The Digital CBD Roadmap

A vision for Melbourne as a leading digital city

RMIT Blockchain Innovation Hub

RMIT Centre for Cyber Security Research and Innovation

RMIT Digital Ethnography Research Centre

RMIT UNIVERSITY

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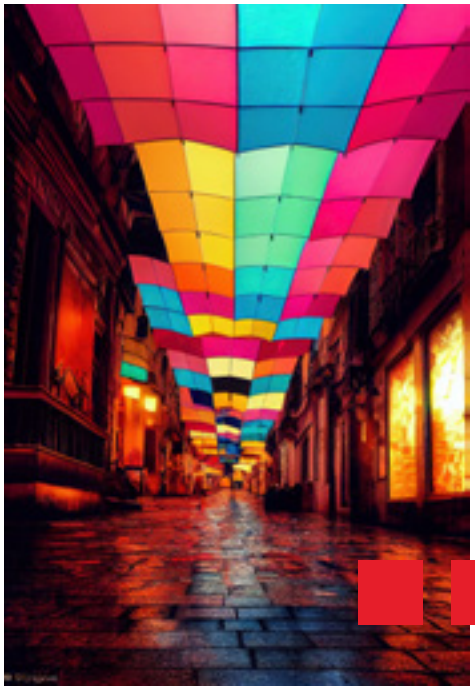


Foreword

by Associate Professor Chris Berg

Associate Professor Chris Berg

In this Roadmap we are laying out a vision of what Melbourne needs to do to become a leading digital city.

This Roadmap draws together insights from research into the study of a Digital CBD, and provides direction and recommendations on how cities can become fully digital and take advantage of web3 technology that is now available.

The economic and social implications of two shocks that we have all experienced together: the COVID-19 pandemic that reshaped our cities and urban environments overnight, and the slower winding revolution in technology that is permanently restructuring the ways we work and live, led us to this research.

When compared to the life of a city, the pandemic was a short-run thing – almost a blip – but the pandemic's effects will linger because of how we responded to it. In order to implement the work from home policies, firms and individuals had to rapidly adopt a suite of technologies that had been built just a short time earlier.

The pandemic was an accelerant for digital adoption and change.

This research was supported by the Victorian Higher Education State Investment Fund, and produced in collaboration with three frontier research centres at RMIT University: the Blockchain Innovation Hub, the Centre for Cyber Security Research and Innovation and the Digital Ethnography Research Centre.

It was this interdisciplinary collaboration that has allowed us to understand the complex social and economic factors that are reshaping the post-pandemic city and to sharpen our focus on the interface between digital and physical.

In the blockchain space, where I focus my research, there's a lot of discussion about the opportunities and challenges presented by what people call the 'metaverse'. Metaverses are usually understood to be immersive digital worlds that allow for real interaction, real commerce, and real economic activity to take place.

As we survey the Digital CBD research across its many domains – cybersecurity, decentralised communities, supply chains, skills and lived experiences - it is hard not to conclude that the metaverse isn't something that needs to be built – we already live in it. Our pandemic experience has left us with businesses and communities that already exist simultaneously online and offline, and we move between the two seamlessly and casually.

In other words, Melbourne's future is both digital and physical, one supporting the other, and we hope that these reports and the research that has informed them can help us build the sort of city that we want.

Associate Professor Chris Berg
Co-Director
RMIT Blockchain Innovation Hub

Introduction

The nature of the city is changing and now is the time to chart a clear vision for Melbourne to be a globally influential digital city.

The crisis associated with the pandemic has deeply affected the way we do business, connect with each other and engage in the socio-cultural life of the city. It has also prompted an accelerated adoption of technology for everyday life, work, production and commerce.

The onset of rapid digital adoption has fast tracked our move from an industrial to a digital economy. However, we are still in a transitionary period of bridging our physical assets and activities into the digital space.

A digital economy is one that has native digital integration. Moving into a digital economy means digitising physical processes and creating digital counterparts to physical assets that can be used with digital applications. This level of integration will allow not only a more efficient and effective economy, but also create a city that is secure, connected and inclusive.

This roadmap leverages the research conducted out of the Digital CBD Project commissioned by the Victorian Higher Education State Investment Fund (VHESIF) in 2021.

The project considered the acceleration of digital technology directly impacted by COVID-19 and consequently the opportunity for a Digital CBD.

