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2. CREATING FRAMEWORK FOR MOBILITY AS A SERVICE (MaaS) IN INDIAN CITIES

MaaS READINESS TOOL

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ABOUT THIS REPORT

This report has been prepared as a part of bilateral technical cooperation project “Integrated Sustainable Urban Transport Systems for Smart Cities (SMART-SUT)” commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) and jointly implemented by Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ) GmbH and Ministry of Housing and Urban Affairs (MoHUA), Government of India. The objective of the project is to improve the planning and implementation of sustainable urban transport in selected Indian cities. The project also supports the Green Urban Mobility Partnership (GUMP) between the governments of India and Germany.

Indian cities selected under National Smart Cities Mission are planning, designing, developing, and implementing various urban mobility projects. All these projects, after implementation, produce a huge amount of data. Thus, the management of the mobility data is at centre of increasingly complex urban transport challenges in these cities. The mobility data generated from various sources and in various forms could be used for providing an integrated journey experience to the commuters which is known as ‘Mobility as a Service or MaaS’. Though providing such a service to commuters would require developing standard data collection and management protocols, strong institutional and regulatory framework, interventions related to urban mobility data policies and so on. With this objective in mind, SMART-SUT initiated the study titled “Creating Framework for MaaS in Indian Cities”.

The study aims to explore opportunities for implementing MaaS in Indian cities and identify a structured approach towards developing a smart mobility ecosystem which is required for developing such a solution by leveraging the real value of mobility data. The study outlines a stepwise approach and set of recommendations towards implementing a MaaS solution in the Indian context, a series of reports have been compiled as an output of this study covering various aspects of MaaS. The recommendations from these reports would assist Indian cities embarking on developing various data-driven mobility solutions like MaaS by integrating different transport modes.

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The team is hopeful of the study outcomes being a useful guide for deploying the MaaS ecosystem in Indian context.

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1 BACKGROUND

India is going through a rapid digital transformation in the transport and mobility sector. It is estimated that with the current pace of access to internet-enabled smartphones, the internet user base in the country will rise to 829 million people by 2022. Approximately, 97 percent of the internet users across India have access to internet through mobile devices. The user base for these smartphones is expected to cover almost 60% of the population [1].

Smartphones with high-speed internet and various sensor technologies can now generate, record and store a high volume of useful data in phones and applications that feed on personal information. While this data can help solve many mobility problems, it builds on a high potential to overlook privacy issues and personal data exploitation, for commercial purposes.

Hence, it is essential to comprehend how this 'smart' transport data is being generated and managed and decide as to which data can be used to develop mobility solutions. Further, mechanisms for data sharing by the government and mobility companies need to be established so that this could be leveraged to provide innovative travel solutions. In this process, it is critical that the privacy of the users must be ensured under the existing legal frameworks.

Mobility as a Service (MaaS) is an emerging smart mobility service that provides access to integrated journey options across different transport modes in a city using a single travel booking and payment platform to its users. With multimodal transport system in the city, MaaS provides commuters with seamless travel options, ascertaining a comfortable journey. The key aspect that enables this solution is the data sharing between different modes and service providers. The study titled "***Creating Framework for Mobility as a Service (MaaS) in Indian Cities***" aims to identify measures that are required for developing a MaaS solution. The objective of the study is :

- To develop a framework for an effective implementation of "Mobility as a Service (MaaS)" in Indian cities.
- To recommend the requisite data and system specifications for implementing MaaS in Indian cities.
- To design an effective policy and a regulatory framework by contextualizing issues related to data sharing in India.
- To develop a capacity-building toolkit for a better understanding of MaaS and facilitating the decision-making process for its successful implementation in Indian cities

Following reports have been compiled and documented* as an output of this study covering various aspects of MaaS :

i. Basics of MaaS and Learnings from Global Case Studies
ii. MaaS Readiness Tool
iii. Urban Mobility Data Policy
iv. Mobility Data Standards and Specifications
v. Legal and Regulatory Framework
vi. System Architecture and Technical Requirements
vii. Reference 'Scope of Work' Document for MaaS Project

MaaS has emerged as a tool that can transform cities by minimizing carbon emissions and simultaneously encouraging people to shift from private vehicles to shared mobility by providing the convenience to travel in different modes using a single application. But to implement MaaS successfully, the city needs a well-integrated system of data sharing policies, regulations, data specifications, infrastructure and technology.

Since MaaS is a new concept, limited work has been done to examine how cities should assess their readiness towards its implemenattion. This report details out the development of a MaaS readiness tool, which assesses the readiness of the Indian cities for implementing projects related to MaaS. It also includes international case studies and initiatives on MaaS readiness. It draws learnings from these case studies and proposes a methodology for this tool that cities can use to identify areas they need to improve to implement MaaS and evaluate city-specific MaaS readiness.

[1] https://icea.org.in/wp-content/uploads/2020/07/Contribution-of-Smartphones-to-Digital-Governance-in-India-09072020.pdf

*All the reports can be accessed via https://www.maastoolkit.org/ which has been developed as a web-based capacity building toolkit and an open source knowledge resource for all the stakeholders and government agencies planning to implement MaaS in Indian cities.

The tool is developed as a web application. The user can easily select data using a drop-down menu and run the readiness model to get the status of MaaS readiness of their city.

