

STRATEGIC FORESIGHT REPORT

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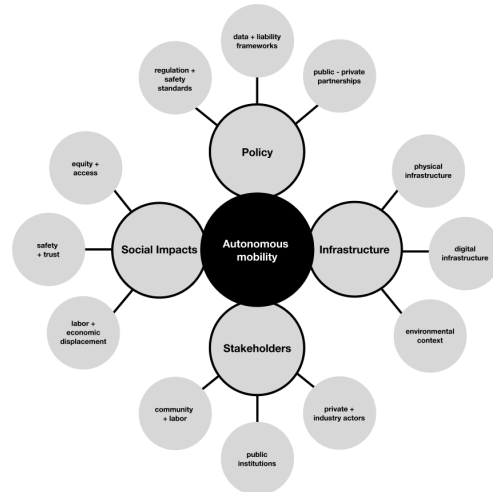
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Domain

Description

This report examines the future of autonomous mobility in Ann Arbor, with a specific focus on everyday commuting patterns within the city and the University of Michigan campus. As a domain, it sits at the intersection of transit, digital urban infrastructure, and community systems (systems that directly shape how everyday people interact with each other, services, etc.), exploring how emerging mobility technologies reshape how people move through and experience the city.



Several key uncertainties define this domain. The challenge of mixed use roads and safety remains unresolved, as autonomous systems must navigate complex environments shared with pedestrians, cyclists, and human drivers. Also, human trust in autonomy presents a major barrier to adoption, particularly as high profile accidents and inconsistent system performance shape public perception. Tensions also between accessibility and innovation raise questions about who benefits from these technologies and whether they will equitably serve all populations. Additionally, data collection and surveillance concerns complicate implementation, as mobility systems increasingly rely on real-time environmental and behavioral data. Finally, weather conditions, particularly in a city like Ann Arbor with harsh winters, introduce technical and infrastructural challenges that directly impact system reliability.

The primary beneficiary of this work is the City of Ann Arbor, which is actively shaping transportation policy, sustainability goals, and infrastructure investment. However, the domain also includes a broader ecosystem of stakeholders, including the University of Michigan, mobility research institutions, public transit providers, private technology companies, and local communities.

The domain is bounded by a focus on everyday passenger mobility rather than long-distance travel, emphasizing lived experience, adoption, and trust. Key categories shaping the domain include digital services in cities, aging populations, shifting work and commuting patterns, and local community economies. Within this scope, the domain includes autonomous vehicles, micromobility solutions such as e-bikes and scooters, public transit innovations, and accessibility technologies.

Historical + Current Analysis

Ann Arbor's mobility system today remains largely car centric, with almost 40% of daily trips still occurring via private automobiles with a single occupant despite increasing investment in multimodal infrastructure (Carpool World). While electric vehicle adoption is rising due to federal and state incentives, this transition largely preserves existing car dependent behaviors rather than fundamentally transforming mobility patterns.

At the same time, micromobility options, including e-bikes and scooters, have become more visible, particularly in downtown areas and around the University of Michigan campus, offering alternative modes for short distance travel. The city has also implemented street redesigns and expanded bike lanes to rebalance space among users, though these changes often generate short term congestion and public debate.

Ann Arbor is uniquely positioned as a national testbed for autonomous vehicle innovation, supported by institutions like Mcity (a public-private entity that seeks to advance transportation efficiency and safety for the betterment of all people) and university led research initiatives. However, these technologies remain in pilot or experimental phases and are not yet widely integrated into everyday commuting. Broader structural factors, such as rising housing costs and regional commuting patterns, continue to push residents farther from the city center, reinforcing reliance on automobiles. Cultural norms emphasizing speed, flexibility, and convenience further instill existing mobility behaviors.

