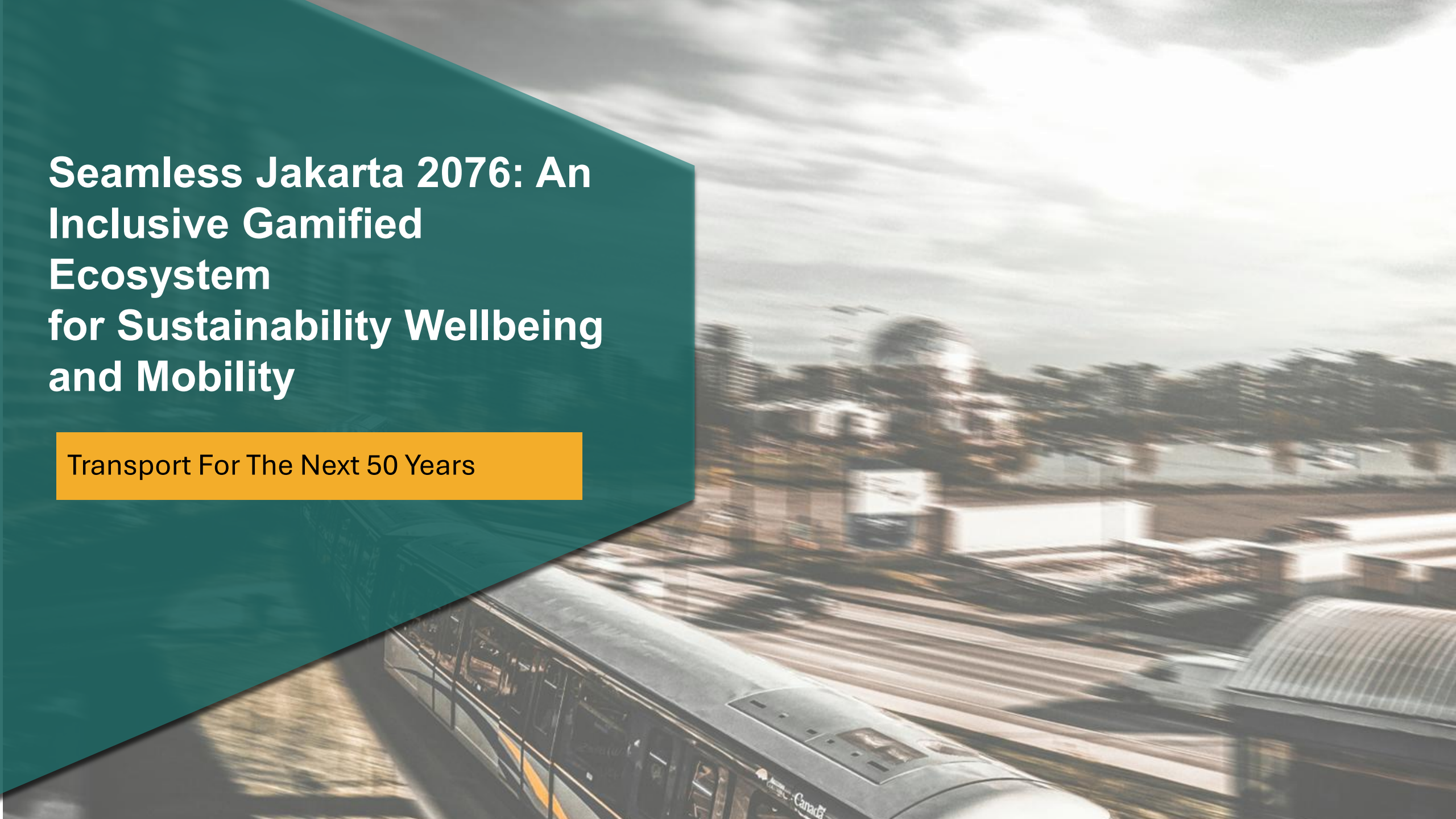
Seamless Jakarta 2076: An Inclusive Gamified Ecosystem for Sustainability Wellbeing and Mobility

