

Sustainable Mobility Kit

Creating a shared vision is central to partnership building, participatory democracy and transformational innovation.



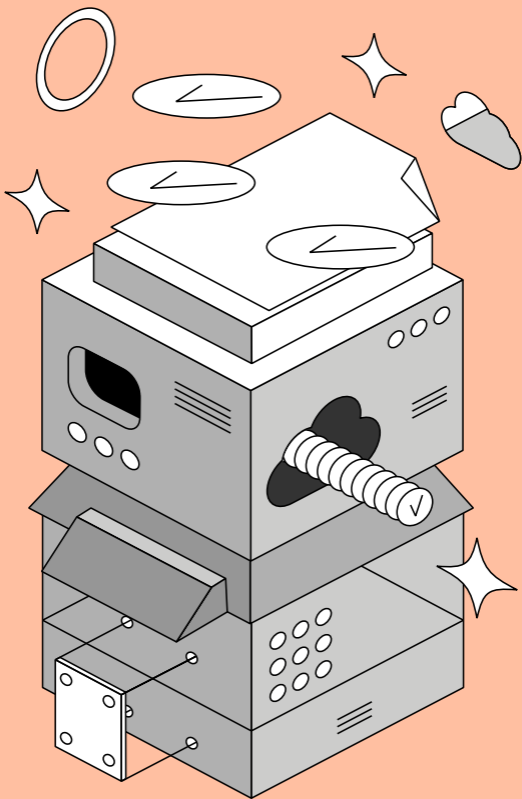
The Sustainable Mobility Kit is a tool for facilitating collaboration. It offers a snapshot of the complexity of urban transport challenges and opportunities. It seeks to incite stakeholders to reflect on, critique or ideate the structure and activities that could make a sustainable and open mobility system.

These cards are based on the Sustainable Open Mobility Taxonomy research and interactive system visualization, which includes best practice examples for each topic. It can be explored at <https://opensourcelab.dfki.de/taxonomy/>



open
source
lab by DFKI

The Sustainable Mobility Kit was created by Tina Gallico and designed by Olya Bazilevich



Strategy

National Agenda

National Agenda

Ideally a sustainable open mobility system has emerged within a national context that has established a policy framework for mobility transformations.



Is there a national policy framework?



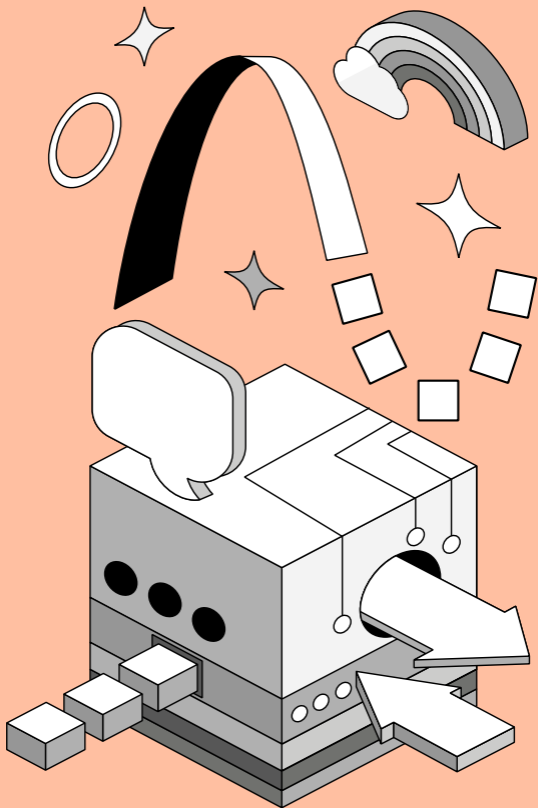
Does the local or city government have enough power to define and implement change needed?



What are the prevalent funding models for local and regional transport infrastructure and services?

POTENTIAL PRIORITIES:

- Infrastructure budget allocation
- Integrated transport and urban land use planning
- Road pricing
- Metropolitan level transport authority



Strategy

Digital Strategy

Digital Strategy

Cities need cross-cutting principles to shape both organizational digitization as well as the city's broader societal digital transformation.



Is there a framework for shaping the city's digital transformation as an organization?



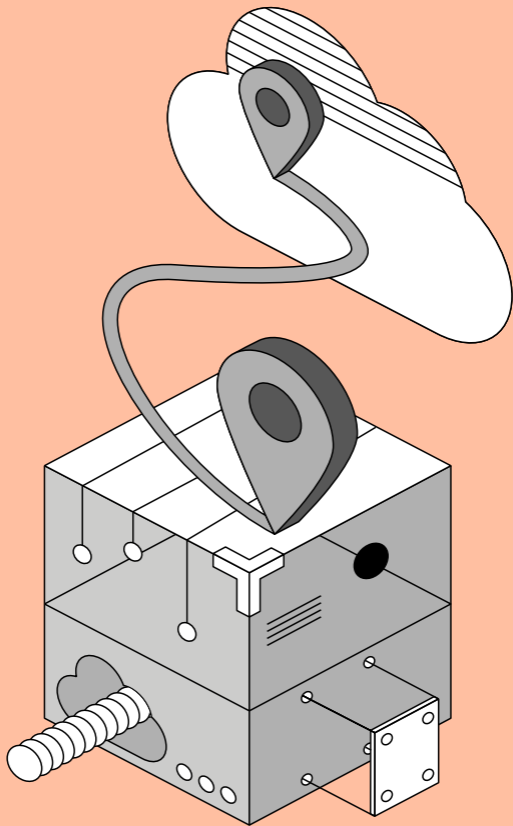
What digital technologies could or should be developed in partnership with digital service providers?