Methods

The foresight process began with scanning research to identify validity in the generated scenarios. Through this, trends (things happening now), issues (current conflicts), plans (intentions for future changes), and projections (data driven research about the future) were identified that act as signals of change, inputs were synthesized into drivers, which represent the most influential forces shaping the future of the domain. Each driver is analyzed across continuation and transformation pathways to understand how it may evolve.

Building on these drivers, the project develops scenarios using foresight archetypes. These scenarios are not predictions but structured narratives that explore plausible futures. An implications analysis, in the form of a futures wheel, was conducted to identify first, second, and third order effects, which inform strategic considerations and potential responses. This ensures that the work moves beyond speculation into actionable insight.

Through these archetypes, personas were developed in this report to deepen the overall narrative value for the audience. With these personas, the scenarios feel significantly more

relevant and allow anyone to see into the world of someone with entirely different needs than their own. It also creates the opportunity for members of an experiential futures workshop, which was performed, to empathize with these potential individuals engaging in the different scenarios. The workshop provides the ability for people to roleplay as different individuals in order to understand their needs and how we can continuously engage with different members of their community while doing futures work.

Drivers

Trust and Resistance in “Living Labs”

Ann Arbor’s identity as a testing ground for mobility innovation depends heavily on public acceptance of data-driven automated systems being produced by private entities. Inputs such as increased data collection, AV safety incidents, and ethical concerns around surveillance demonstrate that trust is not guaranteed. This driver influences whether technologies are adopted slowly through cautious pilot programs or more broadly through transparent, community-supported systems.

Building Types and Development Patterns

This driver determines how mobility systems can physically integrate into the city. Evidence from housing trends, zoning debates, and affordability challenges shows that land use decisions directly shape mobility infrastructure. Low density, car oriented patterns reinforce existing behaviors, while mixed use, high density development enables more efficient and accessible mobility systems.

The Emerging Non Student Workforce

As young professionals move to Ann Arbor for tech and research opportunities, they introduce new expectations for mobility, housing, and urban life. This shift is supported by trends in regional economic growth and university influence. However, the impact of the new demographic depends on their level of civic engagement and political influence.

Climate Goals vs Urban Growth

Ann Arbor’s carbon neutrality commitments push for electrification, reduced car dependency, and sustainable infrastructure. At the same time, population growth and housing demand create pressure for expansion. Inputs such as climate

initiatives, Vision Zero (Ann Arbor plan to reduce traffic-related deaths to zero by 2025), challenges, and development proposals highlight this ongoing conflict.

Capacity for Urban Density This driver determines whether the city can accommodate growth equitably. Housing shortages, rising costs, and zoning resistance indicate limits in current capacity. This driver is closely tied to governance, public perception, and funding mechanisms, influencing whether Ann Arbor becomes more inclusive or increasingly exclusive.

Scenarios

The utilization of this section is to make these scenarios feel known and relevant in everyday situations through the eyes of first person accounts that have been formulated to ease the gap of understanding. They serve as material for a workshop being conducted by an alliance between a large tech company and local government in hopes to conduct more in depth market research and understand the key implications, changes, and possible excitements regarding the topic of autonomous mobility. By holding said workshop with the stakeholders as guides, everyone present, including those conducting the session, will be able to participate and share their voice in a room for the entire community to hear, not one passed through media or any other shared source of information.

The Power of External Forces (Baseline)

Description

In this future, Ann Arbor continues to position itself as a “living lab” for autonomous mobility, but progress unfolds slowly and unevenly across the city. Pilot programs for autonomous shuttles, smart corridors, and data-driven infrastructure are visible, particularly near the University of Michigan and along key transit routes, yet they remain limited in scale and reach. Rather than a sweeping transformation, the city experiences a layering of new technologies onto existing systems.

This gradual pace is largely shaped by competing external pressures. Climate goals push the city toward electrification and reduced car dependency, but debates around density and land use constrain where and how new mobility infrastructure can be implemented. Efforts to expand transit-oriented development along corridors are met with mixed reactions, reflecting ongoing tensions between sustainability ambitions and neighborhood preservation.

