The Future of Mobility

Insights Report Fall 2024

SCADask

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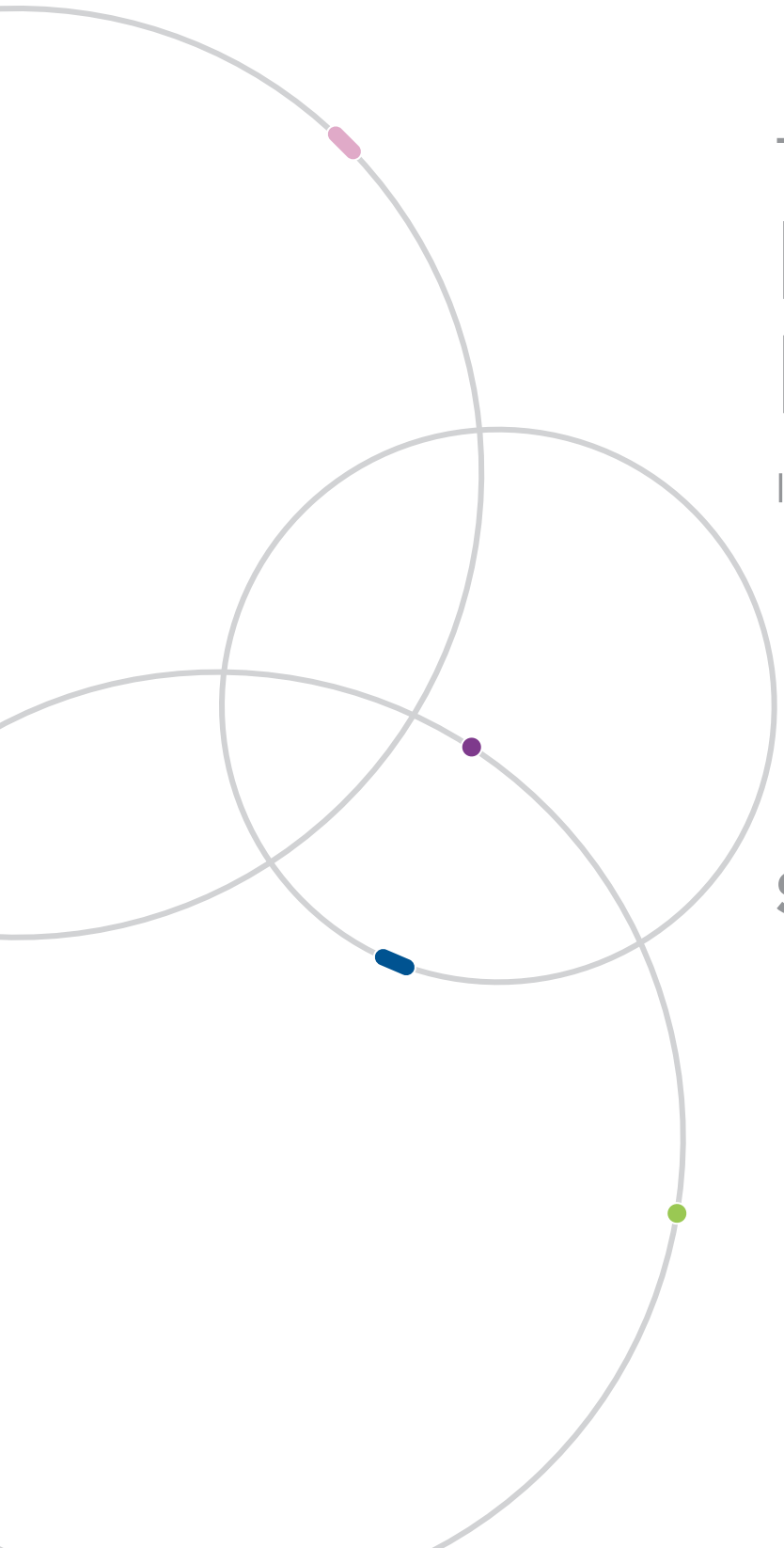

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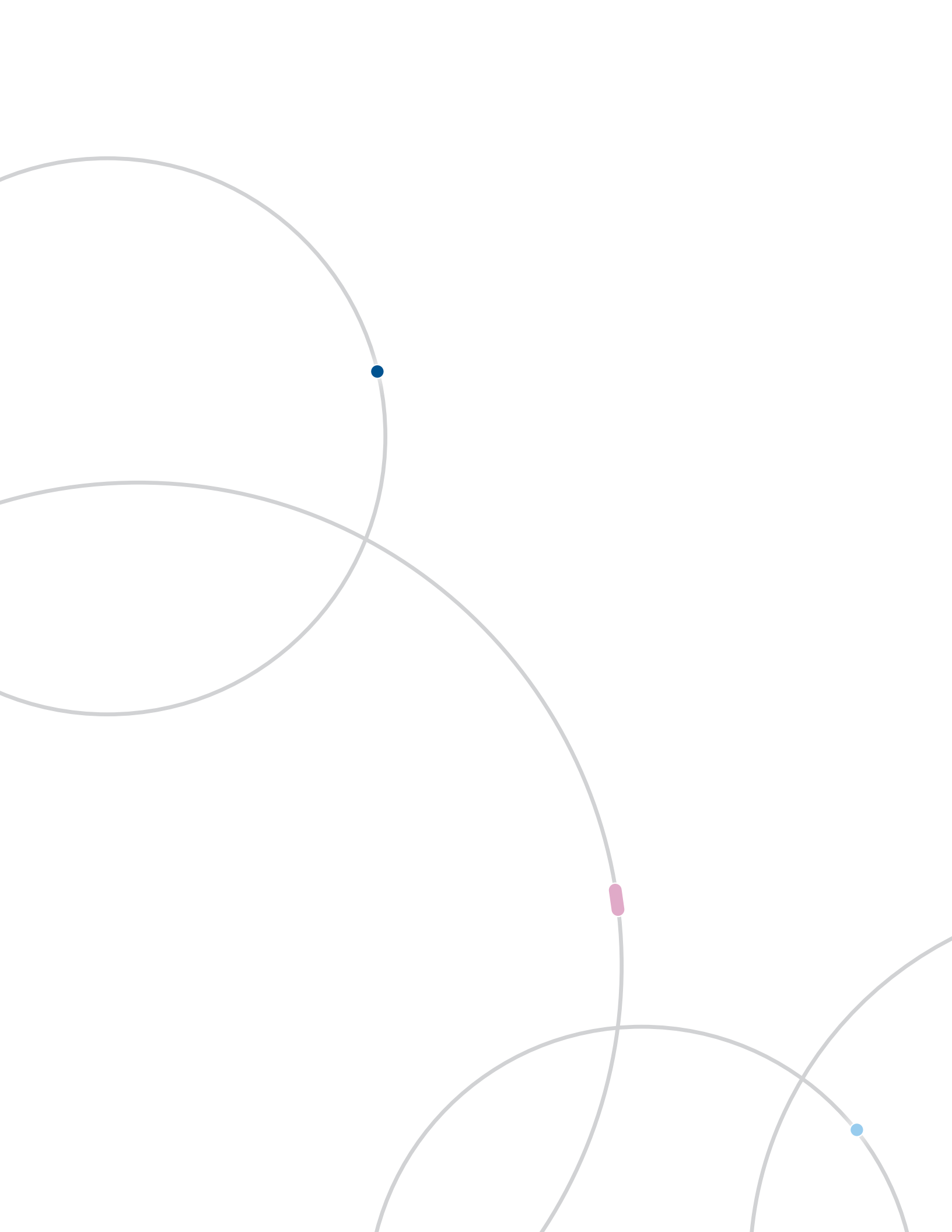

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Executive Summary

Mobility is more than moving from point A to B; it's about connections and experiences. By redefining mobility through user relationships with cities, selves, and communities, both journey and destination merge. This report presents three future scenarios that demonstrate how mobility can evolve to meet Gen Z's needs and aspirations for the future.

Gen Z Needs	Opportunity Spaces	Future Scenarios
City Connection • Effortless experiences • Enhanced safety • Reliable services • Efficient solutions	• Fragmented and unresponsive transit systems • Limited flexibility in transportation channels • Gaps in information delivery systems and underutilized data	**Optimized Integration**
Self Connection • Adaptable spaces reflecting personal style • Integrated digital connectivity with privacy options • Sustainable and eco-conscious solutions	• Underutilization of vehicles (95% idle time) • Environmental concerns with vehicle design and usage • Limited innovation in development cycles and customization	**Infinite Indulgence**
Community Connection • Self-expression and personalization • Real-world interactions • In-person social socialization	• Balance between technology and self-expression • Limited engagement with the physical world • Underdeveloped in-person interaction	**Amplified Joy**

Vision	Action Guide
• **Smart Mapping:** An interactive smart map with AI that syncs with smart infrastructure like cameras and sensors to provide real-time updates. • **SERENA:** An AI companion that offers personalized mobility planning. • **EcoQuest:** A sustainability-based credit system that tracks and rewards users for reducing their mobile carbon footprints. • **Integrated Urban Ecosystem:** A holistic, multichannel urban transportation network with seamless connections.	• Provide timely user data • Encourage data partnerships and services • Leverage intelligent commerce
• **Second Home:** A modular car customization system. • **Next Gen Infinite Module Bundles:** Car module bundle subscriptions tailored for Gen Z and beyond. • **Infinite Module:** Swappable subscriptions, services, and support for shared, adaptable modules. • **New Paradigm:** Redefining independence through autonomous innovation.	• Collaborate with community partners • Allow user control • Make mobility access inclusive
• **MoveID:** A centralized platform network that enables universal personalization and customization. • **Smart Pod:** Dynamic, adaptive environments created by users via integrated smart systems. • **MoveSync:** Fosters genuine connections with safe and compatible companion matchmaking.	• Create bespoke and meaningful journeys • Establish industry-wide standardization • Develop adaptive physical and digital systems

sciencedirect.com/science/article/pii/S0377221722008189#bib0055

"People need to do things while they're going from place to place."