The Digital CBD Project released a series of reports to disseminate research findings and highlighted the following key areas for the attention of policy makers:

- Infrastructural demands
- Secure supply chains
- Digital skills
- Data governance

This roadmap provides a series of recommended actions for how government, industry stakeholders, education and research providers (such as RMIT University), can work together to implement a strategy to rebuild the city post pandemic.

A Digital CBD is proposed that implements the suite of Industry 4.0 technologies.

The city

Our cities are built environments that support social innovation in productivity, sustainability, and livability. They are part of the global machinery for flows in information, objects and people as well as functioning locally as a place through which people and technologies intersect in placemaking and everyday lives. Every city has a unique function, personality and socio-cultural context.

Prior to the pandemic, digitalisation processes and communication technologies touched almost every business in the city and digital platforms were commonly used to conduct the business of the city as well as act as interfaces for our social and cultural lives. These transformative digital processes and infrastructures are now interlaced with a city's ability to adapt to shocks, crises and opportunities.

The transition from an industrial economy to a digital economy has been fast tracked as a consequence of the COVID-19 pandemic.

The heavy reliance on digital technologies for contactless transactions, remote work, online shopping, supply chain solutions and online interactions across many countries has sent us into a hybrid world from which we are not snapping back.

Therefore, understanding this shift is critical to ensure that we can still optimise our city's greatest strengths and position it, and its people, to thrive into the future.

Accelerated digital adoption

From the start of 2020, nearly everyone was forced to pivot, driving deep, coordinated rapid adoption of digital technologies.

Zoom replaced in person meetings, contactless digital payments became common place, online shopping burgeoned over in store attendance and digital signatures were used to sign on the dotted line.

The shock caused by the pandemic intersects with longer trajectories of technological innovation and environmental crisis. This set of circumstances demand that a city of the future must be prepared, responsive, adaptive and resilient in the face of a wide range of crises and opportunities. Embracing how existing and emerging digital technologies can enhance the resilience of a city and its people is key.

With the recent success of this digital transformation, even more frontier technologies could be integrated to increase our level of coordination. As technology adoption escalates, we can shift into what is known as Industry 4.0 – using technologies such as blockchain, Artificial Intelligence (AI), smart contracts, the Internet of Things (IoT) and cyber security technologies. These technologies allow us to innovate on our existing practices, improve our current level of productivity and augment the ways in which we coordinate. There is also the opportunity to go further and construct new organisational forms that could change the structure of the economy.

Fast tracking the digital transition

The COVID-19 pandemic provided the impetus for a reset, but this was decades in the making. We have reset many of the relationships with our city, during which existing inequalities were amplified and made even more apparent. The restructuring of the economy was already underway prior to COVID-19, however the onset of COVID-19 abruptly disrupted Melbourne's economy, socio-cultural life and technological reliances and accelerated a rapid pivot in these areas.

With the end of the pandemic in sight, we now have an idea of where the economy is going, and thus have an opportunity to develop an intellectual framework to inform economic development.

We are also well-positioned to create a value framework that will guide the path forward towards fairer outcomes, advancing shared goals such as equality and sustainability and directing the innovations of the digital era to support public goods, particularly in the arena of health and social challenges.

Existing and emerging digital technologies can be used to fundamentally transform business and economic infrastructure.

They make start-ups easier and create opportunties for new types of businesses.

Digitalisation processes related to efficiency gains push automation deep into economic administration. They also disrupt existing businesses and structures of economic organisation.

As we take steps into a 'COVID-19 normal', we can see that many parts of our lives are beginning to return to past practices. For instance, people are beginning to frequent the CBD for shopping, night life and restaurants.

The remote-work dynamic is becoming a large part of Melbourne's culture and many businesses are struggling to rebuild morale and culture as workers guard their new lifestyle benefits. However, despite the loss in morale and culture, many businesses are enjoying the new-found productivity benefits, international talent and the reduction in hefty rental costs for inner-city space.

Documenting these changes in the way that we coordinate will be pertinent to understanding how the city is changing.

Key Insights

The onset of rapid digital adoption has fast tracked our move from an industrial to a digital economy. However, we are still in a transitionary period of bridging our physical assets and activities into the digital space.

A digital economy is one that has native digital integration. Moving into a digital economy means digitising physical processes and creating digital counterparts to physical assets that can be used with digital applications.This level of integration will allow not not only a more efficient and effective economy but also create a city that is secure, connected and inclusive.