How can the public interest be ensured with any partnerships that enable government digitization progress?

POTENTIAL PRIORITIES:

- Ubiquitous internet access
- Promotion of digital rights
- Open source software development or use
- Interoperability
- Open standards



Strategy

Mobility Strategy

Mobility Strategy

The digitization of the transport sector and urgency of carbon emissions reductions underscores the importance of transport and urban planning integration.



How well are transport and urban planning integrated in practice?



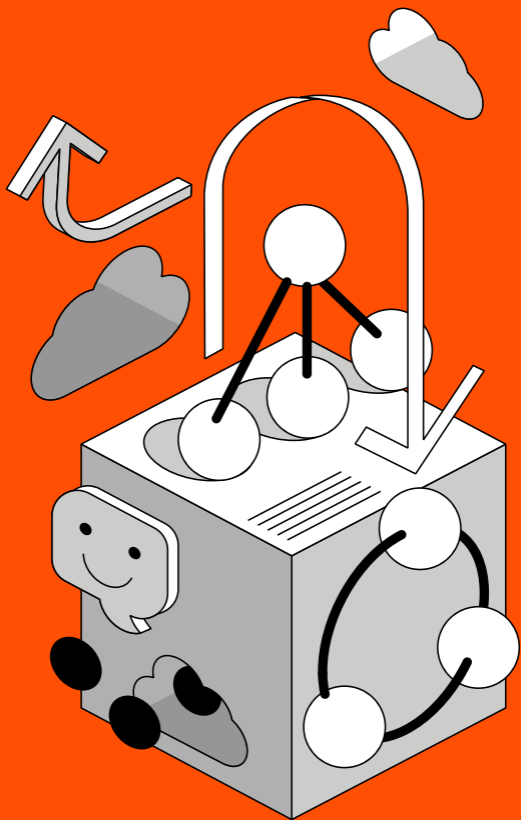
What policy, financing or planning approaches enable a multi-modal transport network?



Are urban design and demand management approaches being leveraged to minimize the need to travel?

POTENTIAL PRIORITIES:

- Accessibility and convenience of a range of transport modes
- Provision of new types of infrastructure and urban design for shared and electric transport
- Accelerated carbon emissions reductions



Sustainability

**Governance
Transformation**

Governance Transformation

In order to succeed in the digital economy governments and companies pursuing innovation and competitiveness have begun transforming from hierarchical and rational to networked structures.



Is urban governance structured in a hierarchical, formal and centralized format or is it networked and open?



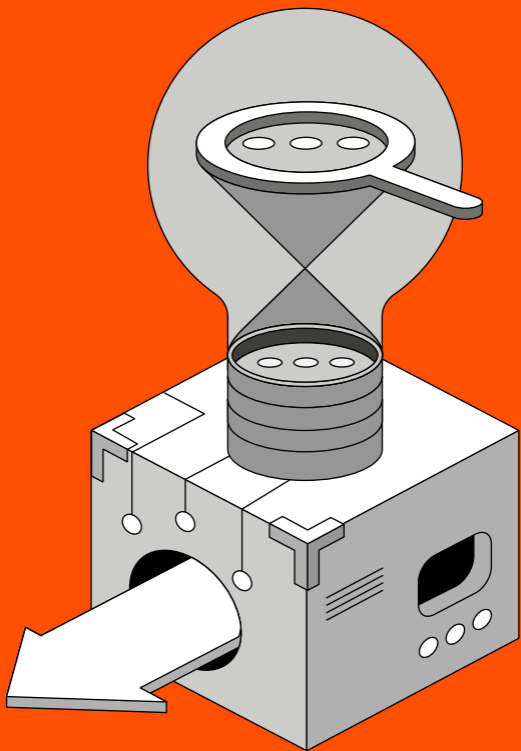
How can distributed, agile and connected city governance involving diverse actors be implemented?



What skills or changes in culture need to be developed within organizations to enable networked governance?

POTENTIAL PRIORITIES:

- Establishment of new roles and responsibilities in line with the transformative vision
- Empowerment of employees as problem solvers and intrapreneurs
- Implementation of goals through networks of public and private service providers



Sustainability

**Transparency
and Citizen
Engagement**

Transparency and Citizen Engagement

Transparency and citizen engagement as part of governance transformations aligns with the open government movement.



Is the uptake of new technologies or service solutions accompanied by processes of stakeholder engagement and public transparency?