Transport For The Next 50 Years



Major Global Transport Challenges and Emerging Opportunities
CHALLENGES

Challenges since the past 50 years

Private Vehichle

A heavy reliance on motorized transport has led to increasing traffic congestion and A systemic shifting toward automobile dependency

Urban Sprawl

City growth expands to the suburban area without mass transportation support (the beginning of cross-border congestion)

Emission

The use of fossil fuel and the lack of emission standards to increasing pollution in the city

Current Challenges

Accessibility

Poor accessibility to public transit networks ensures that private vehicles remain the predominant in transport mode choice

Emission

Despite the emergence of sustainable alternatives, a heavy reliance on fossil fuels persists within the transport sector

Gentrification

The exclusivity of Transit-Oriented Development (TOD) precincts has led to prohibitive living costs, effectively marginalizing low-income populations and restricting equitable access to urban mobility

MAIN ISSUE: "Drawing on our research methodology, we have identified that restricted access and systemic barriers to **mode choice in Jakarta,** a persistent challenge over the last five decades constitute the fundamental root of contemporary urban issues. Consequently, our strategic focus centers on addressing and optimizing **modal choice in Jakarta"**

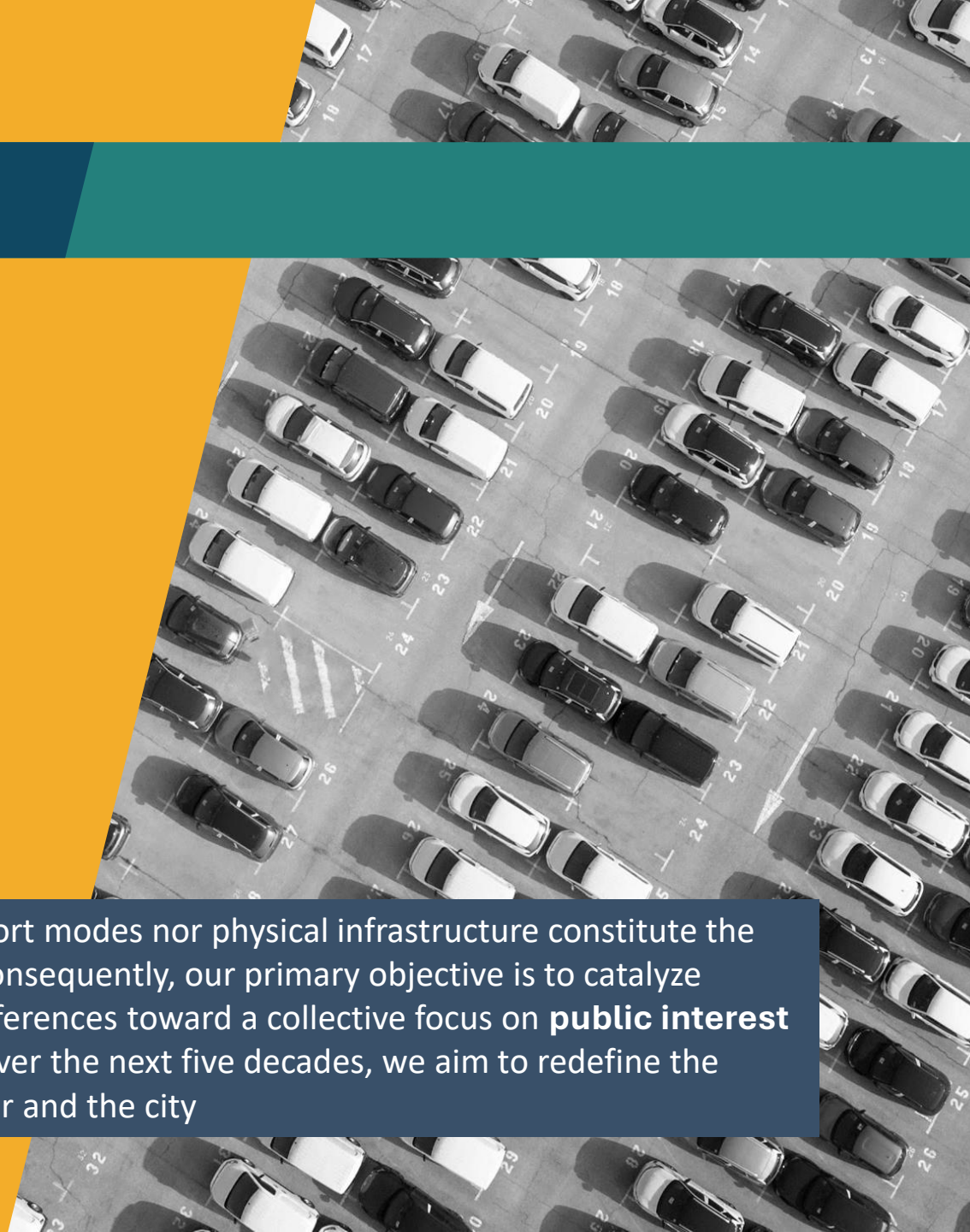
Major Global Transport Challenges and Emerging Opportunities
Solution