Steve Higgins
UX Research Manager,
Google DeepMind

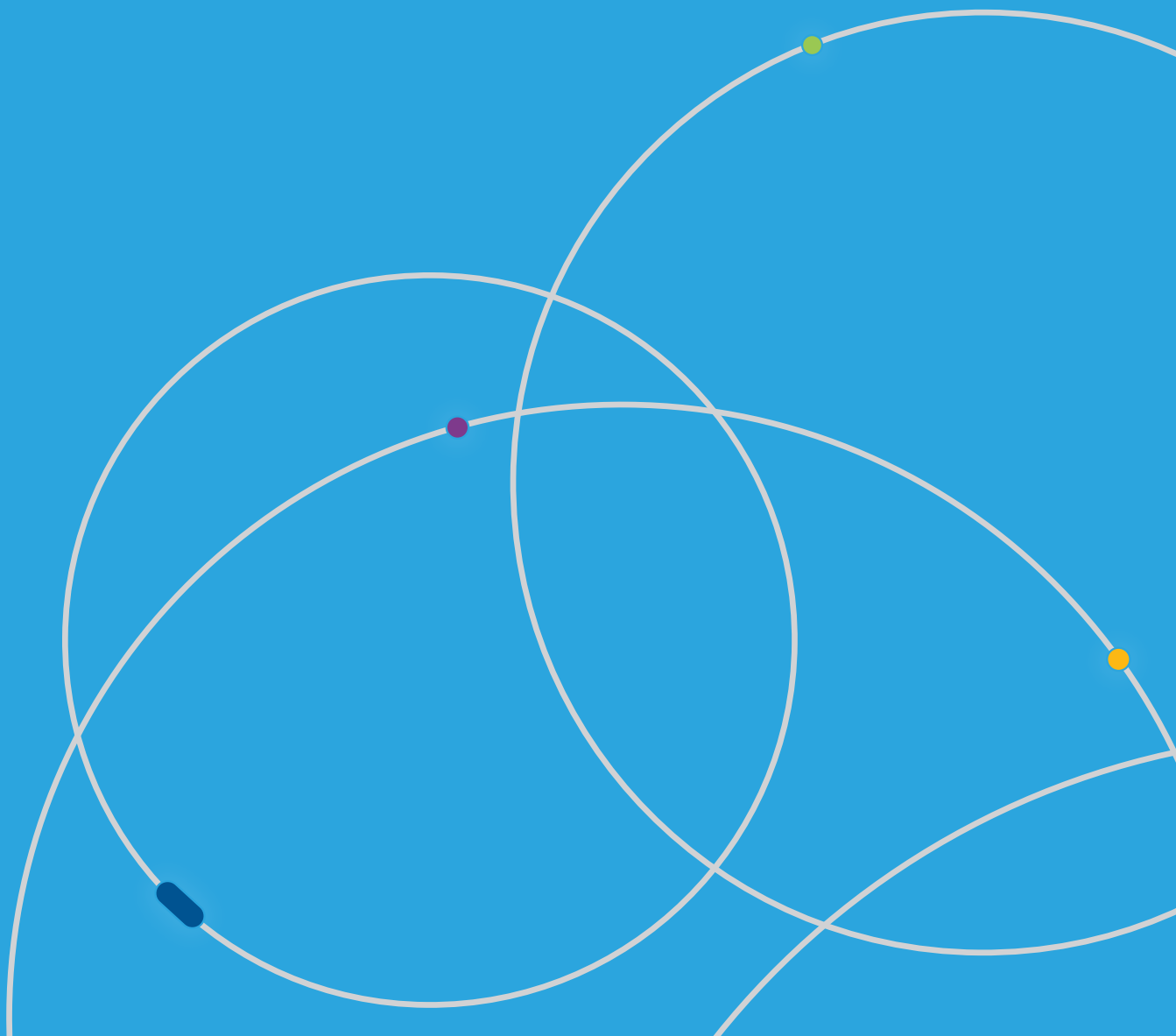
Background

Developed and executed over the 10-week Fall 2024 academic quarter in RSCH 800 Future Lab, this research and analysis identifies current challenges and pain points in public and private transportation. Actionable business opportunities that arose from the findings include solutions for:

- Passenger vehicles,
- Public transportation,
- Ride-sharing,
- Micromobility, and
- Emerging technologies.

The resulting future scenarios are populated with solutions that provide a road map for the future of mobility. This report is designed to guide and unite industry leaders, policymakers, and investors to achieve transportation for users who value sustainability, equity, accessibility, and connectivity.

We believe
mobility expands
connections.



Key Takeaways

Gen Z requires connection to their cities, selves, and communities.

Values include: safety, reliability, adaptability, eco-awareness, digital integration, social engagement, and customization.

Opportunities to serve Gen Z within the mobility space include providing cohesive services and digital experiences, enhancing sustainable options, offering avenues for self-expression, and increasing meaningful social connections.

Connect disparate services and applications to provide mobility solutions that expand communities, offer control, and welcome authentic interactions.

Methodology

1300+ Raw Datapoints

28 Gen Z User Interviews

200+ Survey Responses

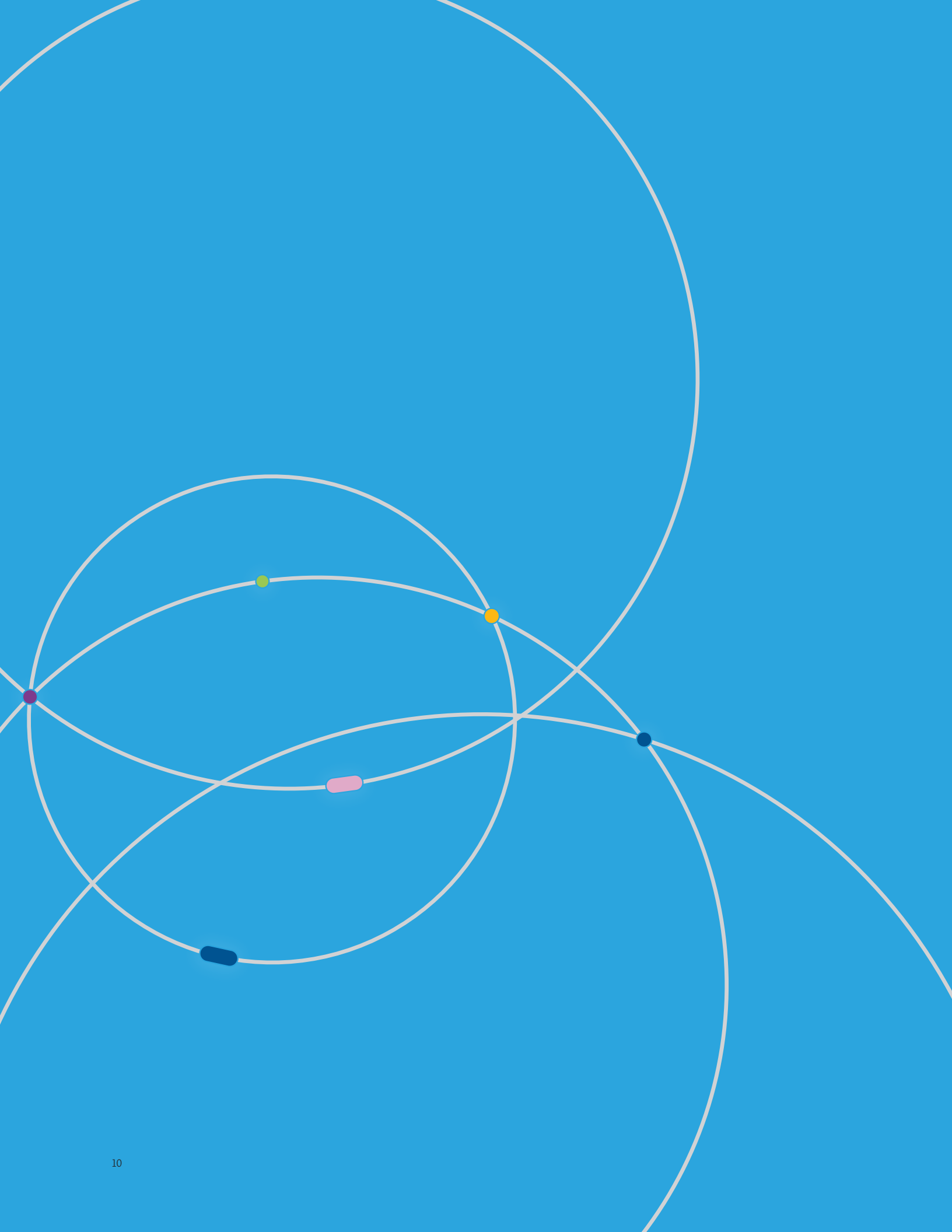
11 Expert Interviews

Ideation Methods

The research team used several tools to holistically approach mobility.

These include:

- **PESTEL Analysis:** A strategic framework used to explore the topic of mobility through political, economic, social, technological, environmental, and legal lenses.
- **Layers of Design:** A visual framework that begins with data and works its way outward through technology, products, experiences, systems, and implications to achieve an understanding of the current mobility system.
- **Maslow's Hierarchy of Needs:** A framework to conceptualize five identified trends in mobility.
- **Archetypes:** Identified personality types among drivers and nondrivers, segmented into users from Los Angeles, New York City, and Savannah.
- **Ideation Framework:** A quadrant that explored mobility concepts across two dimensions — public vs. private and functionality vs. delight — creating potential future scenarios.



01 Optimized Integration

Urban mobility elevated through connected intelligence

Cities are poised to revolutionize mobility by merging autonomous technology, shared transit, and smart infrastructure. This convergence transforms public transportation from basic services into catalysts for sustainable urban living and enhanced quality of life. To help achieve this future, the research team investigated how the stigma associated with public transport might be improved, how user preferences and habits could be sustainably integrated into daily mobility choices, and how mobility could be streamlined into an integrated network that resolves existing fragmentation.

Case Study

Singapore

Singapore has successfully optimized its transit network through a combination of strategic planning, technological integration, and forward-thinking policies with the following elements:

- Smart technology Mobility-as-a-Service (MaaS) implementation,
- Data analytics integration,
- Rigorous maintenance and reliable schedules,
- Government's continuous environmental sustainability focused planning and investment, and
- Private vehicle toll system to manage roadway congestion.