The large scale research undertaken in the Digital CBD Project and published in the aforementioned project reports, has offered the following key insights that underpin this roadmap and subsequent recommendations.

Labour markets

For any organisation to succeed, a resilient skilled workforce is required, however a consistent string of disruptions have made this incredibly difficult. The constant looming lockdowns, sickness, isolation restrictions and work-from-home requirements were factors that contributed to this. COVID-19 variations have spurred several new waves during the pandemic in Australia, creating a massive labour supply shortage.

Furthermore, Melbourne's sombre badge of incurring the greatest number of days in enforced lockdown, decimated its biggest drawcard – Melbourne's thriving arts, culture, entertainment, and hospitality industries.

A sharp decline in jobs within the City of Melbourne was associated with the inability for labour intensive service-based supply chains to operate through in person practices. The displacement of in person acitvites with digital interactivity had a ripple effect on job security for both workers in the gig economy and businesses who relied people coming into the city.

As a result, businesses struggled post COVID-19 to forecast working capital.

Report 2 in the Digital CBD Project proposed a pilot program that would assist in accurately predicting the appropriate amount of working capital in a changing environment. This program would involve people who use the CBD either to work, shop or live, anonymously pooling their data into a data source referred to as a Decentralised Autonomous Organisation (DAO).

This decentralised digital technology would allow businesses within the city to tap into this data source to predict customer usage, optimise resources, increase efficiency and create opportunities for strategic placemaking.

Skilling

Report 4 in the Digital CBD Project published results from its Melbourne Digital Skills survey in which 70% of participants recognised a digital skills shortage within their workplace.

Unfortunately, the benefits of any digital economy cannot be shared when community members lack the digital literacy and inclusion to participate. Digital inclusion goes further than access to affordable technologies. People also require the skills and knowledge to effectively utilise the internet and other digital technologies.

For Melbourne to become a leading Digital CBD within the global context, people will need to be reskilled and/or upskilled in key areas to meet the new demands of the city.

Table 1 below outlines the top five digital skills that require the most attention in order to prepare the workforce for the jump to Industry 4.0.

Entry level digital skills	Advanced digital skills
1. Computer literacy	1. Cyber secfurity
2. Data entry	2. Data science
3. Social media	3. Digital design
4. Web comms/research	4. Data visualisation
5. Word processing	5. UX design

Table 1. Key digital skills that require reskilling and upskilling. Source: Report 4 – Digital skills and cyber security. How do we secure our future?

Currently, the government, industry and higher education institutions are investing heavily to close this gap. However, their disaggregated approach inhibits effective bridging of the digital skills that are desperately required.

The 2021 ACS Digital Pulse Report estimated that by 2026 Australia would need an additional 300,000 technology workers to meet the rising demand in digital skills.

Another challenge identified post COVID-19 was a decrease in immigration which has affected Australia's technology talent pools. Victoria lost the opportunity to attract up to 56,100 potential migrants due to strict lockdown measures including border closures.

This decline in population growth, combined with an unprecedented rise in advanced and new technologies, has manifested a skills gap that is linked to the growing demand for skills in the job market, especially digital and cyber skills.

To increase the digital skills talent pool there is a need to not only increase immigration but to also attract more people to the digital skills sector.

Digital Skills Academy

Report 4 in the Digital CBD Project proposed the establishment of a Digital Skills Academy that would bring all stakeholders together and allow for a collaborative approach to identify key skills gaps in Australia's economy.

If this academy was structured as a Decentralised Autonomous Organisation (DAO), it would allow for the efficient sharing of data between stakeholders, and organisations could then collaboratively create an action plan to close identified gaps and offer incentives to reskill or upskill.

In addition, as part of a DAOs unique structure, people would also have input into decision making allowing them to provide vital information into specific areas they required upskilling or reskilling into. A coordinated approach through a DAO, would have a greater impact in developing the workforce Melbourne requires for an inclusive, secure and resilient future.

Livability

Our digitial infrastructures must be responsive to the concerns and values of our societies. Two significant values that underpin this Roadmap are social inclusion and environmental sustainability. These values promote the livability of our environment and our ability to thrive under conditions of uncertainty and opportunity.