Infrastructure
The large-scale expansion of transportation infrastructure across both urban centers and inter-regional corridors

Mass Transportation
The development and integration of mass transit transportation

TOD
The implementation of Transit-Oriented Development (TOD) as a concept of modern urban transportation strategy

Digitalization
Digital Transformation: The seamless integration of fare and routing structures into a unified digital ecosystem



Solution for the next 50 years: Our analysis indicates that neither transport modes nor physical infrastructure constitute the fundamental root of current urban transport challenges in Jakarta. Consequently, our primary objective is to catalyze a **behavioral shift in modal choice,** transitioning from individualistic preferences toward a collective focus on **public interest and holistic well-being**. By leveraging transformative technologies over the next five decades, we aim to redefine the relationship between the commuter and the city

Visionary Pathway for The Next 50 years

2045

01

Concept Development

Jakarta as the center of metropolitan region: Advancing Inclusive and Sustainable Transit Connectivity and Unified Digital Mobility Ecosystem

2065

02

Gamification and AI Adaptation

Implementation of Large-Scale Gamification & AI Adaptation. The beginning to change mode choice into a social experience that is competitive and collaborative

2076

03

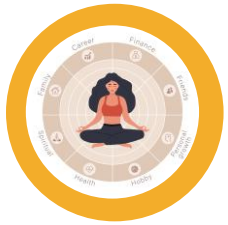
Holistic Well-being

Realizing the Jakarta Well-being Ecosystem: Achieving a holistic synergy between technological innovation, human agency, and environmental sustainability

Integrate Perspective

Enviromental Justice

Fair distribution of clean mobility.
Not just reducing emissions, but promote a benefits from cleaner mobility.



Well-being

Mobility as health infrastructure.
Every trip should improve physical, mental, and social well-being.

Social Equity

Mobility as a right, not a privilege. Mobility system must compensate inequality, not reinforce it.

Technology Transitions

Not only create smart city but adaptive city.
Technology shift from optimizing traffic to shaping behavior ethically.

Seamless Jakarta 2076 is a gamified urban operating system that turns everyday mobility into a driver of environmental justice, social equity, and collective well-being.

Integrate Perspective (SDG's implementation)

We implement sustainable development goals (SDG's) which include SDG's 3, SDG's 5, SDG's 10, SDG's 11, SDG's 13, and SDG's 15.

3

Goal 3

Ensure healthy lives and promote well-being for all at all ages.

10

Goal 10

Reduce inequality within and among countries.

11

Goal 11

Make cities and human settlements inclusive, safe, resilient and sustainable.

13

Goal 13

Take urgent action to combat climate change and its impacts.

15

Goal 15

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Integrate Perspective (SDG's implementation)

We implement sustainable development goals (SDG's) which include SDG's 3, SDG's 5, SDG's 10, SDG's 11, SDG's 13, and SDG's 15.

