

# Get Involved

**01** Watch the short video to understand the background to the project.

**02** Preview the three speculative design solutions and use the Perspex and Pens to provide some constructive comments or suggestions.

**03** Respond to our questions on the interactive feedback station.



University of Dundee

**InGAME**




MICHELIN SCOTLAND INNOVATION PARC

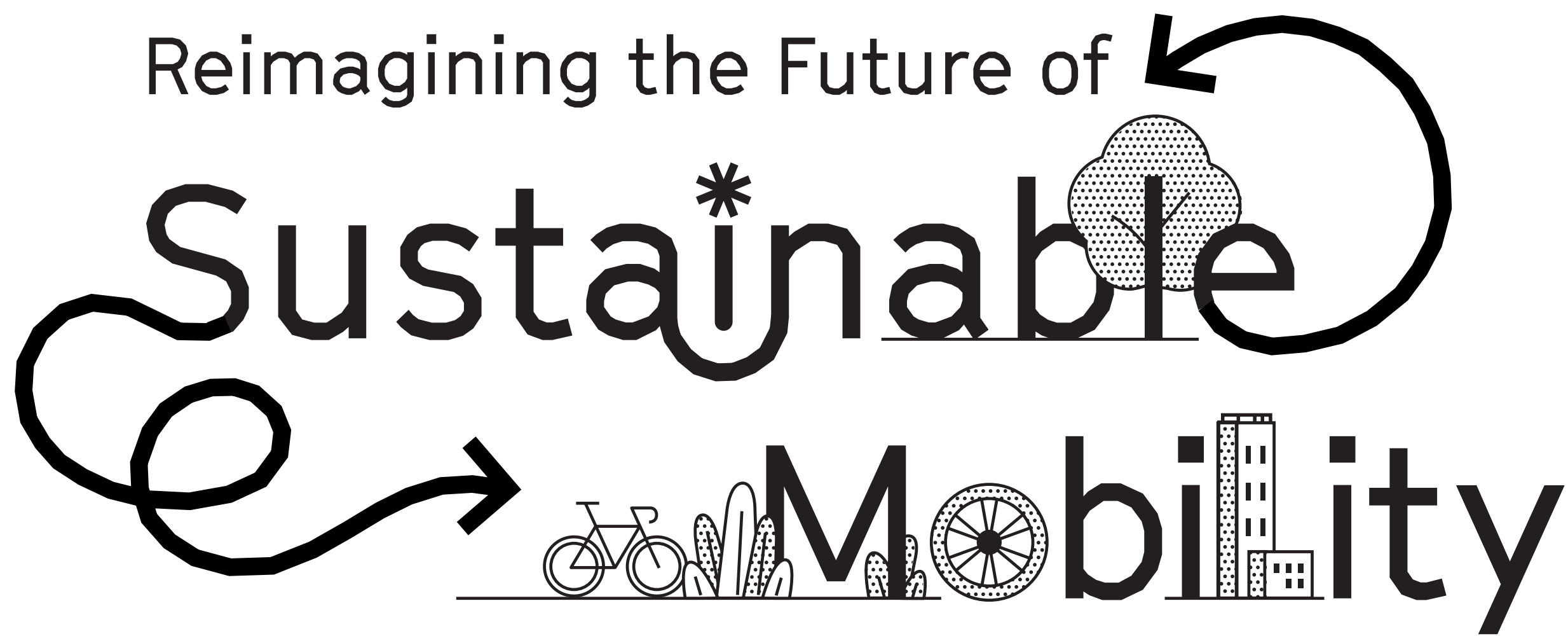
**V&A Dundee**

We would like to take this opportunity to thank the Innovation and Impact Development Fund (IIDF) at the University of Dundee and the InGAME AHRC Creative Cluster for their funding and support for this project.

In addition, a special thanks to our other collaborative partners Michelin Scotland Innovation Parc (MSIP) and V&A Dundee for their active contributions throughout this project.



# Reimagining the Future of Sustainable Mobility



Mobility is at the core of modern civilisation, and the way people and goods move around impacts many aspects of life, with around one-quarter of global CO<sub>2</sub> emissions coming from the transportation of people and goods.

(Scottish Government, 2022).

With policy pressure toward 'Net Zero' rising in many countries, the evolution toward green and next-gen mobility is gaining further momentum. The years ahead will undoubtedly bring significant changes as electrification, shared mobility, vehicle connectivity, artificial intelligence and, eventually, autonomous vehicles, reshape transport markets around the world (Zhao, 2022).

To remake cleaner and smart cities by democratising transit, leaders and innovators must have a comprehensive understanding of the three pillars of modern smart mobility—technologies, technicalities, policies—and how they interact with complex, real-world systems.