The report series observed that embedding digital infrastructures across the regions, into homes and public transport is required to meet the needs of a decentralised workforce and a Digital CBD. However, current integrations of digital infrastructures are further ostracising already disadvantaged communities as seen during the pandemic. This is evidenced by Culturally and Linguistically Diverse (CALD) groups scoring 61.2, in the Australian Digital Inclusion Index (ADII), 0.7 points below the national average.

To bring everyone into Industry 4.0, all Victorians need to access, engage, and benefit from new infrastructures. Providing people with secure, accessible and affordable digital infrastructures, will be vital in achieving this.

It is critical that Victoria focuses on providing affordable and accessible digital infrastructures, especially for those in the regions and from lower socio-economic backgrounds. This is supported by the ADII which identified that Australia's regional areas scored 5.5 points lower at 67.4 than its metropolitan areas at 72.9.

Providing both affordable and accessible digital infrastructures will ensure that all people are equitably brought into the envisioned Digital CBD aligning to public and private interests.

Report 5 in the Digital CBD Project identified that universal access to technologies will be necessary for participation in social and civic life. This will require more than just simple access to technologies as people also require the skills and knowledge to use the internet and the digital technologies effectively.

Sustainability

Expanding digital infrastructures will present environmental challenges, which will need to be addressed by moving beyond entrenched extractive industries and practices.

In order to meet the needs of Australia's new 2030 and 2050 emissions targets, greening our Digital CBD will be pertinent to achieving this goal. The COVID-19 pandemic has also emphasised that easy access to green and public open spaces also contributes to physical and mental health and wellbeing.

As Victoria moves towards a circular economy, there is strong value in strengthening climate action through investments in green infrastructures, renewable energy, and fostering green industry.

Victoria should consider these factors when implementing new digital infrastructures proposed in this report series.

One way to support this would be to build sustainable data centres and use these frontier technologies to facilitate distributed energy sources. Currently, the prime ways for data centres to address and achieve sustainability are through carbon neutrality, energy usage (limiting it, choosing renewable sources or both), adopting innovative coolant systems, water usage and assessing the efficiency of the buildings themselves.

Additionally, there would be a requirement for the development of regulations around sustainable green practices for implementing new technologies going forward.

Immersive environments

The city is a central built environment, from physical space to code, that Melbourne residents will continue to engage with for reasons beyond work. The city is a creative, innovative and cultural centre that can be experienced immersively.

Given the decentralisation of the workforce away from the city, our relationship with the city is changing. Digital infrastructures must be adaptive and resilient and be able to shift with the changing purposes of the city.

Digital infrastructures can enact liveliness through their capacity to support immersive experiences with and in the city. The Digital CBD can be augmenting and regenerative, complementing the city's business activities, cultural and social life. Experiential infrastructures support the quality of life and wellbeing of our communities, directly impacting Melbourne's economy, liveability and sustainability. They are powered by popular technologies such as AR, Virtual Reality (VR) and gamification that can activate the potentials of playfulness for the city.

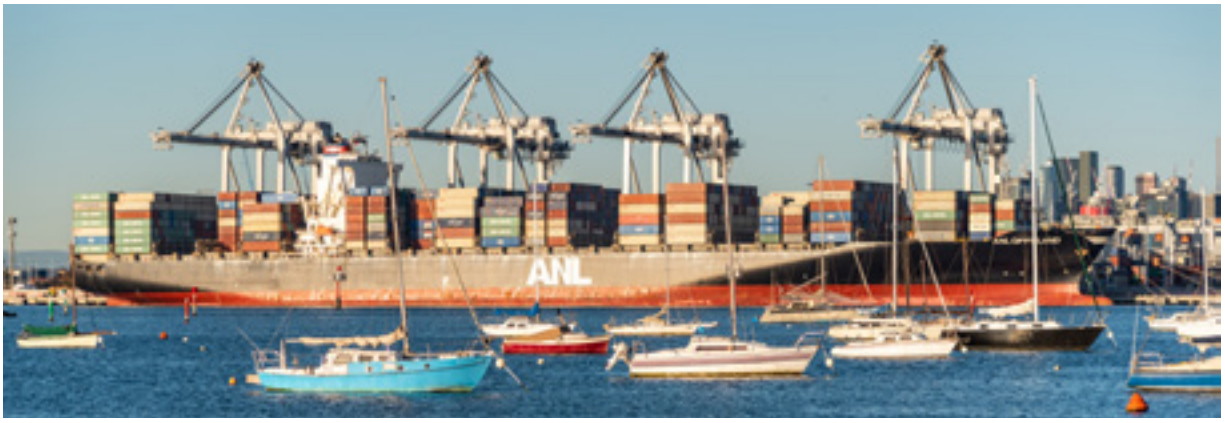
Social vibrancy manifests in localised ways, when people engage in the city through public space and connective, playful and pleasureful infrastructures that speak, play, and resonate with residents in an experiential way. Virtual spaces such as the metaverse can potentially transform cities, extending their spatial reach and facilitating their integration in everyday life. They may also introduce a new era in technology entrepreneurship and digital innovations, generating new business models, modes of work and leisure, and cultural experience and expression.