The concept of **"Seamless Jakarta 2076"** fundamentally integrates the pillars of the **Sustainable Development Goals (SDGs)**. Specifically **SDG's 11 (Sustainable Cities and Communities)** and **SDG's 3 (Good Health and Well-being)**, through the transformation of inclusive, well-being-based mobility. By implementing a gamified mobility system that incentivizes "well-doing," this framework not only targets radical energy efficiency and carbon emission reduction (**SDG's 13: Climate Action**) but also guarantees universal access for all society layers, including vulnerable groups, to eliminate mobility disparity (**SDG's 10: Reduced Inequalities**). Through this approach, transportation transcends mere physical infrastructure, becoming a strategic instrument to achieve a resilient, healthy, and sustainable urban ecosystem for Jakarta's future as a global city.

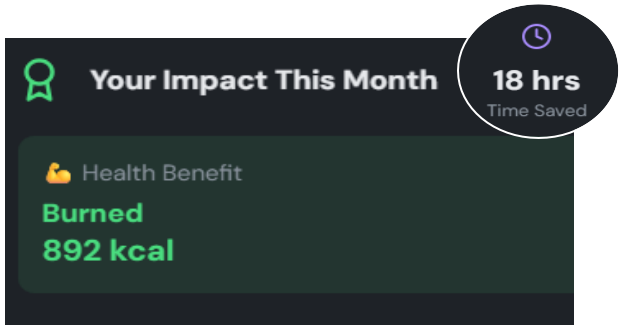
Integrate Perspective (Enviromental Justice)

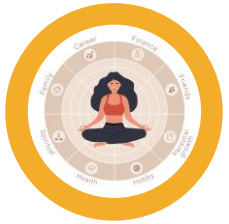
Enviromental Justice

Fair distribution of clean mobility. Not just reducing emissions, but promote a benefits from cleaner mobility.

- Carbon-Aware Scoring
  Every trip has a carbon value (saved/emitted)
- Spatial Multipliers (GIS-based)
  Higher rewards in high-pollution or climate-vulnerable zones
- Low-Emission Priority Routing
  Nudges toward MRT, buses, walking, cycling

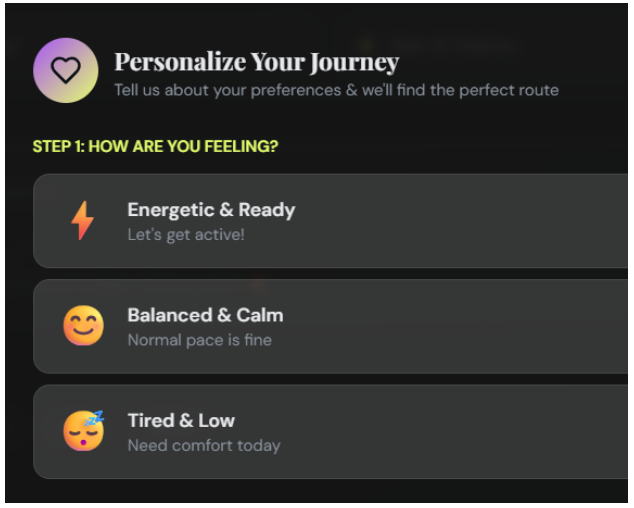
Integrate Perspective (Well-being)