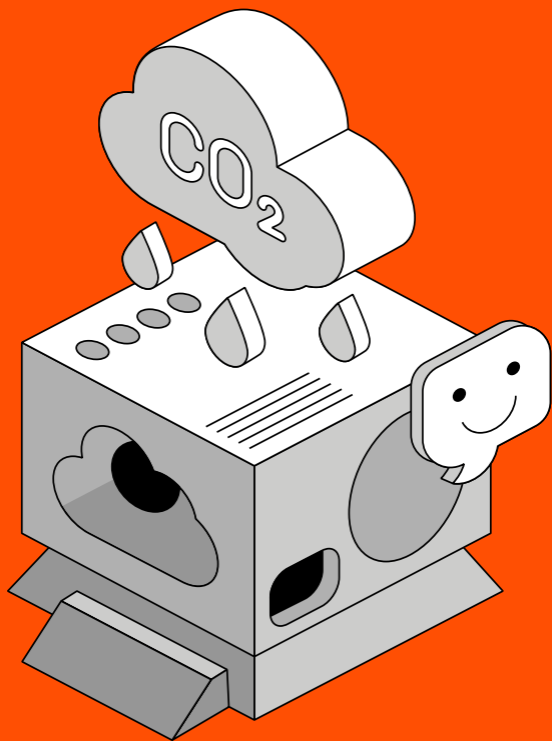
How do we know if public good is achieved in government decision making?



Are communication technologies and online platforms being utilized for greater transparency and citizen engagement? Are they effective?

POTENTIAL PRIORITIES:

- User-friendly information accessibility, financial and decision making accountability
- Building public and stakeholder trust
- Utilization of collective intelligence



Sustainability

**Carbon
Neutrality**

Carbon Neutrality

The decoupling of carbon emissions from economic prosperity will be a fundamental influence in mobility systems transformations over coming decades.



Is there a commitment to economic investment to industry transformations to reduce greenhouse gas emissions caused by human activities?



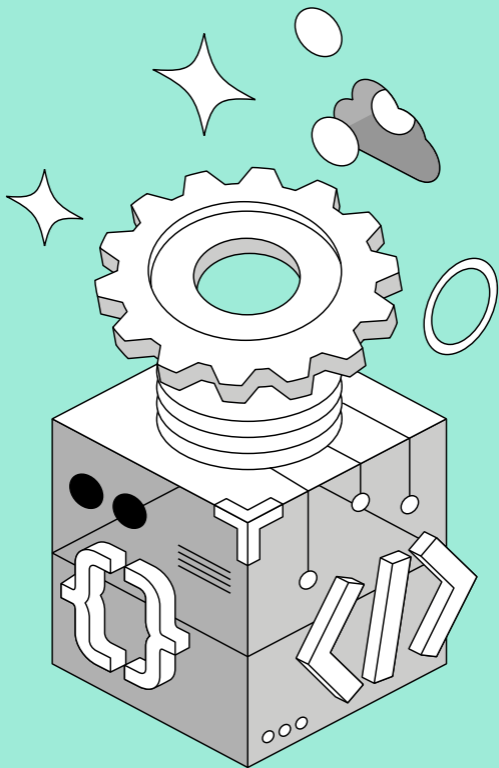
Are mechanisms in place to promote non-private vehicle transport options? e.g. congestion charging, car-free zones, diesel engine bans?



What can be done to improve the attractiveness of zero and low carbon mobility modes such as walking, public transport, carpooling and cycling?

POTENTIAL PRIORITIES:

- Cross-sector transformations particularly in energy supply, transportation and industrial processes for raw materials production
- Investment in the usability and supporting infrastructure for zero and low carbon transport modes



Digital Infrastructure

Open Technical Architecture

Open Technical Architecture

City authorities must modernize and open up the digital infrastructure of their organisations.



Are IT systems, security and policies of the city aligned to enable adoption of open industry standards, open APIs, open data and open source code?



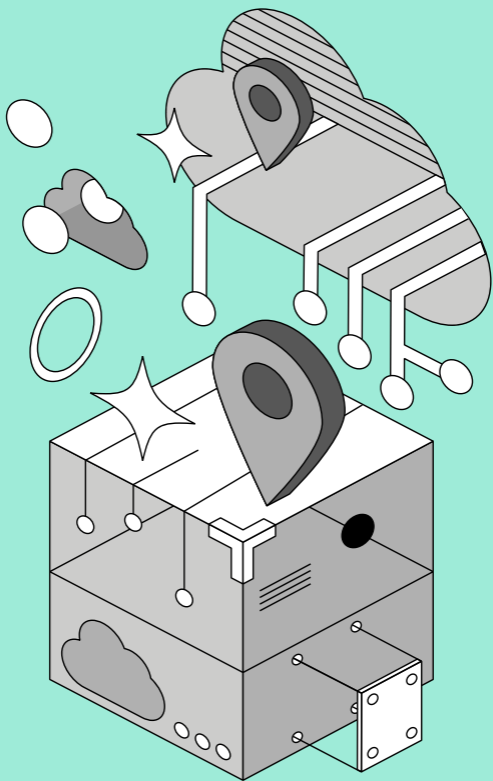
Does the technical architecture of city services enable joint working with an open network of vendors?



Can digitally based solutions be adopted by or within the city in good time?

POTENTIAL PRIORITIES:

- Modernize the digital infrastructure and practices of city authorities
- Build systems open to both public and private transport and service providers
- Collect and analyze data from multiple sources to identify and monitor urban challenges



Digital Infrastructure

Open Mobility Platform

Open Mobility Platform

An open mobility platform integrates different Mobility as a Service (MaaS) offerings by an array of public and private providers.



What MaaS platforms are currently up and running? Who is developing these?