Gamification

Report 5 of in the Digital CBD Project identified that the Digital CBD survey highlighted that gaming is a popular past time for many with 45% of respondents stating they played games on their phones, tablets or using a gaming console. With VR and AR being used to create a more immersive experience for gamers, the opportunity to apply these concepts to other areas of our economy arises. Gamification can be described as the application of game design features in non-game contexts to create interactive and enriching applications to engage users.

For example, some marketers are looking at creating engagement incentivisation strategies for loyalty programs. These programs use gamification in combination with VR, social interaction and a point-based system to engage consumers. The social networks, multi-user environment and the social cues, whether competitive or not, draw people to gaming. Furthermore, games seek to create memorable and emotional connections between users, the system and their brand/merchandise (physical or digital).

Exploring the relationship between gamification and the playful phenomena is important and its success could be applied to other areas of our economy. There is the opportunity to create gamified course offerings to bolster learning and engagement within our city both formally and informally. For instance, we could turn our concrete jungle into an immersive playground for art, education and innovation.



Digital Twins

The processes of digital infrastructures of the city can be modelled and made visible. Digital Twins are one way to do this. A Digital Twin is a virtual representation of physical product that mirrors its states, behaviour and properties across its lifecycle. The resulting model holds the capacity to ingest, manage, influence and provide access to real time data of the product or ecosystem it models.

Report 3 discussed Digital Twins in the context of NFTs in the supply chain and Report 5 discussed them in the context of the modeling and visualising the entrepreneurial ecosystem.

Web3 innovations for supply chains can be found in the useful application of Non-Fungible Tokens (NFTs), in combination with blockchain technology, to produce the most secure form of a Digital Twin. NFTs that meet industry standard for digitally representing physical products are both trust worthy and have the potential to utilise a decentralised storage network such as the Interplanetary File System (IPFS), rather than a cloud server, to mitigate against data deletion.

NFTs that meet this standard could provide serious value to supply chain networks and replace current track and trace systems. This is because NFTs have tamper resistant transparency and can be mapped to physical items allowing them to be securely tracked. Furthermore, utilising NFTs as the industry standard for digitally representing physical products would help to mitigate fraud, theft and loss.This makes them a perfect use case for representing products that traverse the global supply chain.

Virtual Supply Chains

Virtual supply chains are being created as a way to digitally represent physical supply chains and use NFTs as a way to represent physical products in the digital world. These supply chains exist in the metaverse and can mimic every aspect of a physical supply chain.

This can support predictive analytics, forecasting, and risk management to assist with potential problems that a supply chain could face, ultimately allowing them to become more resilient to shocks.

Victoria should focus on implementing blockchain based systems that utilise NFTs for goods that move within the State. This would assist with forecasting, product recall and creating supply chains that are more resilient to shocks. Ensuring that there are provisions in place to create secure cyber resilient digital infrastructures would allow Victoria to maintain a state of readiness for dealing with crises quickly. For instance, implementing blockchain-based supply chain processes would facilitate instant product tracking and secure privacy through permissioned systems.

Digital twins can be used to model and influence the dynamics of innovation in the city. Specifically, Report 5 discussed their application for supporting Melbourne's entreprenurial ecosystem. Entrepreneurial ecosystems are complex adaptive systems that can be enhanced and interconnected by digital infrastructures. A thriving entrepreneurial ecosystem incorporates conditions and practices that create a fertile environment for entrepreneurial activity, a key element of innovation within a city. A key challenge for Melbourne's entrepreneurial ecosystem is enabling start-ups to move effectively through the full lifecycle of commercialisation.