Merging efficiency with accessibility, Singapore's transit system represents a blueprint for sustainable urban mobility.

BINGJHEN - stock.adobe.com

tang90246 - stock.adobe.com

tang90246 - stock.adobe.com

75%

of peak-period travelers should utilize mass transit by 2030 to meet Singapore's Green Plan goals.

greenplan.gov.sg/targets/

Copenhagen

Copenhagen combines an efficient public transit network with a strong cycling culture. This creates a sustainable urban mobility system that decreases car dependency. Features include:

- Comprehensive cycling infrastructure,
- Innovative infrastructure solutions for other modes of mobility that accommodate cyclists,
- Efficient train loading systems for cyclists, and
- Bike lanes connected to public transit options, increasing access to services.

When accompanied by policies that encourage cycling and use of public transit, Copenhagen's transportation system addresses the traffic congestion, pollution, and associated quality-of-life issues that result from car-dependent cities.

Luminary Studio - stock.adobe.com

Chernobrovin - stock.adobe.com

Chernobrovin - stock.adobe.com

95%

of Denmark's urban population had access to public transportation within 500 meters of their residence, as of December 2019.

dst.dk/en/Statistik/temaer/SDG/globale-verdensmaal/11-baeredygtige-byer-og-lokalsamfund/delmaal-02/indikator-1

A SCADask survey found that Gen Z prioritized improved safety measures when asked how they would like driving to change in the next decade.

Enrich riders' journeys by transforming public transit and micromobility

Today's urban residents, particularly Gen Z, face a paradox: they desire sustainable mobility options but find them neither convenient nor reliable enough to fully adopt. These challenges are particularly pronounced in American cities like New York City, Los Angeles, and Savannah, Georgia. Limited bus routes, lack of real-time updates, and minimal integration among various transport modes have created a system that often fails to meet user needs for an effortless experience, enhanced safety, reliable services, and efficient solutions.

Opportunity Spaces	Vision
• Fragmented and unresponsive transit systems	• **Smart Mapping:** An interactive smart map with AI that syncs with smart infrastructure like cameras and sensors to provide real-time updates.
• Limited flexibility in transportation channels	• **SERENA:** An AI companion that offers personalized mobility planning. • **EcoQuest:** A sustainability-based credit system that tracks and rewards users for reducing their mobile carbon footprints.
• Gaps in information delivery systems and underutilized data	• **Integrated Urban Ecosystem:** A holistic, multichannel urban transportation network with seamless connections.

"The city is our habitat ... it's about the buildings around us. It's about how neighborhoods change. Clearly, transit and mobility are huge pieces of this."

Dan Sider
Chief of Staff,
San Francisco Planning Department

Effortless Flow

Imagine a world where movement enhances life — where AI-powered maps and companions transform journeys into opportunities for sustainable travel, wellness, and enjoyment. Smart assistants adapt to users' needs while cities' intelligent infrastructures respond in real time. This is a world where people thrive based on how they move.

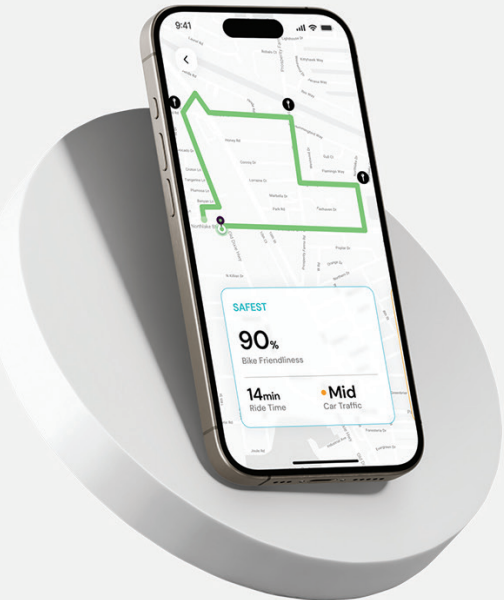
Smart Mapping

This interactive, AI-powered smart map syncs with smart infrastructure like cameras and sensors to provide real-time updates. Drivers, cyclists, and pedestrians will immediately know about road incidents, potential hazards, unusual traffic patterns, parking availability, and more before they reach their destinations.

Smart Mapping is a comprehensive approach that can prevent accidents and enable cities to make data-driven decisions for safety enhancements and improved infrastructure.

Estimated implementation time frame: under 5 years

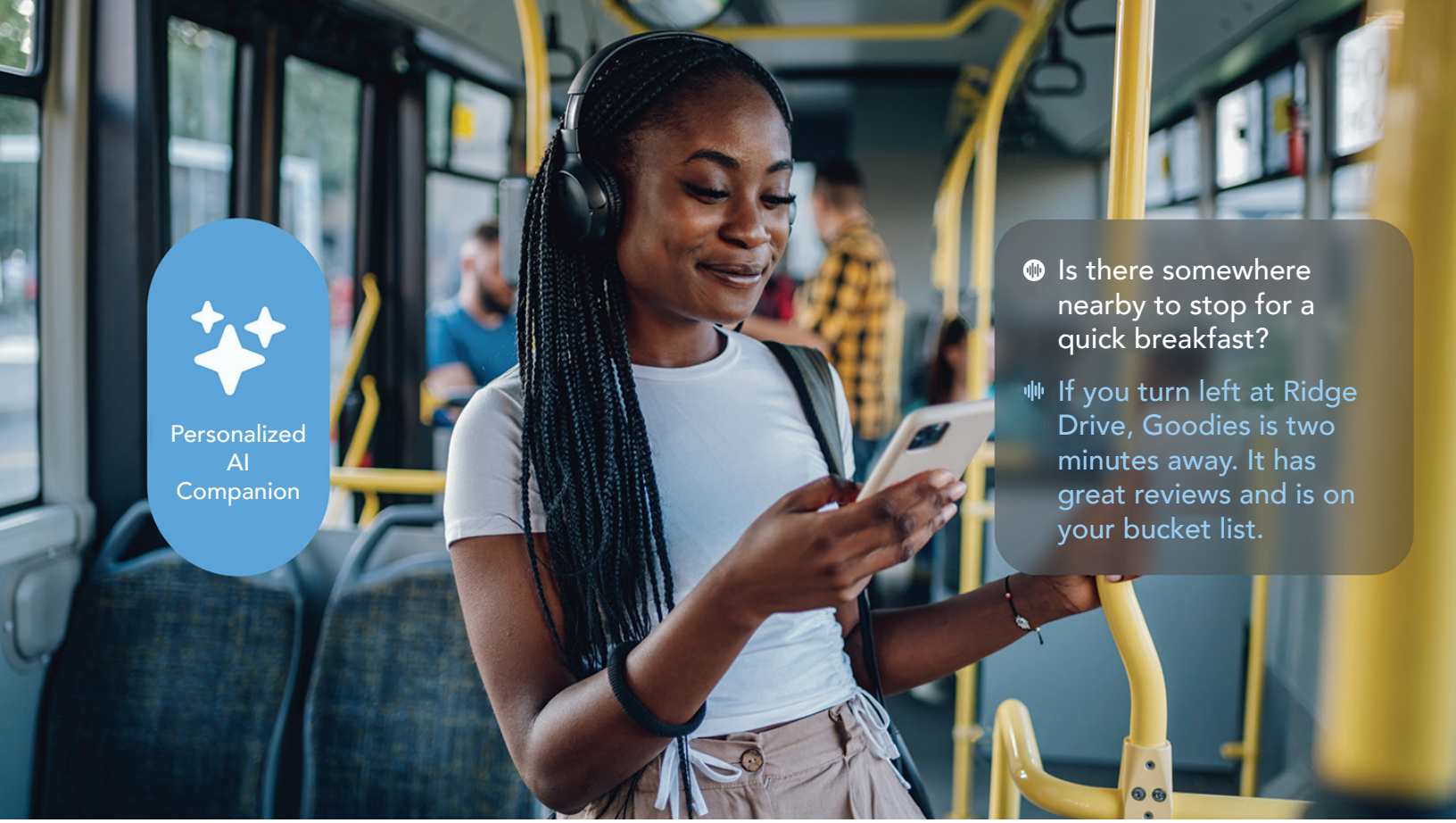
> *I would like to be on something that's fast, reliable, efficient, and clean and safe.*
>
> **Emily S.**
> Gen Z driver,
> Los Angeles



5 minutes FASTER
in 30ft switch to Bus 304

CAR APPROACHING
Bike Left, 1 vehicle
approaching from the left

SCENIC
82%
Walk Friendliness
38min
Walk Time
Low
Car
Traffic



SERENA

With personalized mobility planning, this AI companion integrates into daily routines, providing a more human and empathetic interface that eliminates the distraction of planning logistics. SERENA learns user preferences to create customized travel plans that accommodate schedules and moods.

In addition, SERENA can anticipate needs along a user's route, create personalized content, and offer suggestions for sustainable choices along the way.