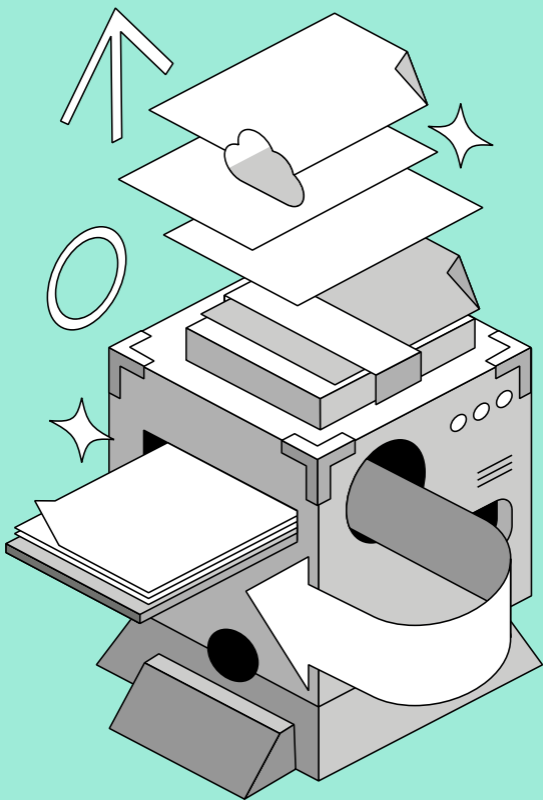
Is there a public or private provider offering an open vendor neutral platform for integrated door-to-door journey offerings?



Are MaaS services coupled with increases in public transport capacity and new public domain elements enabling electric vehicles, sharing and ride hailing?

POTENTIAL PRIORITIES:

- Integration of different Mobility as a Service offerings by public and private providers
- Provision of a seamless and personalized door-to-door journey and positive user experience regardless of travel mode
- Local strategies for transport behaviour change away from private car ownership towards shared and low emissions mobility



Digital Infrastructure

Open Standards

Open Standards

Open standards are needed to enable data sharing and connected service provision amongst system stakeholders.



Is the adoption of open standards a requirement for product and service providers?



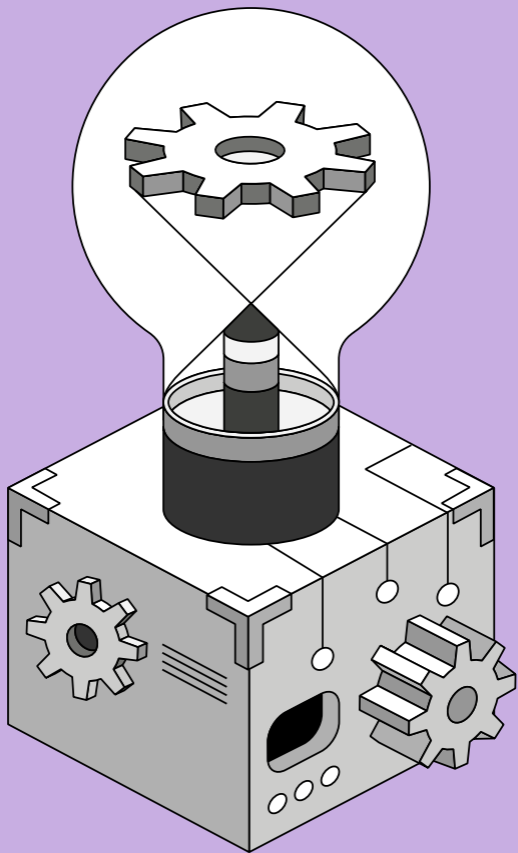
What different types of standards are relevant to different transport use cases? Is this easily ascertainable?



What can governments do to ensure or encourage the use of open standards for the design of products and services?

POTENTIAL PRIORITIES:

- Open technical standards for data, API standards, data security as well as legal standards concerning privacy and use licensing
- Interoperability and vendor neutrality
- Data sharing and connected service provision amongst system stakeholders



Innovation

Open Innovation

Open Innovation

Open innovation is based on networks of people and organizations collaborating to develop novel ideas or solutions to complex problems.



Are there opportunities, such as open innovation calls, so that diverse organizations and stakeholders can collaborate to solve transport related challenges?



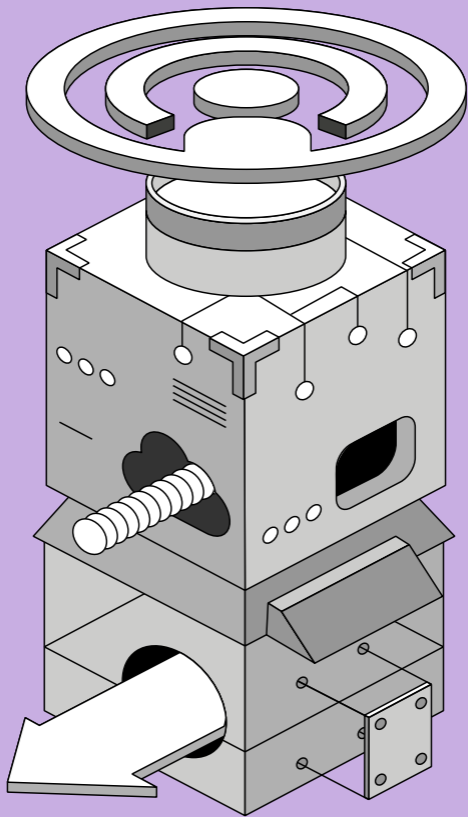
Are there network building activities, entities or funding programs to enable transport related startups to grow or form connections with established organizations?