Digital infrastructures can create enabling conditions for three related forces that influence entrepreneurial ecosystem emergence:

1. Intentionality of entrepreneurs
2. Coherence of entrepreneurial activities
3. Injections of resources.

Digital infrastructures are essential tools for providing interconnectivity and coordination between various layers and elements of the entrepreneurial ecosystem to support a stronger commercialisation lifecycle. Multiple infrastructures such as networks, flexible funding, relevant training, access to knowledge bases and development opportunities, are better co-ordinated as a result of integrating digital infrastructures.

Entrepreneurial Ecosystem Digital Twin

Report 5 in the Digital CBD Project recommends making the ecosystem's coherence and interconnectivity, or lack thereof, more visible and interactive through a city scale Digital Twin.

Digital Twins can capitalise on the computational power of automated decision-making systems.

These systems use predictive analytics based on real time data flows to anticipate change and identify glitches before they happen, or opportunities before they disappear. Being able to visualise the entrepreneurial ecosystem through a Digital Twin will aid anticipation in wealth recycling and increase both the responsiveness of the entrepreneurial ecosystem and coordination of awareness across it.

Doing so enables commitment and trust amongst stakeholders therefore supporting coherence and coordination across the ecosystem to align engagement incentives for talent, investment, professional services and corporate partnerships.

City data

People, businesses, researchers, local government and policy makers represent the multiple stakeholders that need to access data within the city on a regular basis.

This data management requires robust regulations developed in the form of a data governance framework that considers technical security and ethical requirements in order to provide secure data collection, management and use for decision making in the city.

As our city becomes more reliant on digital infrastructures, so too will it become reliant on data. Immense amounts of data flow through our city every day, across supply chains, people and businesses, which are captured by these new digital infrastructures.

The Digital CBD survey published in Report 5, found 40% of Melbourne residents see accessible city data as the most important tech trend for the future of a Digital CBD. Therefore, ensuring that data are secure, accessible and anonymous is extremely important and will require a collective governance mechanism to achieve.

Decentralised Autonomous Organisations (DAOs) were the focus of Report 2 in the Digital CBD Project and seek to revolutionise the city, its data, and how we coordinate.

DAOs are a new organisational form and operate similar to a community or company however via a flat structure that rivals our incumbent hierarchical organisations.

These new organisations mix people and their resources in order to create a purposeful entity that holds assets and makes decisions much like traditional structures. However, DAOs utilise digital (smart) contracts, rather than paper based contracts, to automate actions and crypto tokens to manage identity, ownership and collective decision making.

In addition, a DAO could develop a new model for community participation and governance not just of that data but of all the value that is discovered in that resource, such as the recommended Docklands DAO in Report 2 of the Digital CBD Project.

As a result, DAOs could help to reimagine the city from the perspective of local community governance and the creation of economic resources to generate new opportunities for its people.

Report 3 explored the creation of a testbed for autonomous vehicles, robotics and/or drones within the city where data is collected and utilised to further technological advancements in our regions and precincts.

People who utilise these technologies could receive stipends for their engagement by companies who find value in using the data.

Despite DAOs being nascent and in an experimental stage, there are opportunities within the city that warrant exploration as an early adopter Digital CBD. If Melbourne leads the way exploring and showcasing opportunities for DAOs within the city, this could pave the way for other cities around the world to follow and position Melbourne as a global Digital CBD leader.

Data DAOs

DAOs build a new type of digital economic infrastructure that can assist in creating and managing a new local resource, a city's data.

They can be used to address the problem of trust in the city, through seemlessly automating interactions through the use of smart contracts. They can also provide improved capacity for multi-stakeholder decision making around city data.

DAOs allow stakeholders to collectively manage pooled data for their mutual benefit, and the notion of Data DAOs are beginning to emerge as a result. Data DAOs enable members to collectively manage large pools of data that have been collected within the city through a preferred governance mechanism.

This offers new opportunities for our precincts, where common pool resources are managed by its participants to benefit the local community including residents, businesses and workers. This could assist with numerous initiatives such as forecasting working capital or creating a transparent rental market where participants hold similar voting rights.

Cyber security

Cyber security risks are highlighted throughout the Digital CBD Project research series and outlines the known vulnerabilities within digital infrastructures.

Rapid global digitalisation makes cyber security more critical now than ever before. Key threats identified include:

- Ransomware
- Disruptions to essential services and critical infrastructure
- Exploitation of security vulnerabilities
- Malicious actors targeting supply chains
- Phishing emails.

These threats highlight the need for cyber resilience and digital skills as cybercrime cost the Australian economy AU$33b in 2020-2021.