Public trust also plays a significant role. While some residents embrace innovation, others remain skeptical of data collection, surveillance, and the role of private companies in public space. As a result, autonomous systems are introduced cautiously, often through small-scale pilots with extensive oversight. Transparency measures and public engagement processes exist, but they tend to slow decision-making rather than accelerate it.

At the same time, the city’s evolving population adds complexity. The growing presence of young professionals increases demand for flexible, tech-enabled mobility, yet their limited political influence means their preferences are not always prioritized in policy decisions. Housing constraints further shape mobility patterns, as many residents continue to rely on traditional transportation due to where they can afford to live.

Ultimately, autonomous mobility in Ann Arbor reflects a compromise between ambition and constraint. The city makes steady progress, but its “living lab” identity remains fragmented, defined more by experimentation than by cohesive, citywide transformation.

Driver Outcomes

<i>Trust and Resistance in “Living Labs”</i>	Deployment is cautious and incremental. Public skepticism regarding data collection and the influence of private companies acts as a speed brake, leading to small scale pilots with extensive oversight and slow decision-making processes.
<i>Building Types and Development Patterns</i>	It reinforces existing low-to-mid-density patterns. Debates over land use and neighborhood preservation constrain the implementation of new mobility infrastructure, resulting in a layering of technology over old systems rather than a total transformation
<i>The Emerging Non Student Workforce</i>	This group continues to have limited political influence. While they drive demand for tech-enabled mobility, their preferences are often sidelined by the dominance of legacy homeowner politics.
<i>Climate Goals vs Urban Growth</i>	Climate goals push for electrification, but progress is incremental. Conflict between sustainability ambitions and the desire to maintain neighborhood character results in slow, uneven progress toward carbon neutrality.
<i>Capacity for Urban Density</i>	There is a slow, resisted increase in density. Political caution and divided public opinion lead to limited housing growth, which in turn forces many residents to rely on traditional transportation

due to affordability constraints.

Personas

Ethan (Tech Worker)

"I've spent years working on these pilots, but it's frustrating to see a **reinforcement of existing urban patterns** where the tech only works in wealthy pockets. We need to **expand testing sites to less urban areas** to prove this isn't just a luxury for downtown. If we can bridge that gap, I truly believe **cities grow to be more urban and have less sprawl** because reliable connectivity finally reaches the edges of the city"(Gemini).

Maria (Local Business Owner)

"The city talks about being a 'living lab,' but out here, **mobility inequality becomes more visible** every day when the shuttles stop two miles short of my shop. The city must **work with communities to plan to engage all neighborhoods** so my customers aren't left behind. I just want a future where **smart mobility takes form in all aspects of urban areas**, making it easy for anyone to grab a coffee, regardless of their zip code"(Gemini).

Barron (Local Government Work)

"There is a palpable **nostalgia and trust in traditional systems** that makes every new sensor feel like an intrusion to some residents. We are leaning into **community-led programs to ease the discomfort**, ensuring that the human element isn't lost in the data. I'm confident that **over time, people will become used to the idea of AV integration** until it feels as natural as a traffic light"(Gemini).

Implications

Key Issues	Description
"Band-Aid" Infrastructure	Because the city avoids major zoning changes, AVs are forced to operate on streets designed for 1950s traffic. This leads to constant glitch zones and high maintenance costs for the city, as they try to retro-fit new tech onto crumbling old pavement.
Mobility Inequality	Without a unified system, AVs become a luxury commodity service for wealthy commuters. This creates a two tier city where the tech elite bypass traffic in private pods while the working class waits for increasingly unreliable, underfunded traditional buses.
Nostalgia Hits Hard	A reliance on "how things used to be" prevents infrastructure

from being updated. The implication is a crumbling public system that eventually loses all political support because it feels obsolete compared to private tech.

