclusion” to that of other Australians (Australian Government 2023, 10). But what constitutes digital equity and inclusion for Indigenous communities and groups?

There is little doubt that opportunities for Indigenous communities and organizations to digitally govern themselves in self-determined ways are hampered by poor quality infrastructure, poor internet connectivity, and high affordability costs. These cause delays and difficulties in communication, accessing information, consulting with members, and decision making by organizations and leaders. The COVID-19 Pandemic starkly highlighted the impact of these inequities (ADII 2021, 8; Drieberg, Smith, and Sutherland 2024; Stuchbery et al. 2022; World Vision 2021). The ADII reported the ‘digital gap’ in access and affordability facing First Nations people grew from 5.8 points in 2018 to 7.9 points in 2020 (Thomas et al. 2019, 2020). But are these gaps a matter of low digital participation and deficit capability or an example of digital discrimination? Arguably, the so-called ‘digital divide’ is *not* in fact a divide of aptitude, interest, ability, creativity, or motivation but rather a gap reproduced by factors of external costs, affordability, remoteness, and poor-quality service delivery (World Vision 2021; see also Gasparotto 2016). In other words, digital inequity is more a result of the systemic failure of successive Australian Governments and industry to provide equitable levels of digital infrastructure, hardware, systems and programs, stable connection, and digital training to remote and rural Indigenous communities.

The twin concepts of the ‘digital divide’ and ‘digital inclusion’ play a negative role in a particular discourse about First Nations in Australia. They are used to justify the imposition of government-mandated forms of the digital service delivery, ostensibly in the name of closing the gap on the digital divide. There is also an aroma of colonial assimilation to the concept of ‘digital inclusion,’ which suggests that certain categories of people are somehow less technologically adept and able, and, therefore, their pathway to digital equity lies in achieving digital ‘sameness’ with the Western world (Mims 2012; Selwyn 2004). When framed as a government policy, digital inclusion fails to recognise the possibility that First Nations may choose lifestyles, values, and digital solutions that are substantially different from those of other Australians. Gasparotto (2016, 5-6) additionally argues that extending the infrastructure of the internet to Indigenous communities is wrapped in Western development rhetoric, which requires them to publicly define themselves in the terms of funding bodies “in order to secure the conditions for their own self-determination in the digital environment.” Caught in this discursive field, the goal of ‘digital equity’ too often becomes reduced to statistical equality, which governments interpret and operationalize in terms of Western norms and preferred outcomes.

The snapshots of Indigenous digital initiatives below indicate that a more useful framework for considering these matters will be a rights-based one of self-determination, as laid out in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). This approach is reinforced by the UN Secretary-General’s recommendation to “Place human rights at the centre of regulatory frameworks and legislation in the digital age” (United Nations General Assembly 2020, 18). It is furthered by the United Nations Human Rights Council (UNHCRC), which recommends that, to fully reap the benefits of technological progress while minimizing the potential for harm,

“… the development and deployment of new technologies needs to be rooted in strong human rights foundations… The development, diffusion and adoption of new technologies consistent with international obligations can be enhanced by effective and meaningful participation of rights holders” (United Nations Human Rights Council 2020, 9).

We must recast the concept of ‘digital equity’ as a ‘digital right’ and flesh out the concept of equity’ itself based on Indigenous understandings. That creates an entirely different platform for digital policy and practice. Arguably, Indigenous people should have equitable and affordable access and choice amongst the wide range of ICT technologies.In circumstances where services are not available, erratic, or of high cost, Indigenous groups and their organizations are leveraging their rights and assets to design culturally-based digital applications for governing their knowledge systems, lands, and waters, and development options. Indeed, the adoption of ICT by Indigenous communities has been so rapid and transformative over the past two decades that one Australian researcher (Corn 2013) was moved to coin a new phrase, describing it as ‘the Indigital revolution.’ In such contexts, Indigenous people are priviledging their values, relationships and goals to effectively ‘indigenize’ digital equity; but more importantly, to design self-determined modes of digital governance.