What skills sets or experiences could be beneficial in the development of innovative solutions to urban transport challenges?

POTENTIAL PRIORITIES:

- Utilization of a broad range of skills and joint-working between previously disparate organizations, industries and stakeholders
- Collaboration within a context of open resources



Innovation

User-Centered Design

User-Centered Design

User-centered design focuses on the needs and desires of the users of products and services to ensure they are met and even exceeded.



Are private and public sector actors utilizing user-centered design methods to ensure that existing and new transport offerings address user needs?



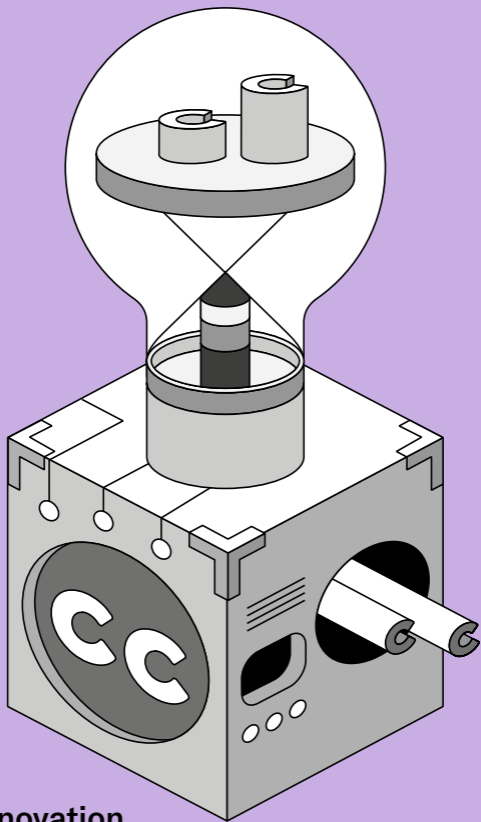
What should product or service designers do when the user's needs or wants conflict with triple bottom line sustainability goals?



Should a product or service's users be involved in the design process? If yes, how and when?

POTENTIAL PRIORITIES:

- Human-centric concepts to improve the usability and accessibility of transport modes and services
- Identify problems and possible solutions with end users at the earliest conception and design stages of a program or project



Innovation

**Open Source
Software**

Open Source Software

The open source movement involves much more than simply providing free code for software creation.



Can open source software be adopted by government authorities or private service providers?



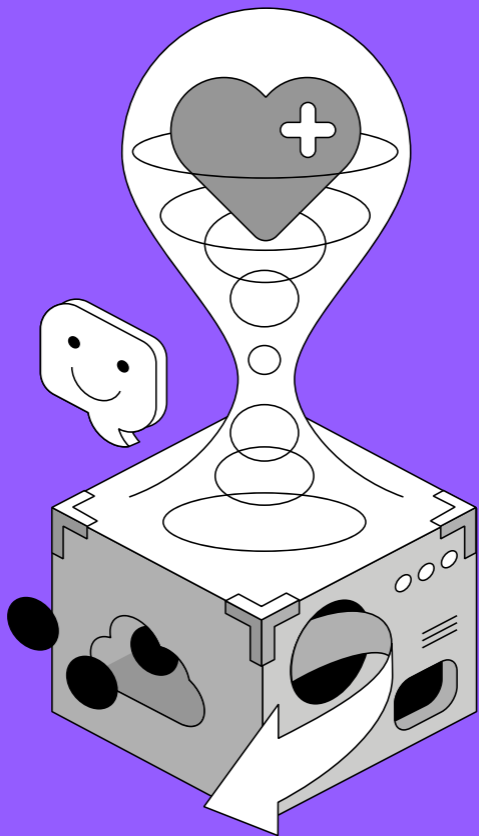
What benefits are there to contributing to open source resources or repositories?



What are different outcomes associated with different open source licenses?

POTENTIAL PRIORITIES:

- Create open source code or contribute to open source software development communities
- Where appropriate, require open source software in procurement activities
- Ensure flexibility to change software as needs or connected technologies develop



Data Governance

Data Stewardship

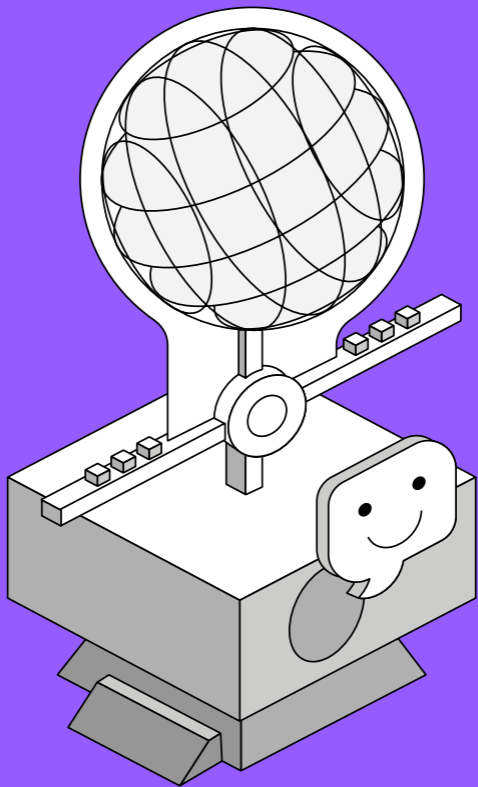
Data Stewardship

Data stewardship defines the management framework for data constantly collected from transport users, organizations and vendors.