Technology Before People (New Equilibrium)

Description

In this future, Ann Arbor emerges as a national leader in autonomous mobility, rapidly advancing its living lab identity through strong investment, public private partnerships, and supportive policy frameworks. Autonomous vehicles, smart intersections, and AI-driven traffic systems are widely deployed, particularly along major corridors and in newly developed high density areas. The city becomes a testing ground for cutting-edge mobility solutions, attracting technology firms, research funding, and a growing innovation economy.

This acceleration is enabled by political and institutional alignment. Zoning reforms and increased capacity for urban density allow for the development of mobility-oriented districts, where infrastructure is designed to support autonomous systems from the ground up. Climate goals further reinforce this shift, as electrified, autonomous transit is framed as a key strategy for reducing emissions and improving efficiency.

However, this rapid transformation comes with trade offs. While the system is highly efficient, it is not always equitable. Many of the most advanced mobility services are concentrated in high-demand areas, leaving other neighborhoods with limited access. The prioritization of technological optimization often overlooks the everyday realities of residents, including affordability, accessibility, and comfort.

Public trust remains uneven. Although the city promotes transparency and safety, some residents feel that decisions are being driven more by corporate interests and technological ambition than by community input. The emerging non-student workforce benefits from improved mobility options, particularly in tech-oriented districts, but long-term residents and lower-income populations may feel increasingly disconnected from these changes. Examples of this in the downtown area include the steep increase in housing costs as a result of innovative technologies and opportunities in the area. These programs and products are displacing residents that have lived in the community for years, eliminating entire stakeholders from the conversation of how Ann Arbor should continue to develop.

Over time, Ann Arbor's identity shifts. It becomes known less as a community centered college town and more as a high tech urban hub. Autonomous mobility is undeniably successful in

terms of innovation and scale, but it raises ongoing questions about who the system is truly designed for, and whether efficiency alone is enough to define a successful urban future.

Driver Outcomes

<i>Trust and Resistance in “Living Labs”</i>	Trust remains uneven and secondary to efficiency. While technology is widely deployed, some residents feel disconnected, believing that corporate interests and technological ambition are prioritized over community input.
<i>Building Types and Development Patterns</i>	Zoning reforms allow for high density, mobility oriented districts. Infrastructure is designed from the ground up to support autonomous systems, though these advancements are often concentrated in high demand, high density areas.
<i>The Emerging Non Student Workforce</i>	The workforce gains moderate influence and benefits from improved mobility options, particularly within high tech districts. However, their presence contributes to the city’s shift away from a college town identity toward a high tech urban hub.
<i>Climate Goals vs Urban Growth</i>	Climate goals are used to justify and reinforce the shift toward autonomous transit. Electrified, autonomous systems are framed as the primary strategy for reducing emissions, even if the resulting efficiency overlooks social equity.
<i>Capacity for Urban Density</i>	Political and institutional alignment enables a rapid increase in density. This allows the city to scale its living lab identity quickly, though the focus on density is often driven by technological optimization rather than residential needs.

Personas

Ethan (Tech Worker)

"The efficiency is incredible, but I worry the **digital divide becomes more significant** for those who can't keep up with the latest software. We are **offering different forms of engagement with the services, like modern taxi stands**, for people who don't want to live through a smartphone. The ultimate goal is that **anyone, anywhere can access the system free of technology restriction**, making the tech invisible but universal"(Gemini).

Maria (Local Business Owner)

"Business is booming with the new high-density zoning, but I've noticed a **reduced use of traditional public transit** as people flock to private AVs. We have to **ensure technology**

advances more than just AVs, like upgrading the sidewalks and shelters around my storefront. I want to be proud that **our ‘living lab’ is multi-modal**, supporting foot traffic and buses just as much as robotaxis”(Gemini).