So, what kind of Indigenous engagement and innovation in digital governance is occurring at the assertively Western digital interface, and what can be learned from them? Below are presented three brief Australian snapshots from different fields, in order to identify the specific Indigenous governing principles and practices being mobilised for their digital agency and innovation. They are: (i) the Ara Irititja Project, a nation-based example of a digital Indigenous knowledge; (ii) the Yawaru Nation’s digital mapping projects for governing Country; and (iii) the TraKs database system designed and operated by the Queensland South Native Title Services (QSNTS) for governing native title holders’ development opportunities. The first two cases are literature-based. The third is based on direct fieldwork. The principles and practices identified in each are finally synthesized into a more broadly relevant framework for Indigenous self-determined digital governance, and to propose a culture-centred concept of digital equity.

**Governing Digital Knowledge: Case Study**

In the mid-nineties, senior Ngaanyatjarra, Pitjantjatjara, and Yankunytjatjara (NPY) peoples (known collectively as Anangu) told their NPY Land Council to retrieve images and materials that missionaries, schoolteachers, anthropologists, scientists, doctors, and the government had collected over time and were keeping in western institutions. Over several decades, the Council and Anangu collaborated with trusted local teachers, researchers, and IT experts to design a purpose-built digital knowledge system, known as Ara Iritja, to house these repatriated treasures. Today, it comprises a digital archive of over 200,000 repatriated and locally produced materials including photographs, sound recordings, film footage, historical records, documents, and oral histories about Anangu cultural and contemporary lives (Ara Irititja 2023). Anangu spokeswoman Sally Scales described the motivations behind their archive:

“Ara Irititja means our history or stories from a long time ago and... Our old people said that they wanted this information back and to teach the young people...and to keep our culture strong….” (Scales cited in Ormond-Parker et al. 2013, vii).

By 2001, the first Ara Irititja computers were delivered to several Anangu communities. Since then, the software configuration and project scope have continued to be customized to create a culturally aligned, digital information architecture (Christen 2006; Hughes and Dallwitz 2007). Rightside Response Pty Ltd. designed and manages the platform, working under Anangu instruction to ensure cultural protocols were embedded into the software programs and online access-use pathways ([Rightside](http://www.rightside.com.au) Response Pty Ltd. 2023).

Today, the knowledge management software called the ‘Keeping Culture Knowledge Management System’ is a cloud-hosted configurable App that enables governance of “a broad spectrum of cultural information while conforming to cultural protocols and community expectations” (Keeping Culture Pty Ltd. 2023). The digital archive is available to all Anangu communities through networked, interactive software that is locally housed at Ara Irititja ‘hubs’ across the vast Anangu lands. In each community, senior Anangu with cultural knowledge and skills run the local hub and manage the computers.

Several Indigenous principles and practices appear to be instrumental in how Anangu govern Ara Irititja. Most critical is to “ensure that Anangu maintain control of this rich heritage” (Hughes and Dallwitz 2007; Scales et al. 2013,152). The NPY Land Council governs the archive to ensure it remains a community-owned, locally accessible, and accountable resource. In contrast to the global push for ‘open data’ (Kukutai and Taylor 2016), the vast majority of Anangu wish to keep this cultural knowledge private. It is not a market commodity, and they are not ‘customers’ of an external service (Christen 2018; Christie 2004, 2008). All intellectual property is owned by Anangu, who are stewards of the knowledge (Janke and Quiggin 2005). Public users are able to interact with a ‘front of house’ downloadable demonstration of the archive. Behind this sits the archive itself, which is accessible only to Anangu. Ara Irititja is aligned to the cultural geography (Country) of Anangu people and so extends across several large communities of the APY Lands. An important feature is its use of Anangu languages (Scales et al. 2013, 160) to record oral histories.