Estimated implementation time frame: 15–20 years

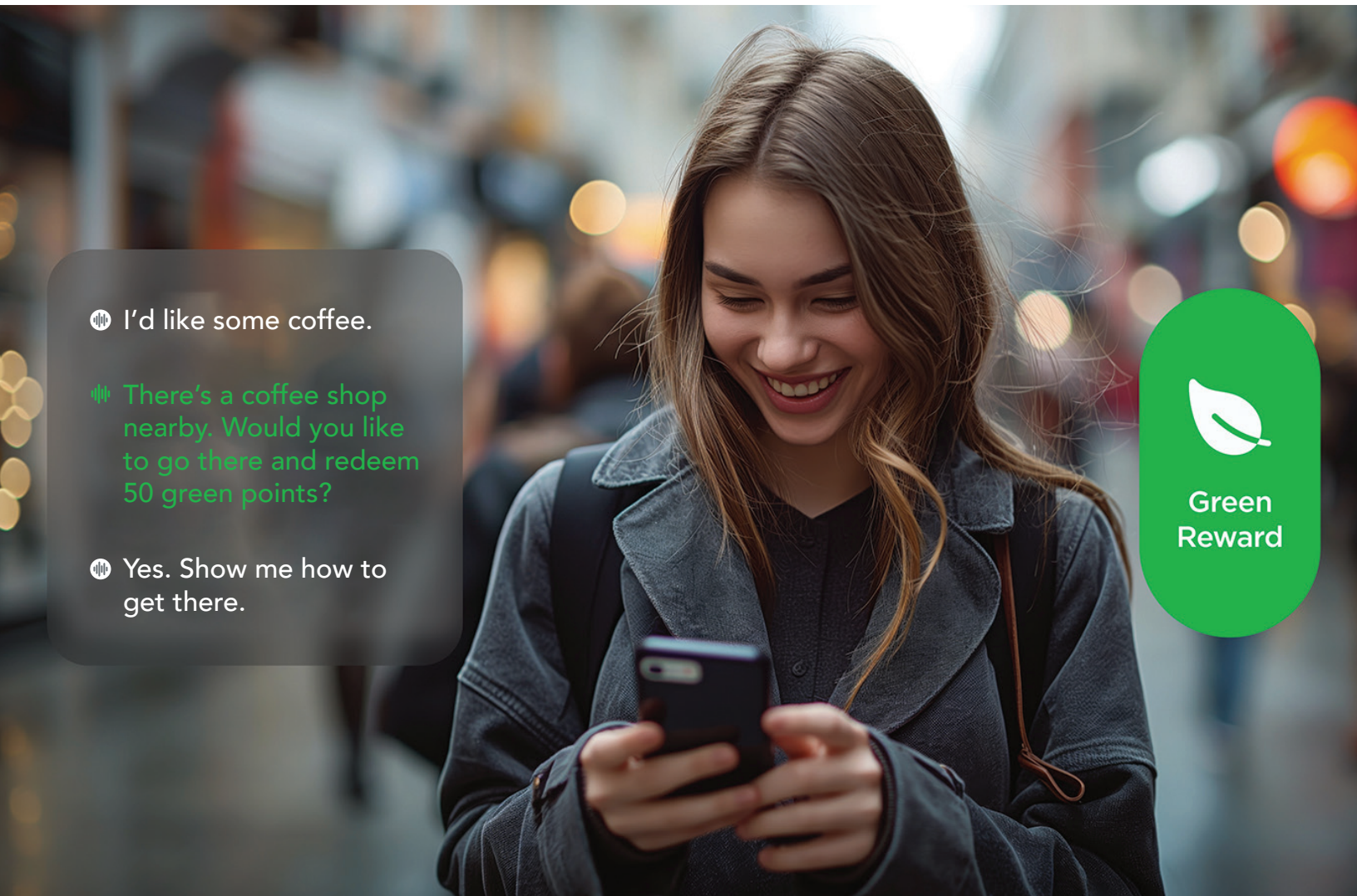
> *If we can create a better experience by integrating Gen AI or some sort of other autonomous technology, then people pay.*
>
> **Steve Higgins**
> UX Research Manager,
> Google DeepMind

EcoQuest

This gamified reward system turns everyday sustainable choices into urban adventures through personal carbon footprint tracking. Users earn points via verified actions like walking, biking, or opting out of single-use containers.

This system can also be used socially with “EcoTribes” that allow participants to pool their points for community projects or to compete in sustainable lifestyle challenges. Each milestone unlocks commemorative digital art, crafted by local artists.

Estimated implementation time frame: 15–20 years



Integrated Urban Ecosystem

Merged mobility networks enable urban ecosystems by connecting city spaces, cultural touchpoints, and communities. Daily journeys in the city are transformed into opportunities for discovery as transit systems link to local attractions, green spaces, and gathering places. The integration encourages exploration as residents and visitors reach their destinations on time.

Estimated implementation time frame: 20+ years

> *Driving has been incredible ... the freedom and autonomy to go see people and do things that matter to me.*
>
> **Hollis M.**
> Gen Z driver,
> Savannah, Georgia

Future System Map

1 Initiation

2 Pre-trip Prep

3 Departure

- Integrated Public Transit System
- Improved Micromobility Infrastructure

4 Journey

- Community Activation
- Multimodal Integration

5 Arrival

- Personalized Assistance
- Enhanced Walkability

User Journey

Stages	User Actions	Front End Interface	Back End Machine Layer
1 Initiation	Engages with AI assistant. Sets destination and preferences.	Presents curated options based on optimized transit modes.	Assesses user's preferences, calendar events, past behavior, and real-time conditions.
2 Pre-trip Prep	Reviews recommended actions.	Details alternative routes and offers relevant details.	Provides personalized options while factoring in external conditions.
3 Departure	Begins journey on the selected route, equipped with real-time updates.	Provides step-by-step guidance including recommendations if conditions change.	Monitors the journey, providing suggestions or route changes without necessary user input.
4 Journey	Interacts with system as needed.	Offers personalized service prompts and recommendations at key moments.	Tracks engagement and offers additional suggestions as needed.
5 Arrival	Reaches destination and reviews journey.	Logs data such as mileage and number of stops.	Analyzes feedback and adjusts algorithms to improve future suggestions.

Transportation planning is much more inclusive but also sees beyond the mono-functional use of the automobile to promote cycling, better pedestrian access, and — wherever it's possible — to introduce public transportation.

Ryan Madson
professor of architecture,
SCAD

Desired Outcome

Earning Trust Through Empathy

The elimination of the transactional ecosystem will increase users' confidence with a service system that empathetically responds to their needs along the journey.

Action Guide

Provide Timely User Data

Just-in-time information enables predictions that can determine the actions users might take, offer opportunities for discovery, enhance safety, allow awards to be redeemed, and more.

Encourage Data Partnerships and Services

Multiple data streams from personal mobility choices, smartphone activity, and social behaviors can connect to track wellness and deliver personalized solutions to accommodate users' wants and needs.

Leverage Intelligent Commerce

Personalized routing, merchant partnerships, and real-time analytics can transform daily commutes into profitable experiences that benefit the entire urban ecosystem.

02

Infinite Indulgence

Every journey transformed with imagination and invention

Adaptable spaces are more important than ever as needs and activities constantly evolve. Traditional environments require radical reimagining to be flexible, intuitive settings that grow with users, inspire creativity, and transform how people live, work, and connect. To move forward with dynamic technological and societal shifts, the research team explored how to create truly personalized mobility experiences, how digital and physical aspects of travel could be integrated, how to ensure sustainable use of resources, and how vehicle utility beyond transportation could be maximized.

Case Study

Kia Platform Beyond Vehicle

Designed for modularity and customization, the Kia Platform Beyond Vehicle (PBV) allows users to tailor interiors for a multitude of purposes like work, entertainment, business, recreation, and more. This adaptability includes personal and shared mobility, last-mile delivery, and pop-up commercial spaces — all versatile solutions for future cities.

Key Kia PBV features include:

- Modularity and customization to tailor interiors for diverse purposes,
- Sustainable materials and energy-efficient designs that minimize environmental impact,
- Advanced technologies like autonomous driving features, urban infrastructure connectivity, and integrated renewable energy systems, and
- A new design philosophy called "OPPOSITES UNITED" that evolves the brand's identity.

Kia's PBV demonstrates how mobility can evolve to meet the diverse and evolving needs of urban citizens.

kia.com/nmc/en/discover-kia/venom.html
worldwide.kia.com/int/pbv-lineup

"Evolving design innovation is more than the technology we use. It starts with a holistic story of the driver's journey."

Won-kyu Kang
VP, Kia Design Innovation Group

BMW's Personalization Innovations

BMW is redefining immersive mobility innovation, transforming user interaction with vehicles through cutting-edge technologies and personalized experiences. From dynamic exterior customization to in-car entertainment and sensory engagement, BMW's advancements portend a bold vision for the future of mobility.

BMW's innovations include:

- BMW iX Flow exterior customization, which allows changeable colors and patterns using Electronic Paper Display (EPD) technology,
- BMW Theatre Screen, which is a 31.3-inch, 8K display accompanied with surround sound and 5G connectivity,
- My Modes (Personal, Expressive, Sport, Efficient, BMW Relax Mode, Digital Art Mode, and Theatre Mode) offer ways to personalize specific features like interior climate, displays, and lighting to create a customized ambience, and
- BMW M IconicSounds Electric, a "characteristic engine sound" created by Hans Zimmer and Renzo Vitale, for BMW M vehicles with electric drive.

These features demonstrate how BMW fuses technology, design, and emotion to create mobility solutions that transcend transportation. By integrating immersive features and holistic sensory experiences, BMW elevates driving.

bmwgroup.com/en/news/general/2022/ixflow.html
bmw.com/en/events/ces2022/theaterscreen.html
discover.bmw.co.uk/article/bmw-my-modes
bmw-m.com/en/topics/magazine-article-pool/bmw-m-iconicsounds-electric.html
bmwblog.com/2023/01/07/adrian-van-hooydonk-future-of-bmw-design/

> ***It is really about how can you really make it [the car] a companion, something that people trust and that they can work with in a very seamless way.***

Adrian Van Hooydonk
Head, BMW Group Design

68% of Gen Z respondents to a SCADask survey reported that traveling in vehicles reflective of their personal style and personality was important.

Explore how Gen Z's personal mobility evolves into endless possibilities

As self-driving reshapes transportation, journeys should no longer be defined solely by movement. Adaptable spaces that reflect personal style, integrated digital connectivity with privacy options, and eco-conscious solutions are required to meet evolving consumer patterns.

Opportunity Spaces	Vision
• Underutilization of vehicles (95% idle time)	• **Second Home:** A modular car customization system.
• Environmental concerns with vehicle design and usage	• **Next Gen Module Bundles:** Car module bundle subscriptions tailored for Gen Z and beyond. • **Infinite Module:** Swappable subscriptions, services, and support for shared, adaptable modules.
• Limited innovation in development cycles and customization	• **New Paradigm:** Independence redefined by autonomous innovation.

sciencedirect.com/science/article/pii/S0377221722008189#bib0055

“The car can become a moving workspace or a living room. Humans want to eliminate pain and save time so anything that eliminates that friction and time wasted is going to be taken positively by people and will sell.”