- Who is responsible for data collected from transport users?
- Is there a legal structure for the body or person responsible for data management?
- Are diverse stakeholders and consensus driven processes involved in deciding on data stewardship?

POTENTIAL PRIORITIES:

- Standards for data quality, privacy and sharing
- Solutions to the growing need for big data from an array of actors to enable innovation, including the development of artificial intelligence



Data Governance

Data Management

Data Management

Data management encompasses an array of activities to ensure data is treated in accordance with regulations, standards and stakeholder expectations.



What is being done to ensure data from transport users is managed in accordance with regulations and technical standards?



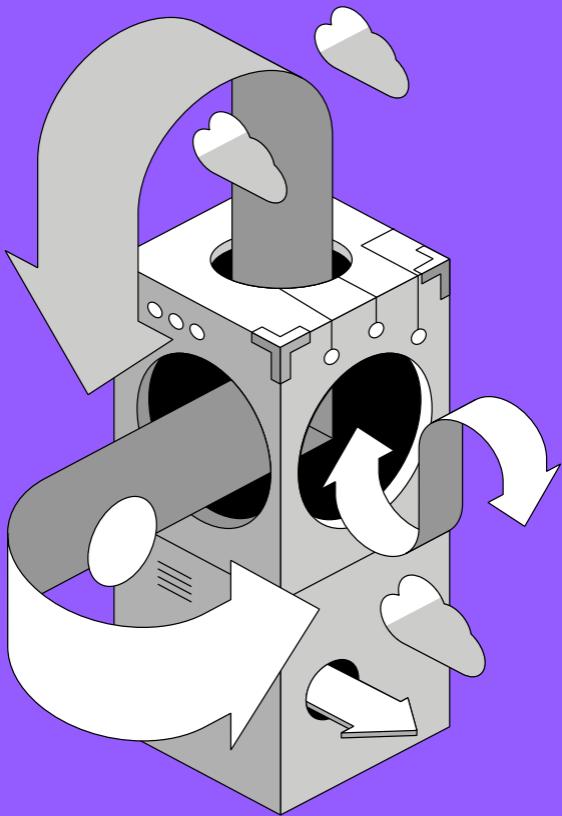
Are the preferences of those whom data is collected being identified and upheld?



What principles characterize the type of data collected from transport users, how it is used, stored, made open data or deleted?

POTENTIAL PRIORITIES:

- Data quality, security and legal compliance
- Digital rights and public interest particularly in terms of privacy and surveillance
- Determining what data should not be collected or should be deleted



Data Governance

Data Sharing

Data Sharing

Data sharing through open data and data sharing partnerships increase possibilities for digital innovation.



Is quality open government data available to drive innovation in the public sector and to enable industry driven solutions?



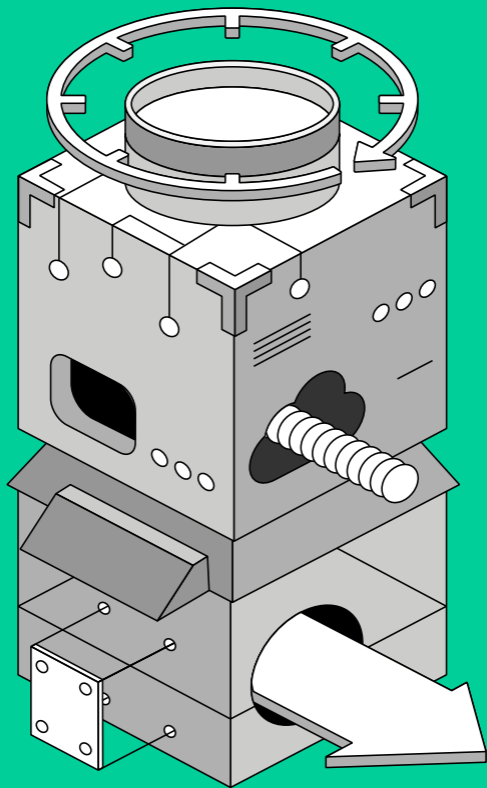
Are data sharing partnerships established through government procurement or permit granting activities?



What process and stakeholders determine the data points that must be shared, who owns data and how it can be utilized?

POTENTIAL PRIORITIES:

- Leveraging mobility data from different sources to enable a broad array of service providers to contribute to the development of new mobility solutions
- Developing solutions so that individuals can more effectively manage personal data, its sharing and use
- Increasing mobility data access by transit authorities



Systems Connections

Life Cycle

Sustainability

Life Cycle Sustainability

The environmental sustainability of mobility products and services depends on their entire lifecycle, not just benefits and impacts calculated during journeys.



Is the product's sustainability being assessed from the natural resources and raw materials used for production, to distribution processes, use and maintenance as well as impacts of disposal and recycling?