“The Ara Irititja system needed to be flexible enough to ensure that each of the relevant local Indigenous languages could feature not only in the database title name but throughout the interface, such as in culturally designed graphics for on-screen icons or buttons” (Keeping Culture Pty Ltd. 2023).

In a very real way, the governing rules applied to the operation of the digital archive derive directly from the law of Anangu Country. From this, it derives a powerful cultural mandate and legitimacy.

Importantly, the subsidiarity of traditional Anangu governance has been embedded into the archive by creating a decentralised network of computers located in Anangu communities, each having their own locally designed control over access and use.

“…the software should not try to prescribe a generic cultural restriction protocol on all communities. Rather, the software must adhere to specific community needs. It must be adaptable to community expectations, and importantly, the individuals who use it” (Keeping Culture Pty Ltd. 2023).

The systemhas overcome the limitations of low bandwidth and expensive internet connection by building a purpose-built media caching software, appropriately called Wiltja, meaning bush house or shelter. Once installed on each local network in a community, the software redirects the user’s browser to download media files stored inside Wiltja. This dramatically improves the usability of the software on local computers, while maintaining real-time access and full local control of content (Keeping Culture Pty Ltd. 2023). This innovative digital solution actively supports self-determined knowledge governance.

The software enables communities and local members to update the existing knowledge database. All Anangu users who have deposited restricted content are in direct personal control of their information through a system of access passwords and options to show or hide sensitive content (Hughes and Dallwitz 2007). This maximization of local control creates a high level of community participation and trust. Recognizing the trauma of reading or viewing racist colonial records, Anangu have had a series of interlocking cultural rules built into the system to govern people’s access not only to the archive, but also to specific components within it. First, the website home page presents a trigger warning for Anangu and the public, in local language and English, declaring:

*“Pukari*—Be Careful. This archive has been gathered from a wide range of sources and sometimes contains language and views that may be offensive to Aboriginal people. While the Ara Irititja project does not support such language and views, it is considered important historically to present this information without alteration” (Ara Iritja 2023).

Once inside the archive, there are culturally informed digital conditions for restrictions to ‘Sensitive’ (Law, ceremonial, personal) and ‘Sorrow’ (deceased persons) information. There are also separate archives within the overarching system to house materials restricted to either women (minymaku) or men (watiku). These are,

“…independent…databases managed and housed in separate locations, and require a series of passwords to access. The Watiku and Minymaku archives are only viewed by Anangu of appropriate gender and seniority. Each database has been given its own ‘laws’ of access by either Anangu men or women” (Scales et al. 2013, 157).

One digital challenge has been to design user interfaces that enable Anangu to use their preferred relational and visual ways of learning, often described as being ‘marlpa’ and ‘ngapartji ngapartji’ (see Hall 2017; Tedmanson 2016). The word ‘marlpa’ is about friendship, doing things together and not leaving anyone out. It is a way of being with others that respects harmony, connectedness, and relational responsibility. The social ethic of ‘ngapartji ngapartji’ is about reciprocity: ‘you give something to me and I give something to you. We give to each other.’ In daily life, these concepts inform the practice of relational learning, whereby past generations teach living generations, elders pass on knowledge to youth, and young people support elders in the context of how to use digital technologies. Both these concepts have equivalences in many other Indigenous languages across Australia. The archive actively promotes the ease of such relational learning.

“Anangu learn from each other how to navigate the computers…one person will manoeuvre the mouse while another controls the keyboard…young Anangu operate computers for their older relatives…different generations of one family sit together to search their family name to look at different members…” (Scales et al. 2013, 154).

To create easy use of computer terminals, ‘buttons’ are color coded based on the functionality they provide. Field and button labels are translated into Anangu language. Western icons have been replaced by culturally preferred graphics.

There are many challenges in digitizing Indigenous knowledge and histories (see Christen 2006; Christie 2004; Ormond-Parker and Sloggett 2012, 191; Thorner 2010). The Ara Irititja archive demonstrates there are also opportunities for Indigenous groups to collaboratively design digital systems that give effect to self-determined governance of their past and living cultural heritage. Innovative digital customization can maximize local ownership and control of knowledge, implement culturally aligned digital rules and processes, and enable relational modes of digital learning and knowledge revitalization.