Steve Higgins
UX Research Manager,
Google DeepMind

Dynamic Luxe

Imagine vehicles as adaptive and integrated spaces with modular design and intelligent systems that extend the boundaries of work and home. This vision transcends the utility inherent in transportation to create personalized experiences that add value to every moment spent in the vehicle.

Second Home

Second Home modular systems allow users to choose preferred interiors and exteriors, transforming the vehicle at a dedicated center. Options like mobile offices, lounges, theaters, and more provide customization and adaptive lighting for experiences that prioritize adaptability and comfort.

This vision of modularity and customization redefines the concept of vehicles and transportation. The paradigm shift enhances lifestyles and adds value, even when vehicles are parked.

Estimated implementation time frame: under 5 years

> *[A car is] a small, encapsulated space that gives you a sense of security and you can listen to music ... adjust your own temperature ... [It] feels like a moving home.*
>
> **Cue L.**
> Gen Z resident,
> Los Angeles

Next Gen Module Bundles

The ability to cultivate bespoke lifestyles and identities allows future consumers to dream bigger. Next Gen Module Bundles enable users to design their lives rather than their vehicles' details.

Bundle options include:

- Smart Office: Productivity tool integration and a multi-display AR workspace,
- Content Creator Studio: A streaming setup with creative tool integrations,
- Digital Social Media Diary: A digital journal interface and social media management dashboard,
- Smart Wellness: Smart exercise equipment and specialized ventilation system,
- Dream Pod: Meditation apps and calming interior mood lighting, and
- Gaming Arena: 360° surround display integrated with gaming platforms.

Estimated implementation time frame: 15–20 years

71% of Gen Z respondents to a SCADask survey believe that driving should be fun.

Infinite Module

Rather than committing to a fixed purchase, users subscribe to a module bundle service that allows them to transition their space as their needs change, for example, from a daytime workspace to an evening entertainment hub. With outsourced module maintenance and updates, subscribers enjoy an experience that's hassle-free, flexible, and upgradeable. Meanwhile, the service provider maintains partnerships that enable continually enhanced innovations and offerings.

The subscription model's convenience further benefits subscribers through its sustainable resource-sharing ecosystem. This approach significantly reduces waste and creates revenue streams that allow for continuous and eco-friendly innovation. In addition, flexible payment options and comprehensive service support allow the premium experience to be more accessible to a wide range of consumers.

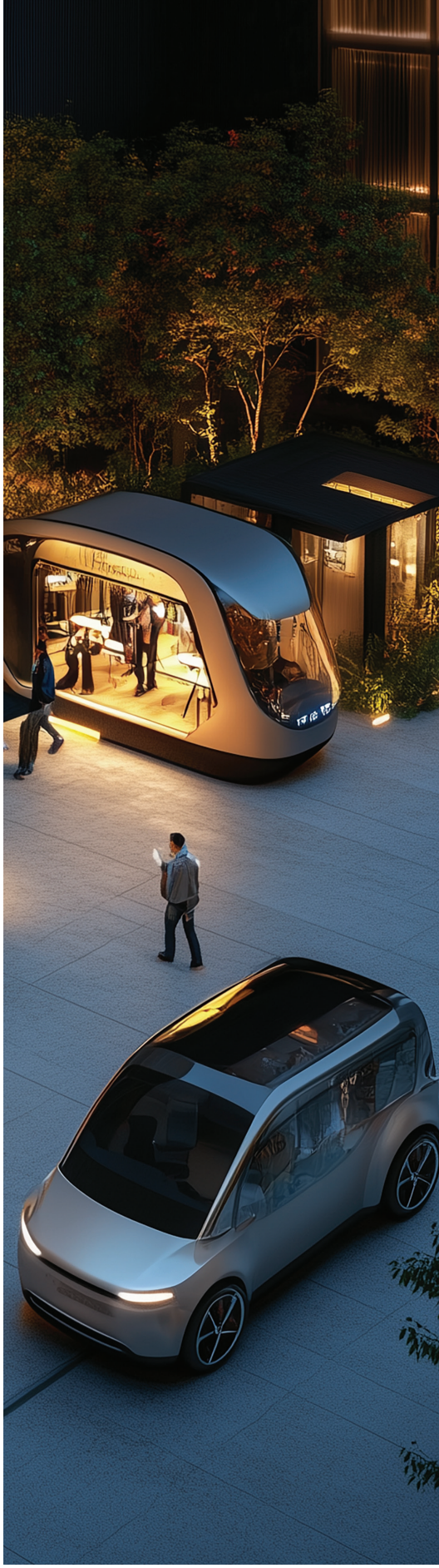
Estimated implementation time frame: 15–20 years

New Paradigm

Expanded modular systems, subscription models, and autonomous driving will revolutionize the mobility industry as the human role pivots from driver to task coordinator. Vehicles will adapt to user needs in real time, automatically modify forms, and manage tasks, ensuring an experience that eliminates stress, hassle, and hands-on maintenance.

Parking lots become flexible zones for community or delivery hubs. Roads prioritize autonomous lanes with intelligent systems that improve traffic flow while users enjoy comfortable and personalized mobility spaces. These innovations promise to reshape how people interact with transportation as lifestyles and mobility positively merge.

Estimated implementation time frame: 15–20 years



> *My friend would come to visit, and he has a car. We could do anything … take a road trip … make spontaneous plans. That's when I knew that when you have a car, it could elevate your life and your decisions.*
>
> Gen Z resident,
> Savannah, Georgia

Future System Map

User Journey

Stages	User Actions	Front End Interface	Back End Machine Layer
1 Flexible Ownership	Browses the bundle options and subscribes to the desired products and services.	Showcases services and subscription details that are categorized by life scenarios.	Manages subscription and family sharing information, maintains physical and digital products, and develops new bundles.
2 Customization Dashboard	Reviews the interior and exterior customization options and sets the automated service time interval.	Demonstrates resource availability, including products and appointment times.	Schedules resources across service centers to provide a customer experience that minimizes technical details.
3 Module Exchange and Service Center	Tracks the vehicle status and service progress on personal device.	Shows real-time updates on vehicle status.	Drives vehicles to service centers, connecting equipment and related vehicle components to share real-time data.
4 Always Ready	Confirms delivery, service, and checks customization details.	Reviews the service content and provides any new operating instructions.	Updates data related to resource management and user account.

[Imagine] if you could get a car that can shrink and expand to suit your needs over the years — even have a car where you can add on more space, or upgrade and get an attachment.

Bess O.
Gen Z driver,
Savannah, Georgia

Desired Outcome

Encouraging Creativity and Empowerment

Modular and flexible mobility will enhance creativity, foster emotional connections, and elevate the travel experience.

Action Guide

Collaborate with Community Partners

Establishing partnerships with local organizations and community leaders ensures that solutions reflect and enhance neighborhood character.

Allow User Control

Visible data management tools and simple override capabilities for all automated functions allow users to trust their experience.

Make Mobility Access Inclusive

Tiered subscription models and sharing plans, from basic to luxury packages, allow accessible options for the widest range of users.

03

Amplified Joy

Travel redefined through meaningful connections

In a digitally centered society, customized mobility fosters deep human kinship, comfort, and engagement. To evolve mobility into an immersive, user-centered experience that enriches urban life, the research team examined how systems could be integrated to offer a more personalized journey, how shared mobility spaces might inspire curiosity and adventure, and how to spark meaningful connections.

Case Study

Hinge + OpenTable

Launched in late 2019, a strategic partnership between the dating app Hinge and restaurant reservation service OpenTable resulted in a Date Night guide to help daters find the best restaurants for a meetup.

The partnership addressed users' need for:

- Genuine human connections,
- Elimination of stress related to planning, and
- Guidance on dress code and etiquette for restaurant types.

Future implications:

- An increased need for in-person human connection in a high-tech world, and
- Growing desires to enhance social interactions via ambience preferences.

With a focus on cultivating romantic connections, this partnership demonstrates how two companies can unite to deepen their services and create more value to users.

63%

of daters think it's important for a date's clothes to align with the restaurant's dress code.

press.opentable.com/node/12046/pdf

Timeleft

Amidst renewed popularity in 'supper clubs,' typically word-of-mouth affairs that focus on delectable food and meaningful connections, Timeleft offers an accessible way to enjoy a similar experience. In order to make unexpected connections, users take a personality quiz and are matched with five strangers. The app books and organizes the restaurant and users decide whether they want to stay connected after the experience.

Timeleft addressed:

- Emotional fatigue from online dating, and
- Stress in planning and booking the right restaurant due to budget and dietary restrictions.

Implications for the future:

- Increased focus on opportunities to forge deeper connections with others, and
- Developing algorithms for personality matchmaking that spark conversation.

Rather than try a new take on the array of dating apps, Timeleft offers a way for users to connect to form friendships, expanding possibilities for human connection.

60%

find it challenging to meet new people at their age.

adventure.com/timeleft-app-dinner-meetup-travel-friendships-news/
latimes.com/food/list/los-angeles-supper-clubs-perfect-recipe-for-connection
timeleft.com
instagram.com/p/DB3_2nYv_3G/

A recent U.S. Surgeon General Advisory report found that people ages 15 to 24 have spent less time in person with friends across nearly two decades, a reduction totaling 70%, or 1,000 fewer hours per year.

http://hhs.gov/surgeongeneral/reports-and-publications/connection/index.html

Prioritize accessibility, presence, and meaningful connections through mobility solutions

Once considered utilitarian, mobility can facilitate intentional moments that lead to connection in delightful ways. Such human-centered interactions arise from consumer desire to promote self-expression and personalization, and to elevate social relationship building in the real world with increased in-person engagement. Through customized and integrated modes of transportation, users can experience self-care through spaces that foster relaxation and meaningful social engagement.

Opportunity Spaces	Vision
• Balance between technology and self-expression	• **MoveID:** A centralized platform network that enables universal personalization and customization.
• Limited engagement with the physical world	• **Smart Pod:** Dynamic, adaptive environments created by users via integrated smart systems.
• Underdeveloped in-person interaction	• **MoveSync:** Fosters genuine connections with safe and compatible companion matchmaking.