Barron (Local Government Work)

"The rapid pace required the **creation of oversight agencies** to ensure corporate speed doesn't bypass public safety. We **keep regulation agencies open to conversation** through constant public hearings so that 'innovation' doesn't mean 'unregulated.' By keeping **regulation for data collection and monetization in check**, we maintain the public’s trust while the economy grows"(Gemini).

Implications

Key Issues	Description
The Great Divide	When the city transitions to an AV-first model, residents who cannot afford the latest devices or lack high-speed data are effectively locked out of the city's transport network. Mobility becomes a subscription service, not a right.
Traditional Transit Death	As tech workers like Ethan switch to autonomous pods, the city's bus and shuttle revenue collapses. This forces a death spiral for public transit, leaving low income residents with no way to get to work.
Bye to Public Oversight	By relying on private companies to provide the equilibrium, the city loses its ability to regulate. Barron finds himself working for the tech companies’ interests rather than the public’s, as the city becomes dependent on private data.

Innovated Harmony (Transformation)

Description

In this future, Ann Arbor redefines what it means to be a “living lab” by placing people, not technology, at the center of its approach to autonomous mobility. Rather than pursuing rapid deployment, the city adopts a deliberate, community-driven model of innovation, where new systems are shaped through ongoing public engagement, transparent governance, and a strong emphasis on equity.

Autonomous mobility is integrated thoughtfully into the urban fabric, complementing rather than replacing existing transportation options. Systems are designed to serve a wide range of

needs, from students and young professionals to long-term residents and aging populations. Neighborhood-level mobility hubs, accessible shuttle networks, and seamless connections to public transit create a system that feels intuitive and inclusive.

This transformation is made possible by a shift in political and cultural attitudes. Public trust, once a barrier, becomes a foundation for progress. Residents are actively involved in decision-making processes, with clear visibility into how data is used and how systems operate. Policies prioritize public ownership or strong oversight of infrastructure, ensuring that technological advancements align with community values.

At the same time, the city embraces density and sustainable development in a way that supports both climate goals and quality of life. Mixed-use neighborhoods, walkable corridors, and equitable housing policies reduce reliance on private vehicles while making autonomous systems more effective and accessible. The growing non-student workforce plays a key role in this shift, contributing to a more engaged and representative civic landscape.

In this scenario, success is not measured by how advanced the technology is, but by how well it serves the people who use it. Autonomous mobility becomes a tool for connection rather than disruption, enhancing daily life, strengthening community trust, and positioning Ann Arbor as a model for human-centered urban innovation.

Driver Outcomes

<i>Trust and Resistance in “Living Labs”</i>	Trust becomes the foundation for progress rather than a barrier. High levels of transparency and active resident involvement in decision-making allow for the full, integrated adoption of autonomous systems into daily life.
<i>Building Types and Development Patterns</i>	The city embraces mixed-use neighborhoods and walkable corridors. These development patterns are intentionally designed to make autonomous systems more effective and accessible to all populations, including aging and long term residents.
<i>The Emerging Non Student Workforce</i>	This workforce becomes a dominant political and cultural force, advocating for more representative and engaged civic landscapes. Their participation helps ensure that mobility solutions align with broader community values and equity goals.

Climate Goals vs Urban Growth Climate goals become the dominant force shaping all infrastructure decisions. Sustainability is pursued in tandem with quality of life, using autonomous mobility as a tool to reduce vehicle reliance while enhancing neighborhood connectivity.

Capacity for Urban Density Strong public and political support enables large scale, equitable densification. This capacity allows the city to build mobility hubs and inclusive housing that support a seamless, community driven autonomous transit network.