**Governing** **Digital Country: Case Study**

The tumult and exhilaration of the ‘land rights era’ across the globe opened opportunities for Indigenous peoples to re-envision their futures and maximize their practical self-determination. One such pathway has been through Indigenous nation-rebuilding. This is achieved through initiatives that enhance a group’s foundational abilities to exercise self-governing authority, make self-determined choices about their community and economic development, and act as an organized political entity with a collective identity (see Cornell 2007; Nikolakis, Cornell, and Nelson 2019; Smith et al. 2021). The Indigenous concept of ‘nation’ emphasizes the idea of a group of kin-related people sharing an enduring affiliation to, and multigenerational stewardship of, a specific territory of spiritually significant land and waters. In Australia, this deep relationality is referred to simply as ‘Country.’ It lies at the heart of Indigenous ways of knowing, being, and doing. Not surprisingly, contemporary nation-rebuilding is embedded ‘in Country’ and provides a foundation for renewing sociality and designing new political formations and modes of advocacy. Digital technologies are playing an increasingly important role in these Indigenous nation-building processes.

Across rural, remote, and urban Australia, Indigenous groups and their organizations are adapting a range of technologies to digitally capture (‘map’) geospatial information and re-present their Country in virtual formats. This takes on a particular digital form known as ‘cultural mapping.’ This is used regularly as a digital tool to substantiate legal claims to lands and waters, negotiate treaties and other settlements, implement development agreements, undertake cultural heritage protection, manage environmental conservation, and plan solutions for the impacts of climate change. A fundamental Indigenous motivation expressed in digital mapping initiatives is to ‘look after Country’; that is, to govern, manage, and protect it for future generations, in accordance with culturally based laws and values.

One example amongst many is the work being done by the Yawuru Nation from the coastal region of the Kimberleys in Western Australia. In 2006, Yawuru achieved a successful native title determination. This is a decision by the Australian Federal or High Court of Australia that native title rights and interests for a particular group either do or do not exist in relation to a particular area of land and/or waters. Based on their determination, Yawuru were able to leverage significant beneficial agreements with Australian governments and industry partners. These provided a strong financial and assets platform from which to rebuild cultural institutions, support family and community development, create an economic agenda for the future, and establish new governing arrangements for implementation of those goals (Yu 2021).

Nyamba Buru Yawuru (NBY) is the Yawuru Prescribed Body Corporate (PBC. Under the *Native Title Act 1993 (Cth)* (NTA), it is required that native title holders have a corporation to manage and protect their native title rights and interests. This is called a Prescribed Body Corporate (PBC). As part of the native title determination process before the Federal Court, native title holders are required to nominate the PBC they want to manage their native title. They are established and registered under the *Corporations (Aboriginal and Torres Strait Islander) Act 2006* (Cth) (CATSI Act). PBCs have compulsory statutory duties set out in a labyrinth of overlapping government legislation including the *Native Title Act 1993,* the *Native Title (Prescribed Bodies Corporate) Regulations 1999* (Cth) (PBC Regulations), as well as the CATSI Act and the CATSI Regulations.

NBY was incorporated in 2006 to hold native title in trust for Yawuru members. It quickly adopted a strategic approach to digital technology as a tool for Yawuru self-governance (NBY 2023; Yu 2011). A valuable research partnership was established in 2012 between Yawuru, NBY, and the Fenner School of Environment and Society, Australian National University (ANU), to build geospatial and related digital skills. Today, Yawuru people are using Geographic Information System (GIS) technology to digitally map their marine and terrestrial Country in partnership with ANU researchers. The digital project records the geographic aspects of Yawuru Country and places of cultural and social significance.