In collaboration with InGAME, Michelin Scotland Innovation Parc (MSIP), V&A Dundee and the University of Dundee, this project explores social innovation interventions for new business practices, placemaking models and gaming technologies that make sustainable mobility not only more efficient, but more equitable, more innovative, and human centred.

POP UP

IMAGINARIUM

This pop-up imaginarium is a presentation and display of speculative design solutions from creative collaborations across disciplines using gaming technology to engage and empower local citizens to co-create sustainable cities that inform future city-wide policy and decision making.

# 1

# Dundee's Digital Twin

## PROBLEM

A lack of people-centred approaches to sustainable transport systems and mobility challenges.



We need to purposefully bring people, data and technology together to help promote and implement sustainable mobility solutions across the city.

There is a lack of city-wide awareness and understanding of environmental challenges generated by transportation systems.

*"Sustainable transport offers mobility services that are culturally and climatically appropriate for a given location and socially, environmentally, and financially sustainable for a defined period of time"*

(Professor Lucy Budd, editorial advisory board member of the Transportation Planning and Technology Journal and Co-Editor of Air Transport Management: An International Perspective, 2020).

## SOLUTION

What if citizens could curate their own digital and interactive maps providing alternative lifestyle choices for finding their way around the city?

Inspired by green map initiatives and the Marauder's Map from the Harry Potter novels and film series, Dundee's Digital Twin is a new digital and interactive transport map co-created with local citizens to support the transition to a cleaner, greener, and safer city.

Using immersive technology to build a virtual metaverse for Dundee (a digital twin) and providing citizens with alternative lifestyle choices. The map would include features like route planning, modes of transportation, nature & biodiversity mapping and Health & Safety recommendations.

### Partnerships

We would partner with UNESCO City of Design Dundee, Dundee City Council, Tactran Tayside and Central Scotland Transport Partnership & NatureScot and Toposophy.

### Stakeholders

Working Professionals, Urban Planners, City Developers, Architects, Creative and Digital Technologists, Local Authorities, Residents, Cultural Attractions & Transport and Logistics Employees.

### Benefits

- 1 Maximising the relationships between residents and other key stakeholders to co-create sustainable spaces and environments that they want to live in.
- 2 Making residents and visitors think differently about how they move around cities to help reduce emissions and respond to carbon efficiency targets.
- 3 Informing future city-wide policy and decision making for national government departments .
- 4 Optimising more green space, transportation, and creating a more resilient and smarter city.

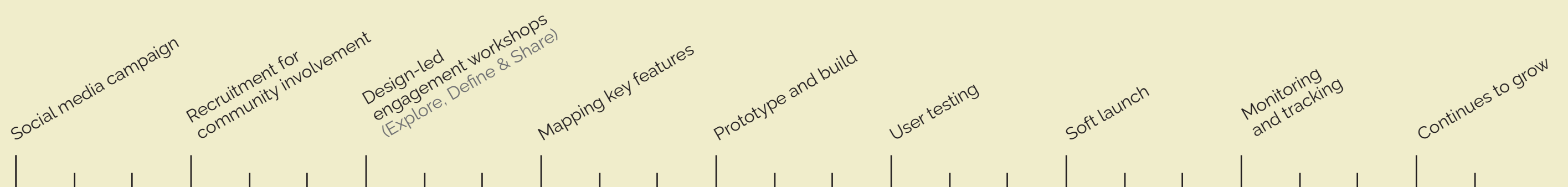
### Possible Barriers

- Recruitment for Community engagement.
- Lack of support and funding from local authorities.
- Digital literacy.
- Hiring appropriate developers.
- Technical and compatibility difficulties in digital map development.

### Measuring Success

- Downloads and usage.
- Smartphone tracking data.
- Monitoring engagement with citizens.
- CO2 emissions, air and noise pollution levels.

### Making it Happen



# 2

# Community Hubs for Smart Cities

## PROBLEM

The problem with smart cities is that they deal with cities, not as centres of communities, but as terrains that need to be managed.

To understand smart cities, it is important to understand the history of cities. Adam Greenfield, an American writer, and urbanist, sums it up by saying that the real problem with smart cities is that they deal with cities, not as centres of communities, but as terrains that need to be managed. Hundreds of years ago, cities grew out of a need for community centres. Where people would bring their goods to trade with others in what began as a simple form of commerce.

With the advent of Artificial Intelligence (AI) and some amazing breakthroughs in technological innovation, it's now time to think about the cities of the future that are smart and more sustainable.

## SOLUTION

What if we developed a new model for a smart city of the future that re-thinks the community centre model by connecting with local authority owned Electric Vehicles (EV's) to support vulnerable and housebound citizens?

A smart city is a municipal framework composed of data-driven decisions powered by Artificial Intelligence (AI) and the Internet of Things (IoT). As part of this framework, an intelligent network of connected devices collects data using sensors and transmits it to the cloud, which allows it to communicate with other assets in the ecosystem. In a smart city, the goal is to maximise quality of life for citizens, use resources more efficiently, reduce costs, and improve sustainability.