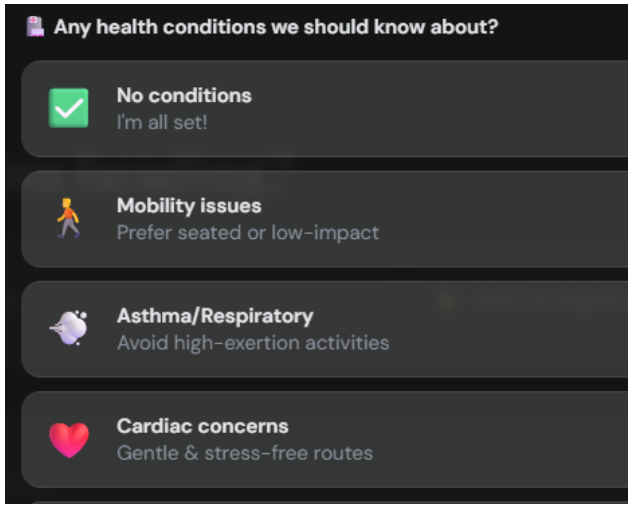




Well-being

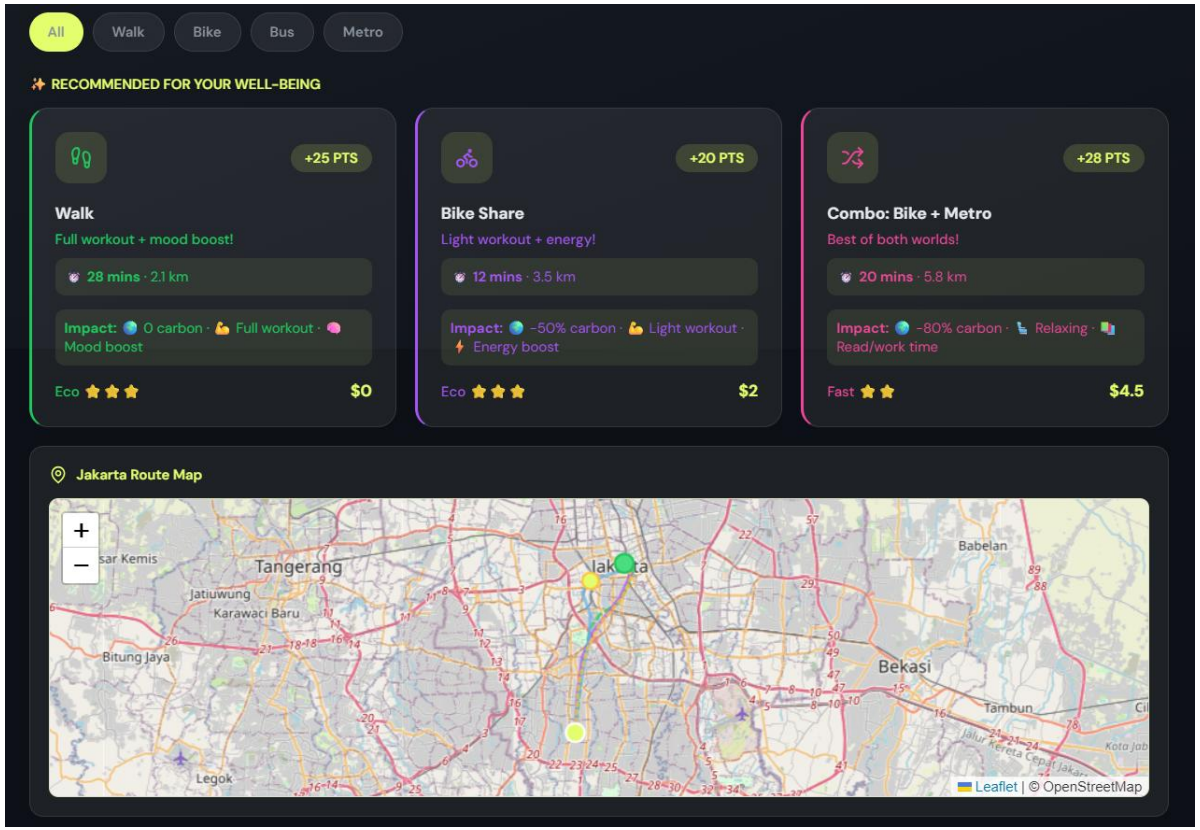
Mobility as health infrastructure. Every trip should improve physical, mental, and social well-being.





- Health Scoring
  Steps, active minutes, stress-reducing routes
- Well-being Rewards
  Redeem for clinics, fitness, parks, community programs
- Calm Routing
  Lower noise, greener streets, safer crossings

Integrate Perspective (Technology Transitions)



Technology Transitions

Not only create smart city but adaptive city. Technology shift from optimizing traffic to shaping behavior ethically.