“The partnership enables Yawuru people to map and monitor historical, current and future use of Yawuru terrestrial and marine environments and provides evidence—both from a Yawuru cultural perspective and from western science—to assess the impact of activities on Yawuru country” (Doran and NBY 2018 no pagination).

Importantly, the GIS technology not only enables groups such as the Yawuru to document a living cultural landscape, but also to integrate their knowledge of kinship, language, stories, law and resource practices into the ‘maps’.[[1]](#footnote-1) Such initiatives commonly engage younger generations working under the leadership of knowledgeable elders. This produces ‘culturally thick’ digital mapping. It now covers an area known as the ‘Yawuru conservation estate.’ comprising a 100-kilometre-long coastal park, covering the entire Yawuru coastline, the intertidal area in Roebuck Bay, and the Nagulagun Roebuck Bay Marine Park.

To coordinate the work, NBY established a Yawuru Environmental Service Unit—“a diverse and skilled group who work on a wide range of projects from environmental monitoring, flora and fauna identification, turtle tagging, geospatial mapping and revegetation projects as well as being involved in cultural practices on country” (NBY 2023). They also employ Indigenous ‘Country Managers’ who work in the Yawuru Indigenous Protected Area and Minyirr Park Conservation area, collaborate with the Yawuru Rangers Program on digital initiatives across the Yawuru Conservation Estate, and partner with external researchers in other digitally supported projects, such as working on fire mitigation, feral animal management, and fencing. Importantly, the digital mapping provides the evidence base on which Yawuru can assess the actual and potential impacts of proposed development activities on their Country. Based on their digital maps and data, a Yawuru Cultural Management Plan has been drawn up to implement development initiatives which Yawuru have prioritized.

Digital mapping technology (including cybertracker, drones, iPads, GIS Apps and modelling, and virtual world technologies) are not culturally neutral tools. They preference Western cadastral space, logic, and crisp boundaries, which enact contemporary digital modes of colonization. These are inimical to Indigenous spatial ontologies (Craib 2017; Doran and NBY 2018; Potter, Doran, and Matthews 2016; Turk 2007; Turk, Mackaness, and Tinlin 1995). Experienced cultural mapping practitioner Petronella Vaarzon-Morel (See Vaarzon-Morel 2014; Vaarzon-Morel et al. 2021; Vaarzon-Morel and Kelly 2019, 133) stress the importance of attending to the *process* of community mapping, rather than simply focusing on cartography and ICT as ends in themselves. This is borne out in Yawuru digital map-making, which is a ‘thick’ performative process. It happens ‘on Country’ where knowledge is grounded in both the physical and metaphysical landscape and so can be ‘properly’ communicated by Yawuru Elders—both men and women—with young people present. This happens through telling of stories, singing of place-based songs, carrying out ritual, collecting of bush food, and naming and talking to Country and ancestors. It is an activity dense with subtle sociality, knowledge transmission, relational learning, and humor and laughter. It is hard to capture on paper, but ripe for digital capture under local control.

The Yawuru digital initiatives are an example of Indigenous ‘counter mapping’ that places their knowledge of Country, laws, and values of wellbeing at their heart (Louis, Johnson, and Pramono 2012; Palmer 2012). This neutralises some of the more overt risks of adopting settler colonial cartographies and development objectives. In these ways, it has created a digital space that priviledges Yawuru collective self-governance and stewardship of landscapes (McLaurin 2022), offering a tool for rebuilding the practical experience of nationhood.

**Governing Development Digital Data: Case Study**

Over the past four decades, Indigenous peoples in Australia have secured substantive rights and interests in lands and waters, as well as intangible assets including cultural heritage, intellectual property rights, and environmental and biosciences knowledge practices (Janke 2019; Janke and Quiggin 2005, 2020; Smith et al. 2021). The Indigenous ‘estate’ in Australia today comprises more than forty-five percent of Australia’s land mass. This amount increases to up to sixty percent when currently unresolved land and sea claims are factored in. As they continue to successfully win land rights and native title, a growing number of traditional owners and native title holders are moving on from the legalized claims process, into an era of exercising their rights and rebuilding self-governance arrangements. A major challenge in this transition is to translate hard-won rights and recognition into the practically beneficial development outcomes expected by their families and communities.