"I love those moments in the car with my friends. Even if you're the person driving, there's a way to talk a little deeper because you're not looking at each other. I feel like the best conversations happen in the car."

Sarah M.
Gen Z driver,
Savannah, Georgia

Matchmaking Mobility

Imagine mobility as an opportunity to merge meaningful connections with routine travel. Combining matchmaking services with mobility models fosters a more connected, cost-effective, and community-focused urban transportation system.

MoveID

This identity system keeps users' mobility preferences and settings in one place. In real time, the network allows them to adjust comfort level, interests, and social preferences as they move through their day.

The standardized and centralized MoveID enables users to easily adjust ambiance, receive content and recommendations along routes, and connect with compatible journey companions.

> *This is not a car; this is actually a connection device.*
>
> **Jeehoon Shin**
> professor of industrial design, SCAD

Smart Pod

This mobility space syncs with MoveID and other smart systems to dynamically adapt the environment to passengers' needs and preferences.

Features include responsive lighting, climate control, and augmented reality windows that harmonize multiple users' preferences. Universal accessibility features integrate into every aspect of the experience.

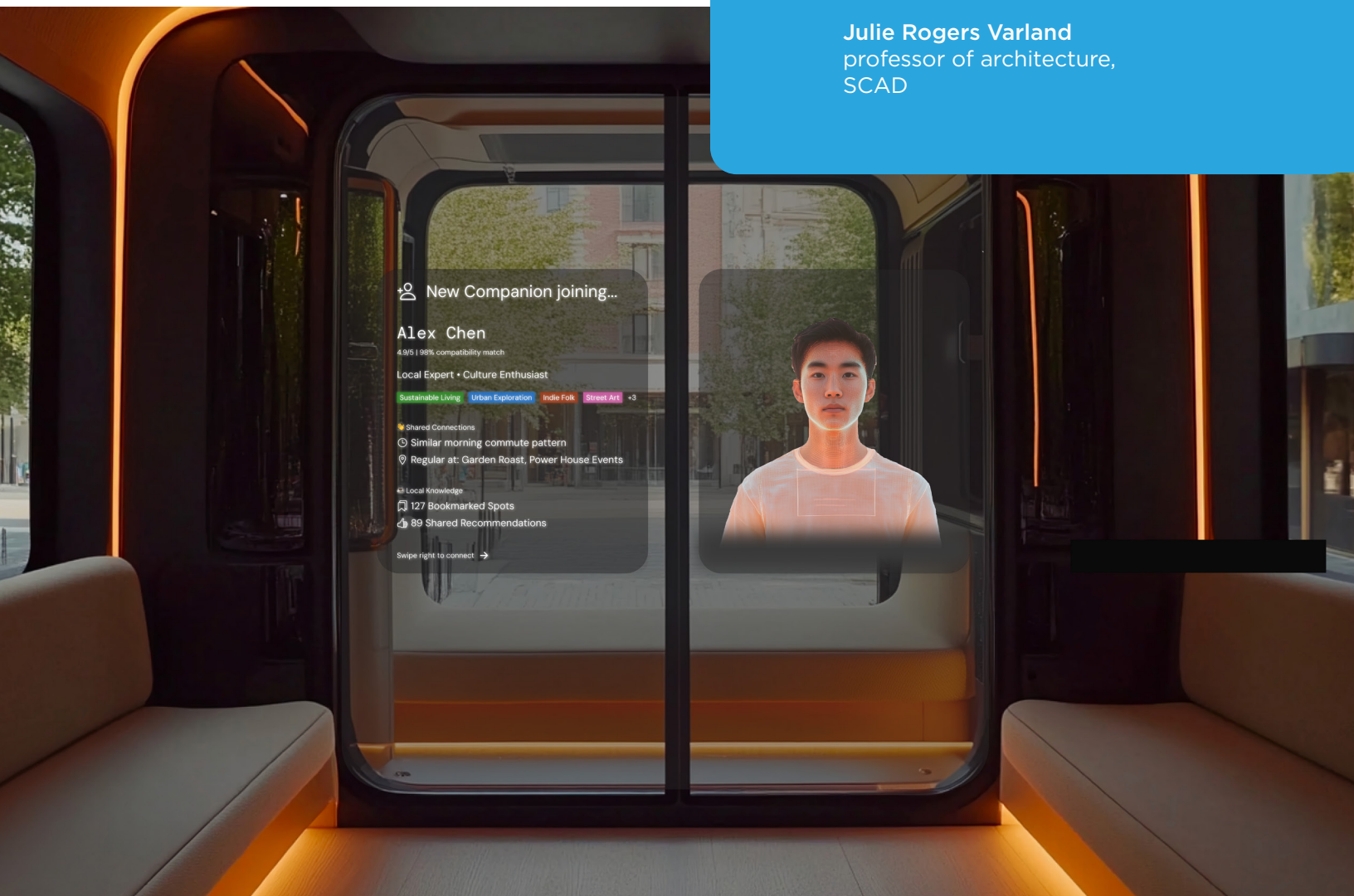
SCADask survey respondents' favorite interior features included seats, climate control, and related comfort enhancements.

MoveSync

MoveSync connects users with fellow companions who share similar commutes and social motivations for the day, creating opportunities for authentic human engagement. The service accounts for Smart Pod preferences to create a customized group ambiance.

Integrating matchmaking services with mobility transforms the journey itself into a dynamic third space, where transportation and community merge.

> *It has always been fun to travel with people and have conversations. Mobility is life and it can involve all the aspects that we relish about life.*
>
> **Julie Rogers Varland**
> professor of architecture, SCAD



> *Most people don't want to have to drive or sit on a bus, so any mobility that turns these spaces into a place where people can do anything else is probably a great growth area.*

Steve Higgins
UX Research Manager,
Google DeepMind

Future System Map

1 Effortless Departure

2 Customize for the Occasion

3 Meet New People

4 Create Memories

5 Save and Share

User Journey

Stages	User Actions	Front End Interface	Back End Machine Layer
1 Effortless Departure	Uses MoveID to enter mobility pod.	Arrives to user based on calendar and accessibility settings.	Matches user with companions who have similar commutes, interests, ambient settings, and accessibility needs.
2 Customize for the Occasion	Adjusts Smart Pod features.	Activates optional ambient settings for lighting, seating, music, and AR window.	Applies settings automatically based on Smart Pod hardware integration.
3 Meet New People	Joins MoveSync companions.	Introduces upcoming companion's profile and conversation starters.	Connects with MoveID to highlight relevant details for the day. Analyzes individual Smart Pod settings to adjust for the group.
4 Create Memories	Embarks on shared adventure.	Provides algorithmic recommendations for nearby locations that match all companion preferences.	Employs matchmaking algorithms for personalities and local adventures.
5 Save and Share	Saves journey moments.	Saves all ambient settings and provides option to reconnect with companions.	Communicates MoveID platform information with other applications to share media.

> *Trends are going beyond vehicle-focused digital services and reaching the ecosystem level where we create conduits for information that enable new business models and support commerce.*

Kevin Simmons
Lead Service Designer,
Volvo Group

Desired Outcome

Cultivate a Thriving Social Life

By integrating belonging, confidence, and adventure into travel, mobility will become a third space where daily connections build communities.

Action Guide

Create Bespoke and Meaningful Journeys

Partnering with, and integrating, matchmaking services for compatible companions and destinations enhances the user journey

Establish Industry-wide Standardization

Unified services lead to unique user experiences and rich collaborative partnerships among service providers.

Develop Adaptive Physical and Digital Systems

Users want to be in the right space at the right time with individual comfort preferences, entertainment choices, and accessibility needs met.

"If I don't have to be attentive at all, I can do my own thing … I could read a book … be on a phone call … whatever I wanted in that enclosed space. It wouldn't be as painful and it wouldn't feel like I'm losing time."