Personas

Ethan (Tech Worker)

"Designing for accessibility has created a massive **pressure for inclusive design standards**, which has actually made our software much more robust. We **engage everyone while keeping the ideology that everything is evolving**, so the tech never feels 'finished' or exclusionary. It's rewarding to see a system where **everyone feels like their voice is heard** and reflected in the code we write"(Gemini)

Maria (Local Business Owner)

"The new transit hubs are great, but the **rising property values** are making it hard for my staff to live nearby. I'm glad the city started a **program to increase education for members of potentially gentrified areas** to help them navigate these economic shifts. It's creating **more highly educated communities that are independent**, allowing long-term residents to thrive alongside the new tech"(Gemini)

Barron (Local Government Work)

"The deliberate pace caused **increased media attention and debate**, but our **public hearings keep transparency open and** prevent the usual pushback. Because we prioritize clarity, **people do not get lost in misinformation** or fear-mongering about the 'robot takeover.' We've proven that when you lead with people, the technology follows much more smoothly"(Gemini).

Implications

Key Issues	Long-Term Goals
Gentrified Accessibility	Ann Arbor becomes so desirable that Maria can no longer afford her storefront. Success drives up land value so fast that the diverse workforce the city wants is priced out by the very tech they built.

Burden of Inclusivity	While harmony sounds nice, the reality is a constant political battle. Every new AV route requires endless public hearings and co-design sessions, leading to participation fatigue for residents who just want to get to work.
New Education Standards	The city must launch massive education programs. The implication is a skills gap where older or less-educated residents feel alienated and left behind by a city that changed too fast.

Synthesis

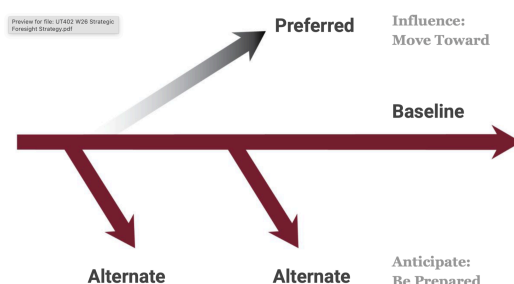
Baseline	"Band-Aid" Infrastructure	Mobility Inequality	Nostalgia Hits Hard
New Equilibrium	The Great Divide	Traditional Transit Death	Bye to Public Oversight
Transformation	Gentrified Accessibility	Burden of Inclusivity	New Education Standards

= Synthesized Key Implication

Between the scenarios, the main difference between the three is that the transformation is the only one that is not caused by accident. The baseline seems likely if Ann Arbor continues on its current trajectory. The new equilibrium seems likely to occur if we give power to specific groups of people, if we enable private companies to control the flow of innovation at all corners of the population. Yet, for the transformation to happen, there must be a blend of the drivers to create the reality.

The Grand Collision of this report lies between the drivers of Trust and Resistance in Living Labs and Capacity for Urban Density because, in order to reach an ideal reality, Ann Arbor must come together and solve its issue of trust within its own people to take hold of the opportunities of innovation at hand. In a future where high density housing continues to be developed and untrusted AV systems are the main source of connecting them, we do not enter the transformation scenario that people strive for. We want inclusivity over efficiency.

For our personas, Barron must act as a bridge between Ethan and Maria to avoid other potential futures. With alternate scenarios at every decision, Barron has to uphold the responsibilities and



values of Ann Arbor in order to ensure the preferred scenario occurs with every possible voice present at the table. For Ethan and Maria, they require guidance to understand what they can and cannot do. Though both reside in the city, their understandings of the future vastly differ and so do their needs and individuals. This bridge between the public and private sector seems to be the key to unlocking the potential of the truly immersive smart city.