- AI Recommendation Engine
  Real-time route nudges based on congestion, air quality, and user profile

- GIS Spatial Intelligence
  Layers: pollution, flood risk, accessibility, walkability

- Digital Twin of Jakarta
  Simulates policy impacts (e.g., incentives, zoning, pricing)

Define Clear Principles and Actionabble Research Direction

Strategic Vision: Transforming Jakarta into a 'Living Network,' where mobility is no longer a cognitive burden, but a regenerative urban activity

Main Goal:

- **Environmental Justice:** Achieving Net Zero through AI-driven energy efficiency
- **Social Equity:** Achieving universal accessibility through the catalyst of proactive behavioral engagement (Well-doing)
- **Choice Modelling**: The choice of transport modes defines the collective footprint on the city and public well-being

Clear Principles

Human-Centric Automation

AI does not merely power machines, it liberates individuals from navigational stress as a mode choice designed to enhance urban well-being

Zero-Friction Accessibility

Dissolving the boundaries between transport modes and payment systems. Mobility as an 'Invisible Utility' as a strategic response to significant technological advancements

Altruistic Gamification

An incentive system designed to transform self-interest into collective contribution (Civic Well-doing)

Ecological Symbiosis

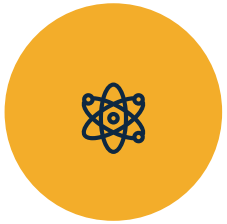
Technology-driven adaptive infrastructure: Coexisting with climate change and Jakarta’s sea-level rise as a 50-year global imperative

Actionable Research Directions

1. **Behavioral Choice Modeling**: to analyze public engagement with digital incentives. This system aims to mitigate *gamification fatigue* while nudging users toward transport modes that align with both personal requirements and the broader public interest.
2. **Adaptive Infrastructure**: Engineering of *Modular Buoyant Hubs*—autonomous, modular transit stations and vehicle systems capable of self-adapting to fluctuating demand and environmental conditions
3. **Federated AI for Collective Transit**: Real-time mass transit route optimization utilizing a decentralized data architecture. This approach ensures the robust protection of citizen privacy through data deconcentration, providing a secure foundation for evidence-based policymaking.
4. **Socio-Economic: Eco**nomic framework designed as a redistributive tool to ensure equitable transit access for marginalized groups (the elderly and persons with disabilities). This system serves as a multifaceted incentive structure to foster public-interest-oriented mobility behaviors.

Recommendations

ACADEMIC



Advancement in Behavioral Choice Modeling

Researching the "Psychology of Incentives" to prevent *Gamification Fatigue*

Digital Twin Urban Resiliency Research

Using platforms 'the platforms' (and more advanced versions) as permanent "Digital Twins" of Jakarta

Integrated Well-doing Metrics

The development of new metrics correlating transport efficiency with public health

GOVERNANCE

Decentralized Budgeting via "Well-doing" Credits

Use the aggregate "Well-doing" points of a neighborhood to determine infrastructure priority

Dynamic Algorithmic Policy-Making

Move away from fixed yearly transport masterplans. Instead, use the real-time data from the citizen's "Mobility App" (the gamified interface) to trigger immediate policy "patches."

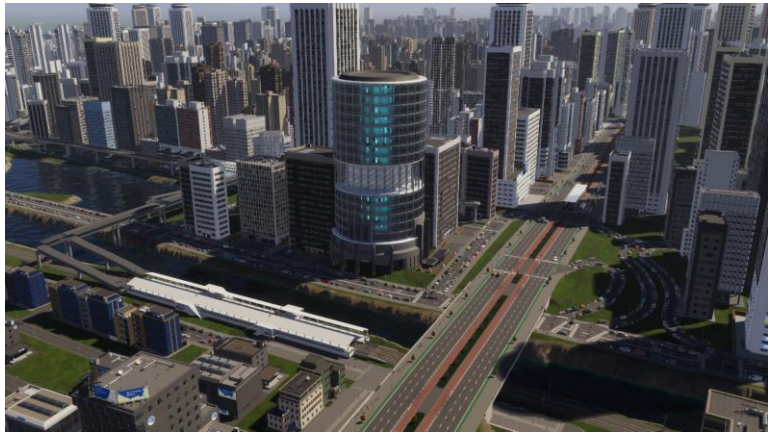
Ethical AI Oversight & Transparency Board

To ensure "Inclusive Mobility," the AI's "Choice-Based Optimization" must be auditable.