Furthermore, there is a great propensity for human error within cyber and network security. Some of these errors involve sharing passwords, oversharing personal information on social media, indiscriminate clicking on links, opening untrusted attachments and not updating software.

The progressive distribution of our workforce poses a greater level of threat as employees are operating remotely on personal machines and open networks that could be more susceptible to attacks. This is supported in the Melbourne Digital Skills Survey 2022 that found 66% of respondents indicated that the biggest challenge in keeping remote workforces secure was the lack of security awareness amongst employees and keeping up with the latest cybersecurity threats.

Therefore, it will be important to help develop and practice healthy cyber hygiene to increase critical digital literacy. Organisations should ensure that they provide employees with accurate educational information to ensure that staff are aware of the latest security threats, how to address them, how to regularly update and clean their devices, use secure passwords and two-factor authentication. However, the shortage of cyber professionals must first be addressed. This shortage conveys the need for an Innovative Skilled Migration Program to close this gap.

Cyber security also looks at how this new suite of technology can replace incumbent systems to provide a greater level of security to digital infrastructures to ensure secure and resilient robust support to our critical infrastructures.

Innovative Migration Program

Report 4 in the Digital CBD Project proposed the development of an Innovative Migration Program that targets skilled migration in the recognised skills gap field and a comprehensive ICT and Cyber Security Diversity Action Plan for attracting more women to the sector.

These plans could be developed and co-ordinated through the Digital Skills Academy.

It is estimated that 25,000 cyber security professionals are required just to close the current gap in the market according to the 2021 ISC2 Workforce Study.

An Innovative Migration Program would be valuable to Victoria's recovery following almost net zero skilled migration in 2021.

Accurately forecasting the needs of a shifting workforce through a Digital Skills Academy would ensure that Victoria could maintain a diverse skilled workforce moving into Industry 4.0 and a Digital CBD.

Recommendations

The reports in the Digital CBD Project research series have identified key areas that will be impacted as a result of the transition to a Digital CBD.

The following recommendations provide a strong foundation for further research into the future of our digital cities and outline a roadmap for clarity and realistic implementation.

1. Establish a Digital Cities Research Centre

Create the world's first Digital Cities Research Centre to provide research outcomes, undertake global digital benchmarking and collaborate with and advocate on behalf of, industry bodies, stakeholders and the digital community.

This will ensure that digital innovation continues to be developed and trialled, and will establish Melbourne as a leader in digital city implementation.

Further investment would be required to achieve this such as initiatives similar to Breakthrough Victoria.

2. Establish a Victorian Digital Skills Academy

For the Victorian Government to invest in a Digital Skills Academy.

The academy would develop through a consortium between industry, education and government.

This consortium is structured as a DAO to support multi-stakeholder decision making and the development of policy for reskilling and upskilling within a digital city.

3. Embed accessible corridors

Embed accessible cyber resilient digital infrastructures into corridors.

Embedding secure and sustainable digital infrastructures into our corridors that connect the city with its regions and precincts would keep our hybrid workforce connected during commutes and across remote working practices and locations.

Improved access to and affordability of digital infrastructures in all regions including the CALD community and those from lower-socioeconomic backgrounds, would ensure everyone has access to a Digital CBD.

4. Create a Data Governance Framework

A data governance framework that can provide guidelines for utilisation, ownership and governance rights is needed to facilitate its use within the city. This framework would need to be easily interpreted and promote usability and accessibility for all stakeholders.

5. Virtual Supply Chain Pilot

Develop a Victorian supply chain such as construction using NFTs to track the use of sustainable materials.

A digital twin utilising NFTs in the supply chain would aim to improve information symmetry for stakeholders and create more trustworthy and secure data. This could then be extrapolated into a virtual supply chain that exists in the metaverse to support resilience.

6. Data DAO

Utilise DAOs as a vehicle for data management

The organisational structure of a DAO would support the efficient, equitable and transparent management of data within Melbourne. To achieve this, DAOs would need to be recognised as a legal entity to enable integration. This recognition would allow our regions and precincts to support government, industry and the community.

Successful integration of DAOs within the city would help to create new jobs, allow efficient sharing of data, community governance, encourage innovation within the city and produce passive income for people interacting with the city.

7. Greening the Digital CBD

Focus on a green digital economy by building sustainable data centres and using digital technologies that manage distributed energy sources and enhance energy use management.