The beneficial purpose enshrined in the Preamble to Australia’s *Native Title Act 1993* reinforces this expectation. It states,

“It is particularly important to ensure that native title holders are now able to enjoy fully their rights and interests. Their rights and interests under the common law of Australia need to be significantly supplemented…” (*Native Title Act 1993*, 3).

Native title rights themselves are inalienable and not fungible. Put simply, once secured, native title is forever. Accordingly, PBCs are established in perpetuity, having no legal end date to their operations. These representative organizations sit at the frontline of intercultural governance of development, working to ensure their group members are better off after the native title determination than they were before. PBCs are legally responsible for consulting with, and obtaining the informed consent of, their members about activities proposed by external parties on their native title lands and waters. They are also the organizational inheritors of a jigsaw puzzle of mismatched Indigenous Land Use Agreements (ILUAS) and resource agreements (Smith 1998) previously negotiated by their members during the claims phase, as well as subsequently. These agreements are with different parties, about a great range of matters subject to different terms and conditions. The implementation of most have never been monitored. They do not constitute a cohesive ‘development agenda’ for groups, let alone a collective vision for the future.

In order for PBCs to carry out their representative duties, govern future development, and support native title holders to “enjoy fully their rights and interests” (NTA 1993 preamble), they need data (Smith 2016). Yet, relevant data are generally not available. This is a fact that has been raised repeatedly over many decades (see Altman and Martin 2009; Langton 2004; O’Faircheallaigh 2004, 2006; Smith 2008, 2009, 2016; Kukutai and Taylor 2016. Anecdotal evidence from traditional owners and case study research suggests the failure by external parties to deliver on their agreement obligations to Indigenous groups is likely to be high. If this is generally the case, it has significant economic consequences for Indigenous landowners. In effect, the data gap holds groups back from the fuller economic and community realization of their rights.

One Indigenous native title representative organization is working to change this situation. The Queensland South Native Title Services (QSNTS) is designing an electronic information management system they call TraKs—the Traditional Owner and Knowledge System—to support traditional owners to govern their native title rights and agreements more effectively through access to a bespoke development database (QSNTS 2023(a)). Established in 2005 under the *Native Title Act 1993*, QSNTS is funded by the Australian Government to represent the rights and interest of native title groups across an extensive area of Queensland. To date, they have assisted twenty-eight groups to secure positive determinations of native title, with a further twelve applications under way (QSNTS 2023(b): 22). Many of these groups have signed multiple ILUAs and resource agreements and are engaged in negotiations with external parties. With few resources of their own to govern and monitor implementation of agreements (Woods et al. 2021), groups can be ill informed about their financial viability, miss out on opportunities, and fail to secure the outcomes they want.

The TraKs database contains detailed information that has been collated and uploaded on hundreds of native title agreements. The benefits secured under these agreements are diverse and precious. They include not only monetary payments, but identified employment and training, business initiatives, joint ventures, education scholarship, ‘Caring for Country’ and Indigenous Ranger Program resources, the building of new infrastructure, and so on. The TraKs database operates as a secure ‘members only’ portal with access to information via an internet-based App. Information covers the type of agreement, each party’s contact information, their agreed commitments, anticipated outcomes, and historical data on the extent to which parties have honored previous agreements. The database program aligns the terms and conditions of each agreement with its date notifications and reminders linked to the key digital alerts. It automatically sends notifications to native title claimants and holders for Future Act notices under the *Native Title Act*. These alert native title holders about potential activities proposed on their lands and waters, and open the way for negotiation and agreement making.