Concept Visualization

We use City Skyline Game Application to build our Jakarta ‘as a twin city’ for the basis data in the next 50 years.

The image of an area for ‘Jakarta twin city’ as a visualitation and daily mode choice basic data



Transit station with massive and inclusive park and ride.

Wide pedestrian to support walking and decreasing of emission

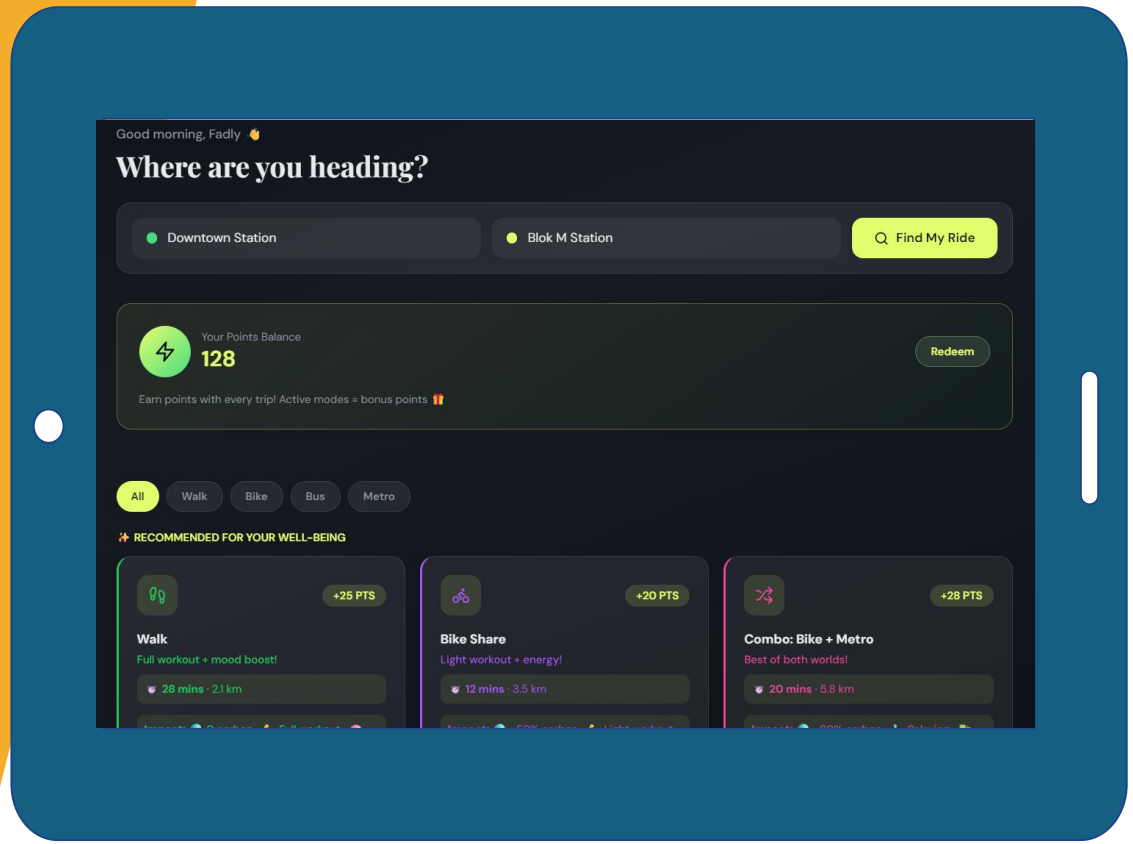
Rail-Based Transportation as main mass transport mode choice