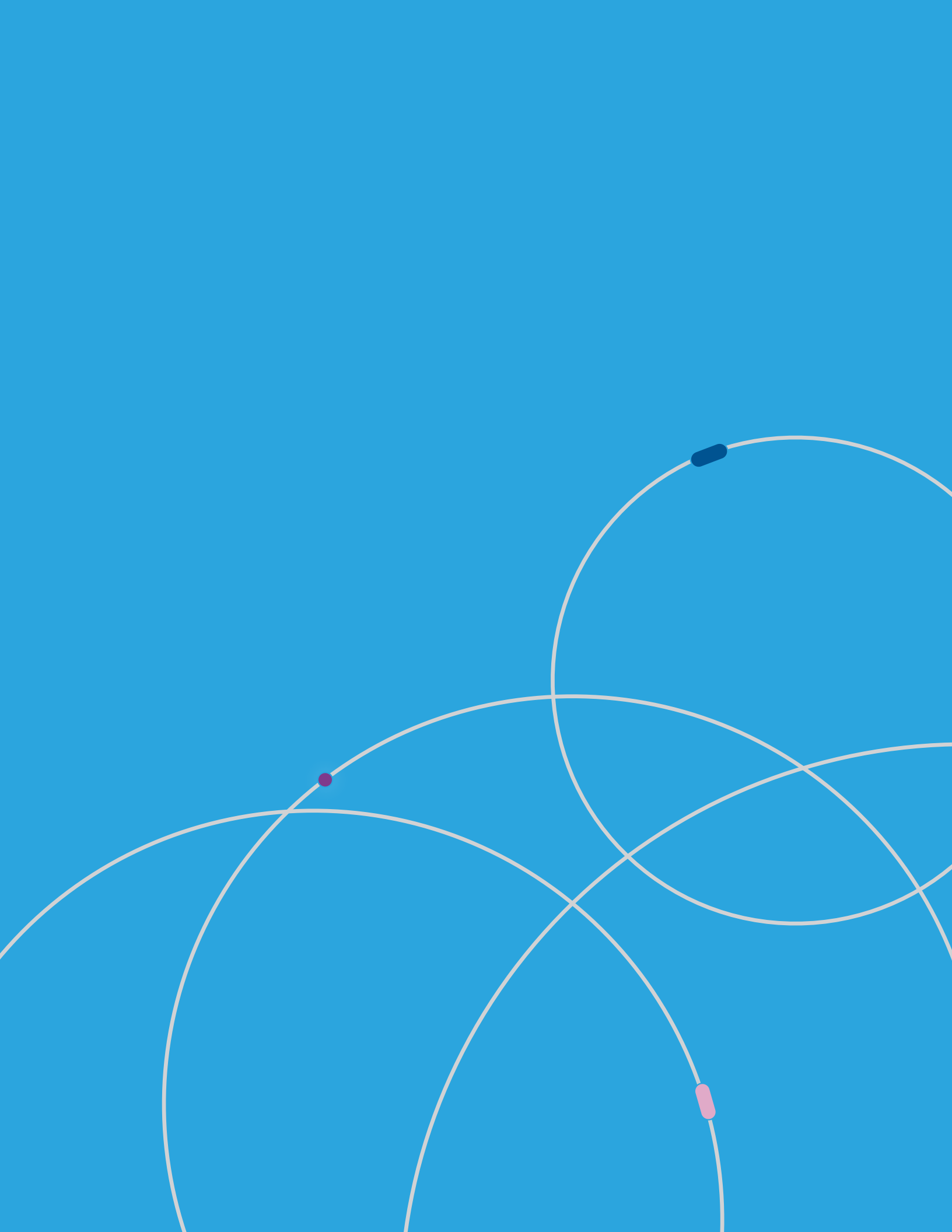
Emily S.
Gen Z driver,
Los Angeles

Conclusion

The future of mobility represents opportunities to positively shape connections among individuals, communities, and urban environments. Through three scenarios — Optimized Integration, Infinite Indulgence, and Amplified Joy — this report emphasizes the critical need for mobility solutions that are personalized, sustainable, and human-centric. By addressing challenges such as underutilized infrastructure, environmental concerns, and fragmented transit systems, the proposed innovations cater to Gen Z's expectations and redefine the broader mobility experience.

As technology rapidly advances, AI integration, modular systems, and immersive environments offer transformative possibilities for travel. By prioritizing inclusivity, collaboration, and emotional fulfillment, these concepts bridge functional needs with aspirational desires. The envisioned systems align mobility with lifestyle, human connection, empowerment, and sustainability.

This vision challenges conventional perceptions, urging industry leaders and innovators to collaborate on adaptive solutions that enhance urban living and individual well-being. As mobility evolves beyond the mundane commute, it emerges as a catalyst for creativity, community, and curiosity. By embracing this transformative approach, the future of mobility will be poised to expand connections, elevate life, and spark joy.



Appendices

Methodology

Research Goal

The team aimed to understand Gen Z's mobility needs and pain points to anticipate their ideal future for transportation.

Gen Z was defined to include ages 12 to 27, a range spanning mobility users who are still minors along with users in the early stages of adulthood. The team research found a gap between expectation and reality in their perceptions of independence, underscoring the importance of comprehending their needs to predict consumption patterns along variable stages of life and development.

Mobility's Layers of Design

The research process began with examining the concept of mobility and its layers of design in the present. Research and analysis included:

- The role of data,
- Safety and access,
- Technologies like AI and autopilot,
- Product design for EVs and VR,
- Ownership and contexts of use,
- Mobility systems and their legal and environmental aspects, and
- User emotions bound with mobility, like "fear" and "joy."

The secondary research was compiled and organized on FigJam, an online whiteboard, allowing the team to collaborate on analysis and design.

Research and Analysis

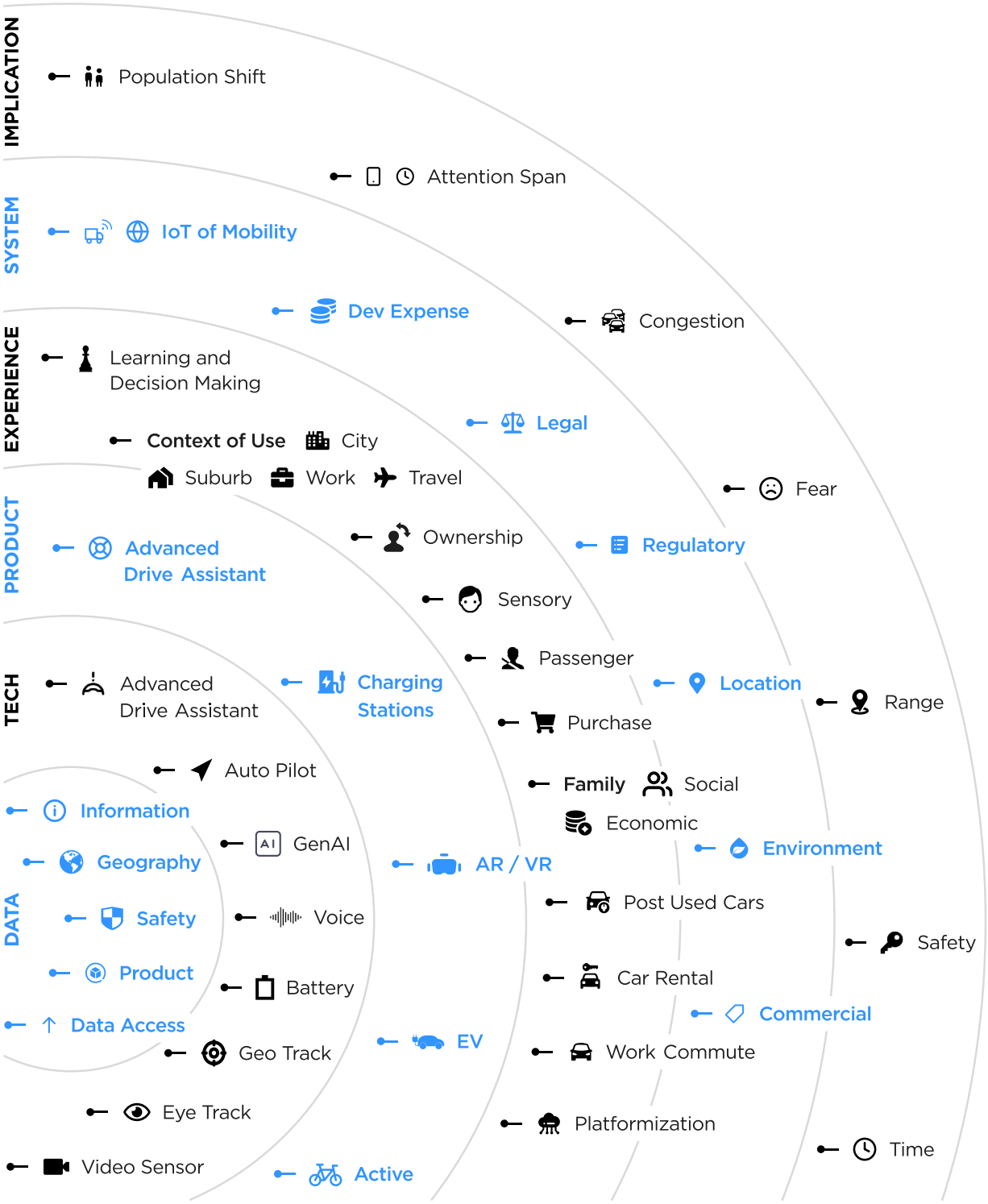
In collaboration with SCADask, the team received 216 survey responses about driving and driving preferences from Gen Z. To expand on and complement the survey, the team conducted 28 interviews with Gen Z drivers and non-drivers from Los Angeles, New York City, and Savannah, Georgia.

Additional interviews about mobility took place with 11 SCAD professors with expertise in architecture, industrial design, and user experience design and industry experts from:

- BMW,
- Google,
- Google Ventures,
- Hyundai,
- Los Angeles City Planning,
- San Francisco Planning Department, and
- Volvo Group.

Collectively, research revealed over 1,300 data points, including more than 200 from interviews and a survey. These generated more than 60 insights that contributed to this report.

Mobility's Layers of Design



PESTEL Analysis

The team employed the PESTEL method — which analyzes a topic through political, economic, social, technological, environmental, and legal lenses — to understand how each factor influences mobility across the public and private sectors.

Political

This research took place Fall 2024, during U.S. President Joe Biden's tenure. His administration's support for EVs aligned with the global trend of reducing reliance on oil. However, conservatives maintain skepticism and show signs of reversing this stance throughout President Trump's present term.

Economic

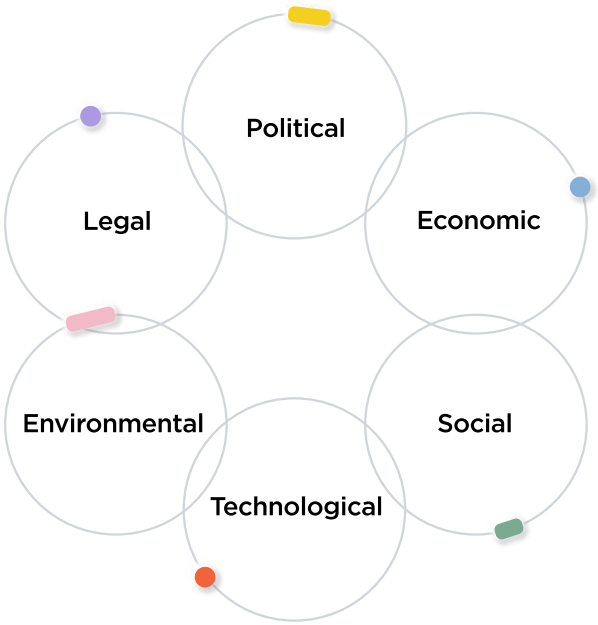
Mobility directly influences economic growth locally, regionally, and globally. Due to growing environmental awareness and rising fuel costs, adopting alternative forms of transportation has accelerated beyond private car ownership. Automakers are focusing on delivering services to create an integrated user/driver experience.

Social

Connectivity crucially influences new-era urban planning. Research finds increasing cases of cities incorporating accessible and cost-efficient forms of transportation. Cities are reassessing existing public spaces and upgrading infrastructure to better accommodate new modes of transportation, with a focus on connecting communities and neighborhoods.