TraKs is able to generate real-time daily and annual reports on the status of all agreement clauses and commitments. It administers payment of cash benefits linked to the Consumer Price Index for benefits, producing automated payment schedules for each group. Payment calculation reminders are generated for monetary benefits owed, and it tracks the non-monetary commitments agreed to in agreements. The database also affords the valued service of simplifying complex legal and financial documents into plain English summaries, which are confidentially provided to native title holders.

TraKs is one of the few Indigenous digital initiatives in Australia that directly empowers native title claimants, holders, and their representative PBCs with data control to govern development. It enables groups to hold agreement signatories to account, monitor their compliance to agreement terms, and act on that information to negotiate and plan their development futures. Through the provision of accurate, timely digitized data, native title groups can exercise *equitable* authority at the negotiation table and can make informed decisions in ways that meet many of the conditions of ‘free prior informed consent’ set out in UNDRIP. As such, the database adds to the larger national and international Indigenous movement for Data Sovereignty.[[2]](#footnote-2)

**Indigenous Digital Governance: Principles and Practices for Self-determined Equity**

The following Indigenous principles and practices of digital engagement and innovation have been synthesized from the case study evidence above. Each effectively supports Indigenous ‘digital equity *with* culture and identity’ and, in combination, constitute an initial framework to guide Indigenous meaningfully equitable digital self-governance. They include:

1. *The collective right to digital self-determination*

As proposed by the UNDRIP, this principle advocates the collective Indigenous right of sovereign decision-making authority and control over the nature, direction, and pace of their digital engagement. This entails Indigenous groups having authority to design and exercise digital systems of rules, policies, licences, software, and protocols based on their Free Prior Informed Consent (FPIC). The right to say ‘No’ is as important for digital equity as the right to adapt and transform.

1. *Digital ownership and stewardship in Indigenous hands*

This principle recognises the critical importance to Indigenous groups of exercising stewardship and ownership of newly created ICT and digitized Indigenous knowledge. It emphasises Indigenous decision making over the areas of knowledge to be digitized (and what will not), incorporating age, gendered, and place-based conditions for Indigenous transmission of digital knowledge over time. It activates Indigenous Cultural and Intellectual Property (ICIP) rights, and the right to determine the extent to which digital data are open or private.

1. *Digital participation with culture and identity*

As stated by the UN Permanent Forum on Indigenous Issues (2010), the rapidly changing digital policies, laws, resources, and services of nation-state governments must ensure that Indigenous culture-centred ways of being, knowing, and doing are recognized in digital platforms and solutions. This principle sees Indigenous digital governance as a tool for strengthening collective identities, revitalizing cultural identities, and resisting reduction of those to a Western fetishisation of the individual.

1. *Place-based digital customization and innovation*

Indigenous groups must not be locked into costly digital dead-ends. Digital ICT should be customized to ensure they are capable of meeting diverse place-based needs. This entails ensuring the access, use, and interoperability of digital systems directly supports people to create different local solutions that work for governing their Country and rights, and enable local initiatives to be scaled up into wider digital alliances and networked polities.

1. *An Indigenous digital vision*

This principle reinforces the importance of Indigenous peoples dedicating time to develop a shared vision of the kind of digital future they want. It entails assessing current and potential needs and objectives, alongside existing and desired digital capabilities. It recognizes the Indigenous right and ability to create a digital vision that can be governed effectively and supports the work of nation building.

1. *Culture-centred, relational digital governance*

Digital initiatives and ICT need to be governed in ways that routinely encode valued Indigenous relationships and networks. Indigenous rules and normative practices should provide the framework for digital control, access, and use. This emphasizes the need for digital mechanisms that enable Indigenous governance and monitoring of evolving circumstances. It emphasizes the need to use Indigenous languages, social systems, and cultural graphics for digital instruction and learning.

1. *Informed consent*

This principle inserts FPIC into Indigenous decisions regarding proposed digital programs, services or initiatives. It prioritizes the availability of accurate and meaningful information for informed decision making about the design, implementation, and use of digital ICT. Informed consent becomes critical where subsequent digital development and costs are often in the hands of external agencies and companies.