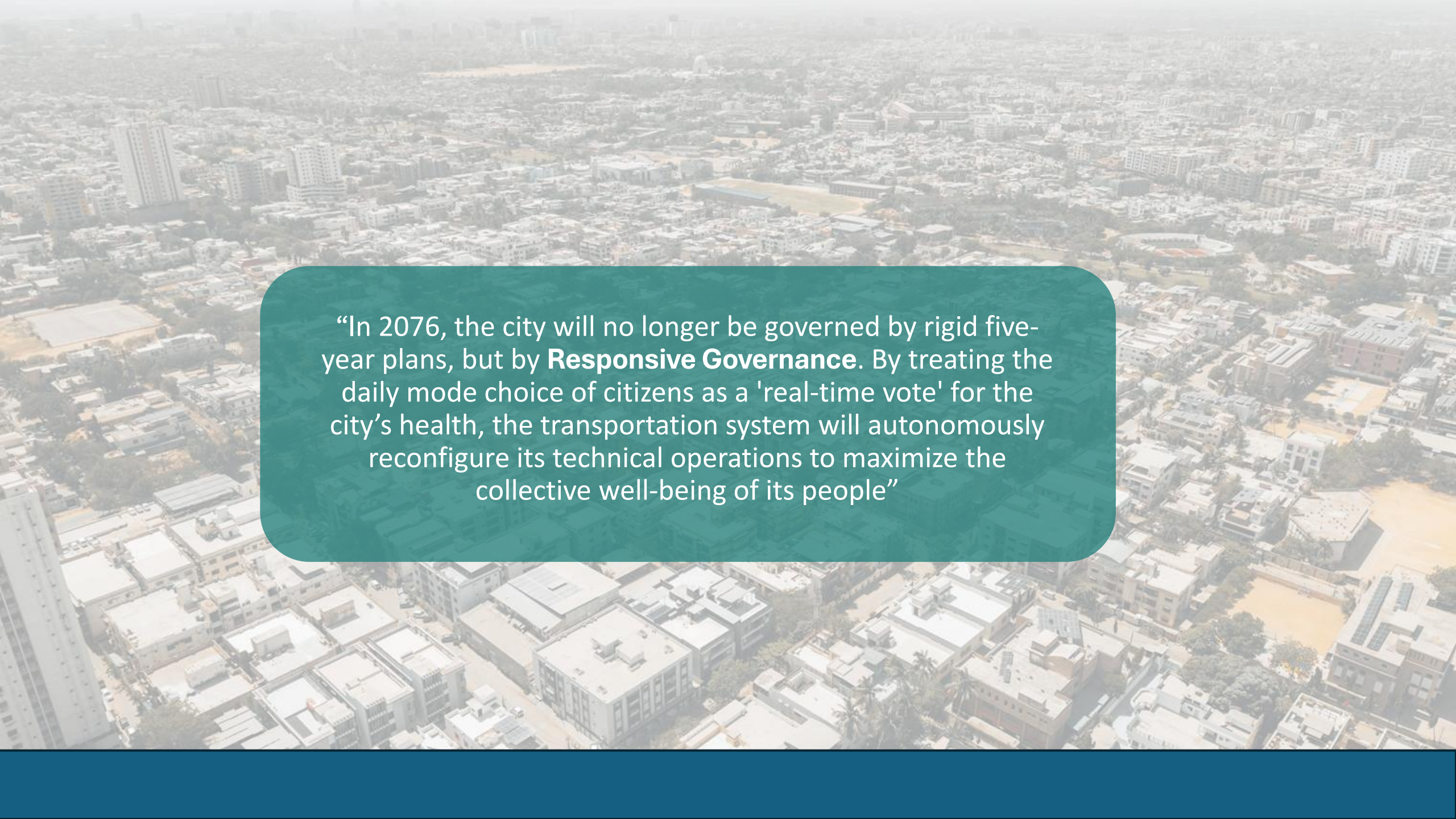
An inclusive park and ride near each transit station

Some parts of Jakarta concept for the next 50 years

Software Demo

https://urbajoy.my.canva.site/





“In 2076, the city will no longer be governed by rigid five-year plans, but by **Responsive Governance**. By treating the daily mode choice of citizens as a 'real-time vote' for the city’s health, the transportation system will autonomously reconfigure its technical operations to maximize the collective well-being of its people”

Thanks!

Do you have any questions?

diannurafalia95@gmail.com
+62 85769017572