Key Considerations

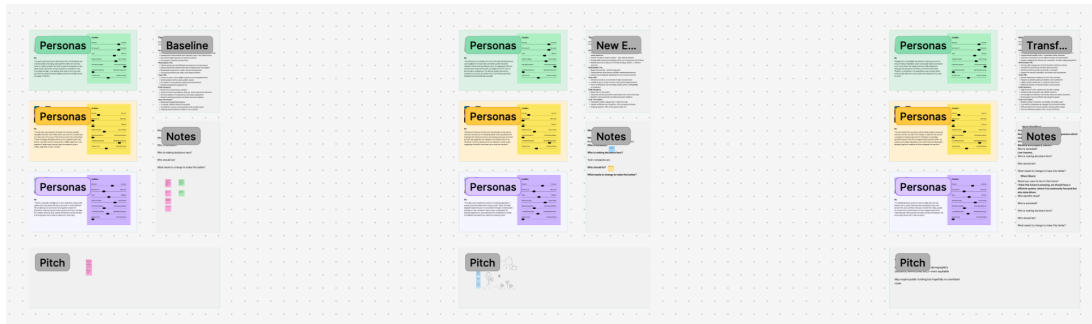
Equity	To prevent the Digital Divide, the City must mandate that 20% of all AV fleet capacity be reserved for low-income residents at subsidized rates.
Land Use	To combat Rising Property Values, any new AV Hub must be paired with mandatory affordable housing units within a 2 block radius.
Governance	Establish a Data Commons where the city, not the tech companies, owns the mobility data, ensuring workers like Barron maintain oversight.

As we travel into these potential futures, we must remember how easy it is to fall into an ideal scenario and how our actions have true consequences on where we lead the city of Ann Arbor. The future of Ann Arbor's mobility is not a technological certainty, but rather a choice we make that involves the partnership of not only private companies and local government, but also the people who engage with the services we design. Without the support of the people, Ann Arbor will cease to ever be the 'Living Lab' it claims to be.

Appendix

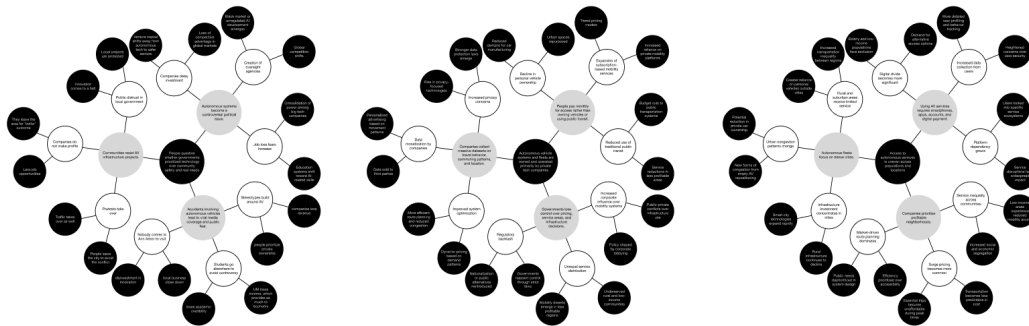
Workshop

A workshop was held to further enhance the reach of the narrative development for the personas. This workshop was conducted over 15 minutes, to which timing and scripts can be found [here](#).

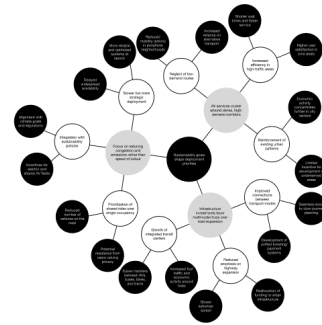
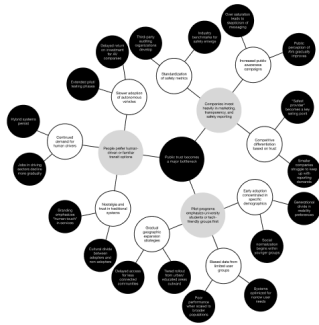
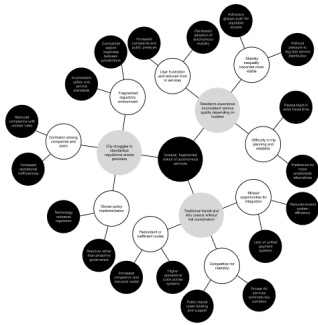


Implication wheels

Baseline



New Equilibrium



Transformation