Technological

Mobility's future is technology-driven with advancements that include AI development, increases in EV battery efficiency, and a focus on mobility as a service. Although regulations have not caught up with tech development, automakers continue to partner with the tech industry.



Environmental

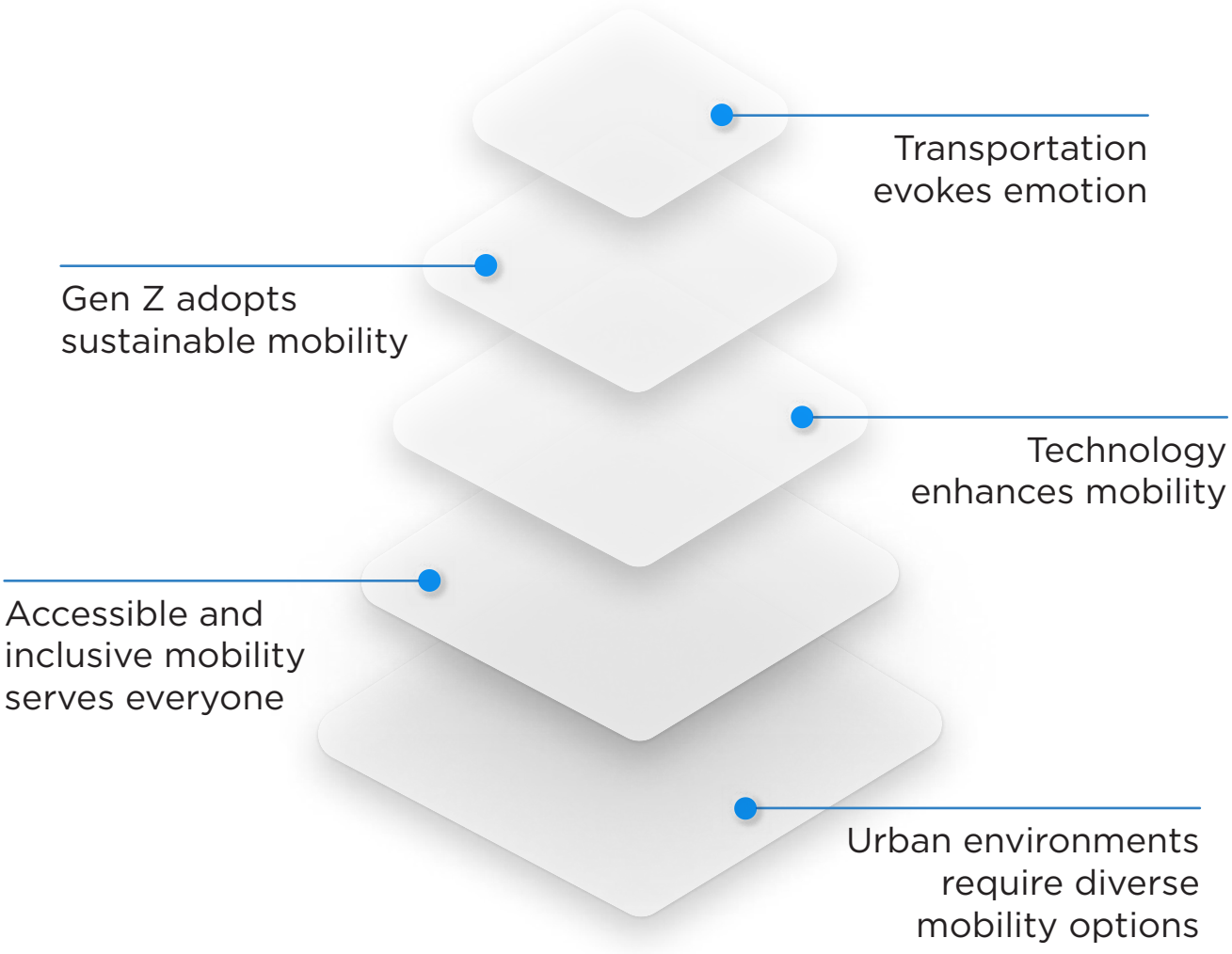
Many developed countries acknowledge the environmental impact associated with transportation, from private cars to commercial fleets. To gain the public's trust, automakers need to increase transparency in their efforts to reduce environmental impact. Cities must balance infrastructure development and expansion with minimal environmental disruption.

Legal

Governments, along with public and private sectors, must collaborate to construct policies and regulations that balance individual needs with environmental, business, and societal interests. Although many policies have set goals to achieve sustainability metrics in the next 20-30 years, hard-forced regulations remain challenging to implement in the face of political and economic influences.

Five Guiding Trends

Midway through the research process, five trends in mobility were discovered. The team visualized these findings through inspiration from Maslow's hierarchy of needs. From the bottom, each layer builds upon the previous to create a holistic framework that bridges fundamental urban improvement to higher-order emotional fulfillment.



User Archetypes

After conducting interviews and analyzing the Gen Z interview findings, the team created archetypes to help guide the report's future scenarios.

(drivers)

Serenity Seeker

Suburban Navigator

Responsible Commuter

(non-drivers)

Cautious Socializer

Urban Dweller

Nature Striver

Los Angeles | **New York City** | **Savannah, Georgia**

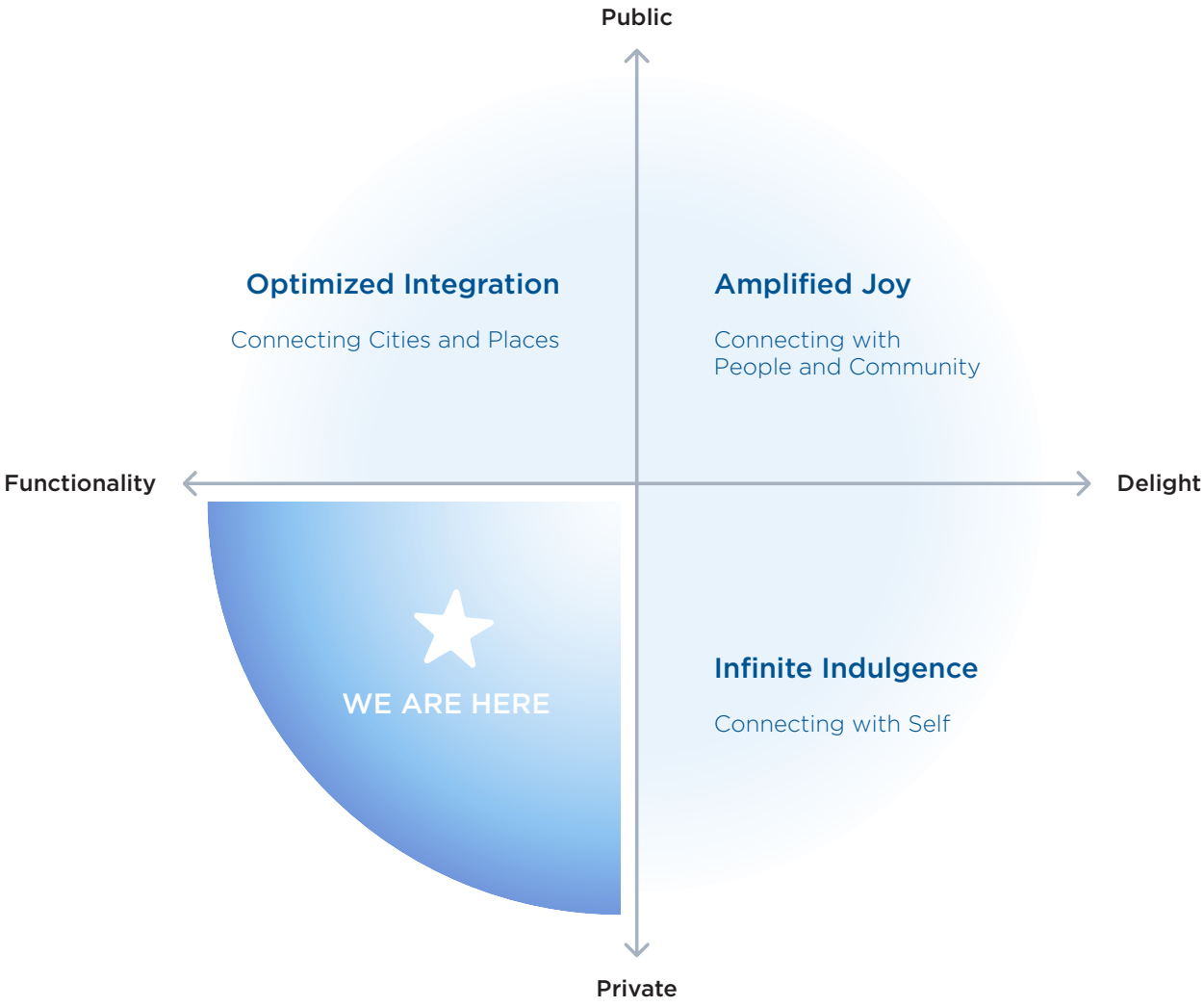
Future Scenario Framework

This framework shows how the team explored mobility concepts across two dimensions: public vs. private and functionality vs. delight. Juxtaposing these dimensions created four scenarios, the dominant, present case identified as Functionality/Private. The team believes that each mobility mindset has the potential to significantly impact future mobility experiences.

In conjunction with the research, the team explored new services and innovations using three consumer mindsets, which became the scenarios in this report:

- Public/Functionality: Optimized Integration
- Private/Delight: Infinite Indulgence
- Public/Delight: Amplified Joy

The ideas that arose from these consumer mindsets challenge conventional perceptions of mobility and unlock new possibilities to transform the future.



Acknowledgments

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VOLVO


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SEAL OF THE CITY AND COUNTY OF SAN FRANCISCO
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SCADask is an applied research studio that leverages the university's collective expertise to facilitate and generate strategic insights for business and media partners. Our design-centered research identifies business opportunities that reveal the future of commerce, creativity, and culture.

To partner with us on custom research, email research@scad.edu.

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