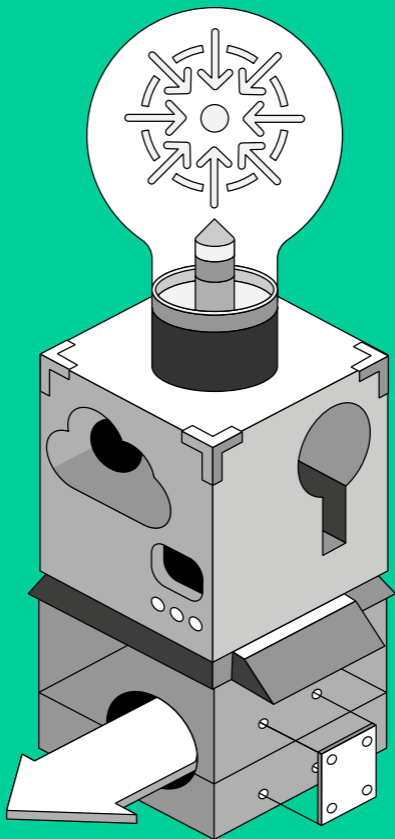
Are products and services offered as a solution to a city's challenges actually the best solution to the problem within the context and existing possibilities?



Is the product or service provider committed to requiring access to data for sustainability analysis from suppliers and customers?

POTENTIAL PRIORITIES:

- Pursuit of aggregate externality avoidance, rather than simply impact reduction at the different stages of a life cycle
- Addressing life cycle sustainability in the product design stage and reducing resource use across the entire life of the product
- Access to necessary datasets for life cycle assessment



Systems Connections
Access

Access

Provision of access is the ultimate goal of mobility.



Does the urban context offer a range of transport modes, geographically dispersed, that can meet different transport needs at different stages of life?



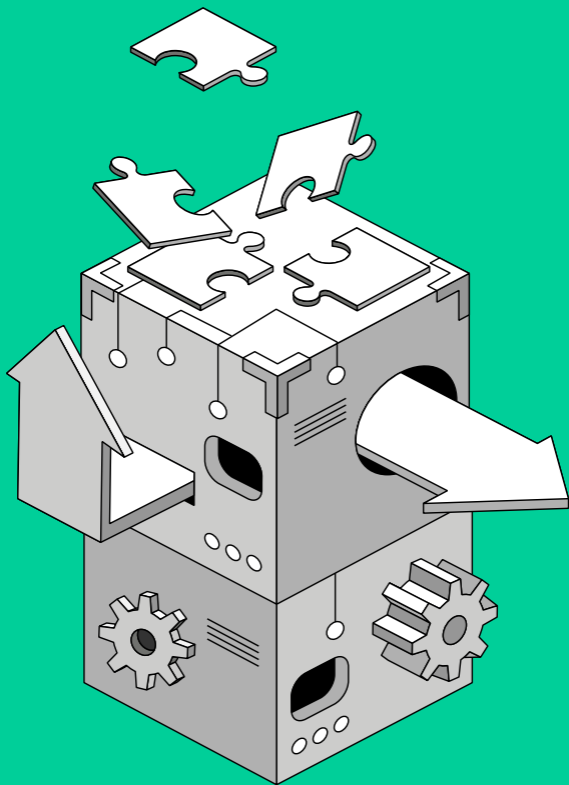
Are technology based mobility solutions being deployed in locations with low digital inclusion rates? Are offline options available in these locations?



Do emerging products or services cater to local demographic challenges, socio-economic characteristics or critical physical accessibility shortfalls?

POTENTIAL PRIORITIES:

- On-demand transport modes that enable independent travel by mobility restricted individuals
- Bridging economic or technological limitations of the population
- Viable provision of universal safe, reliable and comfortable transport opportunities



Systems Connections

**Ecosystem
Synergies**

Ecosystem Synergies

Products and services will succeed that address the local mobility system challenges and aspirations through the creation of synergies with other actors.



Are products and services addressing local mobility challenges through helping to achieve social, environmental and economic goals of the city?



What local partnerships could be forged between public and private stakeholders to accelerate a city's carbon emissions reductions from the transport sector?



Are mobility companies required or compelled to implement local programs for environmental sustainability or data sharing in order to do business in the local market?

POTENTIAL PRIORITIES:

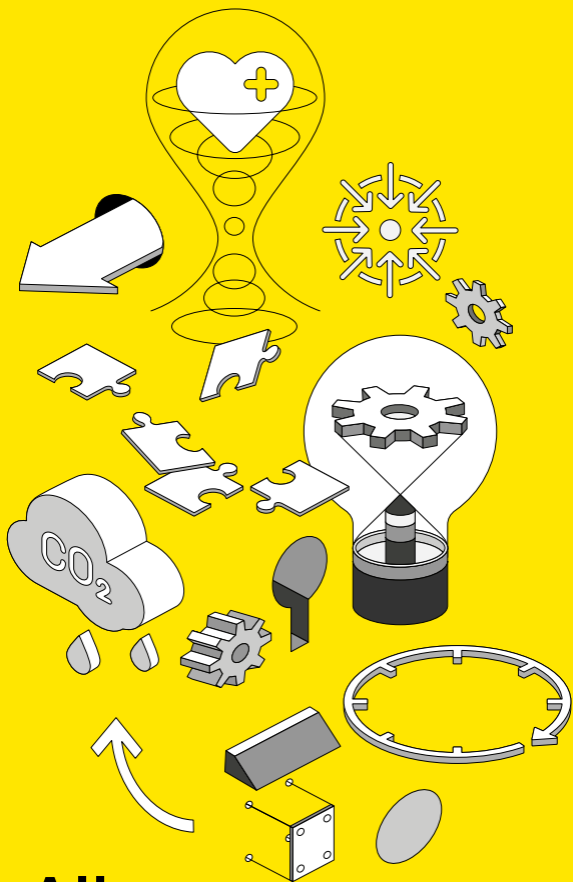
- Identification of how to contribute to transport system sustainability by creating synergies possible in the local context
- Contribution to publicly oriented, dynamic trip-planning and ticketing services that integrates transport provider offerings

Service Providers



Service providers, or vendors, are the companies offering products and services. They can be government, non-government or private entities. The aims of different service providers vary depending on the mandates of their leadership and business models involved. The public sector generally elevates social and environmental goals in service provision, whilst private sector service providers commonly prioritise economic viability and profit-making.