1. *Networked digital subsidiarity*

This principle recognises that Indigenous modes of governance and land ownership are themselves culturally networked formations based on a subsidiarity of authority and decision making. The digital solutions that work best will mobilize such networks and keep matters of consent, access, and use in the hands of those people ‘closest’ to using the ICT and providing the information. Indigenous relational networks provide an effective basis for the creation of digital hub and spokes networks.

1. *Digital interconnectedness*

This principle prioritizes digital solutions that maximizes flexible interoperability and scaling of ICT within communities and organizations, across cultural geographies, and with partner organizations. It reinforces the importance of seeking out or designing software that enables collaboration – to connect to dispersed members, to link a central office with community hubs, to access expertise, and so on. A core practice criterion for digital equity is that interconnectedness must also enable (not undermine) the maintenance of cultural, age-based, and gender domains of Indigenous knowledge holding and transmission.

1. *Digital capability and relational learning*

A foundation capability for digital participation and equity is Indigenous governance; specifically, the exercise of self-determined governance of digital opportunities and challenges. This includes prioritizing solutions that enable Indigenous relational modes of learning and transmission of knowledge in digital contexts. Digital partnerships with external parties that are designed to build Indigenous digital capability and support Indigenous local control will be invaluable in this dynamic, complex arena.

**Conclusion**

In the new digital revolution, Indigenous Australians are creatively transforming ICT, not simply being subject to it. They are not positioning themselves as digitally deficit victims or in need of digital ‘inclusion’ into Westernised ICT values and standards. Nor are they quietly accepting an imposed form of a faux digital equity. As the case study evidence and analysis indicate, Indigenous digital equity can be understood as a relational practice of adaptive agency, where Indigenous groups create, make decisions about, gain support for, and implement novel digital ideas and solutions to maximize self-determination and secure desired outcomes. From this perspective, ‘digital equity’ is digital self-governance *with* culture and identity.

The proposed framework for digital self-governance has at its heart the bigger issue of Indigenous digital sovereignty. For some, this may be an uncommon concept, but it is one which will become increasingly important to Indigenous peoples working to ensure they self-govern their digital participation and achieve the forms of digital equity *with* culture and identity they choose. Digital sovereignty refers to the recognized right and ability of Indigenous groups and their organizations to exercise governing control over the form, pace, and direction of their digital engagement, in a self-determined manner (see also Couture and Toupin 2019; Duarte 2017).

In a digital world where much of the ICT market is in the hands of global mega companies, being digitally sovereign may seem unrealistic. The concept does not mean exercising control over *all* the manifestations of ICT nor does it necessarily mean Indigenous peoples have to do everything themselves. Rather Indigenous digital sovereignty means being in the position to make sovereign decisions that are final, about matters where autonomy and control are desired. This entails two interconnected characteristics. First, it is the recognized *right* of Indigenous groups to govern digitally—to exercise authority over, and make the rules for, their own digital identities, digitized knowledge systems, and proposed digital innovations. Second, it is the *capability* of groups to make informed collective decisions and have those decisions implemented. Sometimes the implementation will be done by themselves; sometimes it will be done by others working under Indigenous direction. In the absence of the overarching framework proposed above, the juggernaut of global digital government, eCommerce, and virtual world market transactions by nation-state governments and multinational companies will undermine Indigenous self-determined digital equity and self-governance, rather than recognize and enable it.

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1. . Detailed descriptions of the projects can be found in Potter et al. 2016;,Doran and NBY 2018, and the NBY website at <https://www.yawuru.org.au/> and <https://www.yawuru.org.au/about/nyamba-buru-yawuru>. [↑](#footnote-ref-1)
2. . For the Australian context, see the work of Kukatai and Taylor 2016; Lovett et al. 2019; Raine et al. 2019; Walter 2018; Walter et al. 2018; Walter et al. 2018, 2021; and Walter and Suina 2019. [↑](#footnote-ref-2)