Introduce appropriate green legislation to manage the sustainable implementation of these new digital infrastructures.

8. Entrepreneurial Ecosystem Digital Twin Pilot

Produce a Digital Twin pilot to assist in coordinating entrepreneurial activity.

A Digital Twin would assist in creating a more visible and interactive landscape for entrepreneurs and other stakeholders to engage with across the full lifecycle of commercialisation.

9. Gamification and immersion in the CBD

Build gamified and playful environments within the city that citizens can interact with via immersive technologies.

These initiatives can promote creative engagement with what a digital city is and what we would like it to become.

10. Implementation of an Innovative Migration Program

Develop an Innovative Migration Program to incentivise migrants to live and work in Victoria through initiatives such as business sponsorship, industry connections, global promotional strategies and relocation packages.

This would assist Australia in returning to its former heterogeneous workforce and support the shift into Industry 4.0.

Summary of Recommendations

Establish a Digital Cities Research Centre

- Initiate and fund an interdisciplinary research platform.
- Set the research vision towards goals to address city needs in urban regeneration, social inclusion, the housing crisis, sustainability, public health and economic resilience.
- Establish cross government stakeholder investment in the implementation of research outcomes within policy and social contexts.
- Advocacate and collaborate with stakeholders working closely with the Victorial Digital Skills Academy on digital litreacy and cyber security.

Establish a Victorian Digital Skills Academy

- Connect and augment existing precinct based digital skills initiatives such as the Cremorne Digital Hub, with a networked academy.
- Connect with experts in the field and request for tender from private and public education providers to develop course materials.
- Create programs to increase digital skilled workforce such as the Innovative Migration Program and ICT and Cyber Security Diversity Action Plan as well as assisting marginlised groups with upskilling.

Regulatory and policy actions

- Create web3 oriented regulatory sandboxes for entrepreneurial experimentation.
- Develop policy surrounding a city data governance framework.
- Establish DAOs as legal entities.
- Develop a skilled migration plan to address industry gaps in web3 and cyber security expertise.

Activate pilots and interventions

- Establish digital corridor pilots to support a decentralised workforce.
- Government facilitation of pilot implementation.
- Fund initiatives through a competitive application process and community consultation.
- Build industry relations with the Innovative Migration Program.
- Fund digital social vibrancy initiatives.

Implement a Data Governance Framework to support:

- Data DAO
- Accessible Digital Corridors
- Sustainable digital infrastructures
- Gamification and immersion in the CBD
- Greening the Digital CBD
- Virtual Supply Chain Pilot
- Entrepreneurial Ecosystem Digital Twin Pilot

Digital CBD Roadmap

This Digital CBD Roadmap provides a clear vision for Melbourne to start moving towards a globally influential digital city by as soon as 2023 if funding is prioritised. This would allow for a more efficient and effective economy while creating a city that is secure, connected and inclusive.

YEAR 1

Establish Digital Cities Research Centre

2023

- The Digital Cities Research Centre (DCRS) is established as the first step in the Roadmap and spun up within **Year 1** of the Roadmap implementation.
- The DCRC to actively conduct research for five years and build a research program linked to the pilots, data governance and policy concerns.
- The DCRC to provide the research basis to inform the formation of the Victorian Digital Skills Academy (VDSA).

YEAR 2

Establish pilots and Victorian Digital Skills Academy

2024

- Commence the first set of research based pilot initiatives.
- Each pilot is run for three months then evaluated.
- The VDSA is initiated and will take two years to establish and bring into effect.
- The DCRS to build a Data Governance Framework linked to the pilot scenarios.

YEAR 3

Data governance, pilots, education and policy

2025

- The second set of pilots is run for three months and evaluated.
- Data Governance Framework is developed for these pilot scenarios.
- VDSA courses are developed in consultation with industry and government stakeholders.

YEAR 4

Policy, city interventions and digital skills

2026

- VDSA courses are live and evaluations undertaken.
- Pilot evaluations to inform broader policy and city developments.
- Innovative Migration Program, informed by DCRC insights implemented.
- Data Governance Framework built into comprehensive policy strategy.

YEAR 5

Research, evaluation and policy

2027

- Research case studies produced on city interventions, review of research strategy and outcomes.
- Policy implementations evaluated.
- Data Governance Framework benchmarked to global standards.
- VDSA evaluated and recommendations provided.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