A key challenge in forging collaboration and partnerships between different types of service providers is balancing these contrasting goals and priorities.



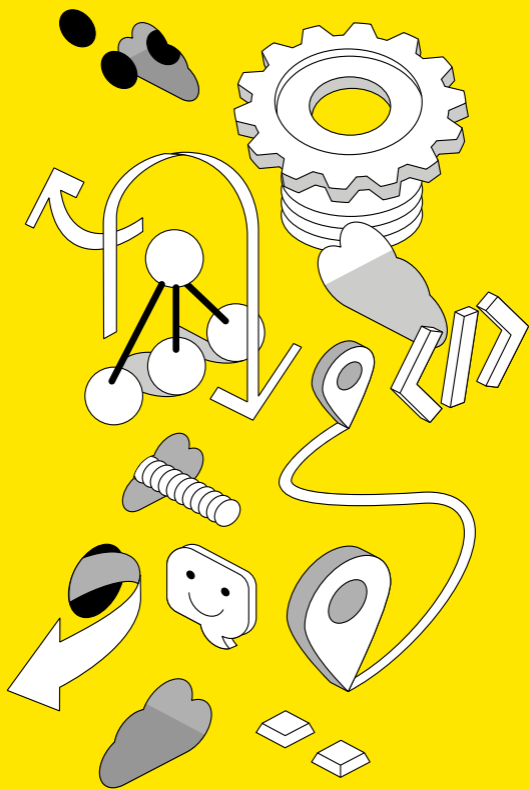
**All
Stakeholders**

All Stakeholders



All stakeholders refers to any person, group or organization within a given system. In terms of mobility it includes the transport providers, built environment designers, users of transport and public spaces, those interested in developing commercial transport concepts as well as linked global enabling communities such as those for open source software or climate activism.

The input of a broad array of stakeholders is needed to shape urban systems and digital transformations underway, particularly in terms of civic infrastructures, digital rights and responsibilities.



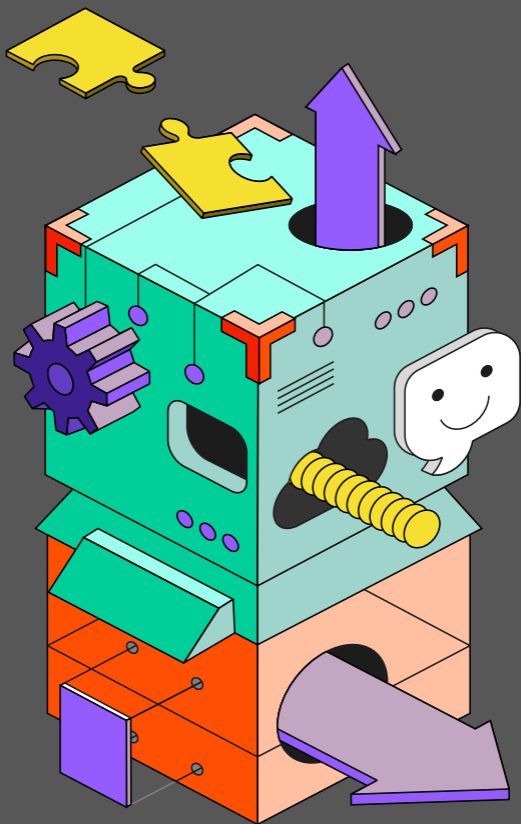
Governance

Governance



Governance refers to the way a society or an organization is managed. It is referred to here in the sense of public governance. That is, the strategy, processes and activities that govern a spatial context such as a city, state or nation. Characteristics of governance include laws, political processes and social norms.

Governance by government is increasingly undertaken with civil society, networks and the market. A central debate in mobility governance is the extent urban transport and digital infrastructure should be delivered or regulated by the government to achieve the public interest, in light of emerging market driven solutions.



Possibilities

Design Your Future

Each of the 18 cards with icons represents a different part of a city transport system model that is open to diverse companies and public providers, has locally tailored solutions to transport challenges and is sustainable environmentally, economically and socially. There are also 3 stakeholder cards that represent potential actor spheres in the ecosystem.

Strategic Insights

The graphic side of the cards can form the basis of simple card sorting activities by individuals or groups. For example, to prioritise which themes are most and least important, or perhaps which actions are necessary for sustainable mobility in a city and which are desirable.

Contextual Understandings

The underside of the cards provides questions for group discussions. They seek to prompt more nuanced consideration of each theme. Cumulatively these questions could provide a thematic mapping of a specific city's current transport system as a basis for further ideation or problem solving activities.