This project explores how this might be optimised for social good to support innovation within transport to support vulnerable and housebound citizens. To explore if local authority owned EV's can be utilised for multi-purpose travel to build connections within their local community. As AI-based technologies continue to expand their capabilities, it is not unthinkable that more decisions will be guided by AI (such as using fingerprints or facial recognition to make journey payments), thus reducing inconsistency and human error for the betterment of the community and the ecosystem.

### Partnerships

Local business and research institutions, Scottish Government, Dundee City Council, Age UK & British Red Cross.

### Stakeholders

Councillors and local authorities, Housebound and vulnerable residents, Community volunteers, Social enterprises, Creative Technologists & AI Developers.

### Benefits

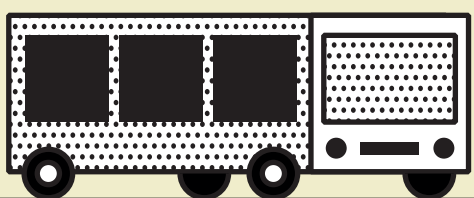
- 1 Building more integrated systems between communities, local services including hospitals and healthcare facilities.
- 2 Improving policy making systems to support social equity frameworks across the city.
- 3 Developing new community hubs where residents and local authorities collaboratively assess community health needs.
- 4 Empowering people to use the community hubs to generate new and novel ideas to fix, mend and re-use transportation services across the city.
- 5 Offering on-demand and door-to-door mobility services that meet the needs of the housebound & most vulnerable.
- 6 Using more sustainable modes of transportation in the form of EV's or even self-driving vehicles, creating safer streets and smoother journeys for all.

### Possible Barriers

- Lack of community engagement and finances to support patient transport needs e.g. inability to afford EV's and lack of charging infrastructures across the city.
- Digital equity.
- Data management & misuse.
- Lack of computing power.

### Measuring Success

- Tracking levels of engagement between citizens and local authorities.
- Monitoring missed healthcare appointments.
- Tracking the amount of people using the service.
- User satisfaction of the services provided.
- The number of new initiatives generated through the community hubs.
- Social networks & measure of betweenness centrality.





# 3

# 20 Minute Neighbourhoods

## PROBLEM

Around the world there is growing interest in creating places where most of people's daily needs can be met within a short walk or cycle.

Societies around the world are facing a number of urgent interconnected problems, including how to

- reduce carbon emissions
- help people become more active to improve health and wellbeing
- reduce loneliness
- improve high streets and neighbourhoods that have declined.

We are in the midst of long structural, societal, economic and climate changes that are driving and demanding a deep evolution in the governance, function and role of our cities and neighbourhoods. The combination of the Covid pandemic and Brexit has accelerated the transition of our cities and we need to explore what this future urbanity will look, feel and live like.

## SOLUTION

How might we create complete, compact and connected neighbourhoods in which people can meet most of their daily needs within a short walk or cycle ride? Where local economies are strengthened and opportunities to reduce food miles are taken?

How well we plan, design and create new places and regenerate existing ones will help or hinder work to tackle a wide range of issues, including health inequalities, climate change, and the decline in local high streets and economies. We need to transform the way we live by creating environments that make it easier for everyone to be more physically active, and local authorities and planners have a key role in this.

Every community has its own context and aspirations for the future. The 20-minute neighbourhood idea is about strengthening local economies by keeping jobs and money local; facilitating local food production to create jobs and supply affordable healthy food for all. Ultimately, it is about empowering communities to have a direct say in how their neighbourhoods change.

### Partnerships

Local authority, Sustainable Transport network, Transport Scotland, Regional partnership groups e.g Taycities Deal, Economic development agencies, Scottish Government & NGOs supporting community groups.

### Stakeholders

Citizens, Local Businesses & Cycle Hubs.

### Benefits

- 1 **Social benefits:** people become more active, mental and physical health improves; people see more of their neighbours and strengthen community bonds.
- 2 **Economic benefit:** local shops and businesses thrive, reduction in road congestion, new jobs, potential to increase land value, productivity of local area improves.
- 3 **Environmental benefits:** biodiversity, energy efficiency, climate resilience, air quality, sense of community and well-being.

### Possible Barriers

Re-prioritising pedestrians by uncovering old street patterns.

Neighbourhoods with spread out, disconnected buildings can be difficult, unpleasant or dangerous to walk or cycle through.

Many councils are struggling financially, have reduced staff and expertise, and have competing priorities for their shrinking resources.

### Measuring Success

An increasing number from a wide demographic believe it is a great place in which to live.

Recognise that some communities with fewer resources will need more support in order to contribute.