2 CONCEPT OF MaaS AND CITIES READINESS

Urban Mobility in India is continuously evolving and as a result a number of choices in terms of the urban transport services are available to the users. While introducing the new modes and transport systems focused on providing mode choices in the past, the recent approach that cities across the globe are following is more holistic. The priority now is combining new modes in the transport systems with information and communication technology (ICT) advancement and mobile computing to develop a user friendly application/service to access urban transportation. The main objective of these advancements is to offer the consumers an opportunity to choose from different modes of transport. On a macroscale, it can potentially help in assisting the goal of achieving the sustainable development by minimising the local carbon emissions[2].

MaaS is one such solution that offers convenient door-to-door integrated transport service without the essential need to own a private vehicle.

There are several definitions of MaaS, however in simplistic form, it offers travelers an access to a pre-paid bundle of transportation modes on a single mobile application. In addition, the application allows the convenience of integrating planning, booking, and payments functionality for making trips.

To meet a customer's request, a MaaS operator facilitates a diverse menu with various options of combinations of transport services including public transport, shared mobility options, taxi or car rental/lease, micro-mobility modes, etc. For the users, MaaS can offer an added value. Using a single mobile application they can access various modes and make a single payment for the entire trip instead of multiple ticketing and payment operations. This helps the users to meet their mobility needs and simultaneously saves their journey time and eases the inconvenience of multiple trip bookings.

The main aim of MaaS is to offer a sustainable form of transport service that encourages the users to shift from privately owned vehicles to shared mobility. Consequent data is gradually emerging on how MaaS may impact the mode choice behaviour[3].

Mobility as a Service project is implemented around a network of factors including technology, infrastructure, travel behaviour, transport services, policy regulations, legal framework, etc. The first step towards developing a framework for MaaS is to understand the status of accompanying measures that are required for a thriving MaaS ecosystem. The readiness tool that has been developed will help cities evaluate their strengths and weaknesses for implementing a MaaS project and identify actions required for successful implmentation in the future.

In this report, we have comprehensively looked at the assessment and status of various factors associated with MaaS implementation. Simultaneously, measurable indicators are identified to assess MaaS readiness in Indian cities.

3 INTERNATIONAL CASE STUDIES

Before planning for MaaS, it is important for decision-makers to understand how close a city is to fulfilling the various requirements for implementing MaaS. Though various initiatives have been taken in the past to understand the level of readiness to implement MaaS, as part of the development of the readiness tool following two initiatives has been referred as case studies:

i. MaaS Maturity Index developed by MaaS lab, University College London, UK

ii. Mobility as a Service (MaaS) readiness level Indicators for local authorities developed under CIVITAS initiative, European Union.

[2] https://maas-alliance.eu/2021/06/02/4-ways-to-reduce-carbon-emissions-generated-by-transport/
[3] https://www.sciencedirect.com/science/article/pii/S1369847820304654

3.1 MaaS MATURITY INDEX BY UNIVERSITY COLLEGE LONDON

The MaaS Maturity Index (MMI) measures a city's readiness for MaaS implementation.The index takes into account the pre-requisites for the implementation of MaaS as well as the factors that will facilitate its successful implementation in the future. It is important to note that the index does not consider how many of the elements of MaaS have already been integrated into the transport system but the potential for each of these elements to be put in place. Furthermore, the index does not apply to intercity transport or rural areas.

The study developed five dimensions for MMI based on the review of the case studies and expert elicitation. These five dimensions are as follows:

i. Transport operators openness and data sharing
ii. Citizen familiarity and willingness
iii. Policy, regulation and legislation
iv. Transport services and infrastructure
v. ICT infrastructure

Each dimension has a series of sub-dimensions and secondary sub dimensions. These were selected based on the literature review, expert elicitation, and review of the existing indexes in the field of transport and open data[4].The detail of these sub dimension is given below-

Table 1 – Dimensions, sub dimensions and secondary sub dimensions of MMI

S. NO	DIMENSION	SUB - DIMENSION	SECONDARY SUB DIMENSION
1.	**Transport Operators Openness and Data Sharing**	Data Collection	Static Data Collection
			Real – Time Data Collection
		APIs	Open API Availability
			Private API Availability
			Real Time via API
		Open Source	Open-Source API
			Raw Data Availability (under agreement)
			Open Raw Data
			Raw Data Common and Open Standards
			Real Time Raw Data
		Security and Privacy	
2.	**Citizen Familiarity and Willingness**	Smart Technology Familiarity	Smart Phone Penetration
			Debit Card/Credit Card Penetration
		Travel Behavior	Modal Split
			Car Ownership
3.	**Policy, Regulation and Legislation**		Recommended Open Standards
			Data Security and Privacy
			Right to Data Portability
3.	**Policy, Regulation and Legislation**		Third Party Ticket Sale
			Commercial Viability / Subsidization
4.	**Transport Services and Infrastructure**	Variety	Modal Alternatives
		Density	Rail
			Bus
			Taxi
			Bike Sharing
			Car Sharing
		Frequency (Bus or Train)	Overall
			Peak Time
		Integration	
5.	**ICT Infrastructure**		WiFi Access
			Mobile Network Coverage
			Mobile Network Download Speed
			Smart Ticketing Infrastructure

The index has been used to assess the readiness in London and West Midlands and the output shows that London is better prepared than West Midlands for MaaS implementation. The index does not mention the optimum score to implemnent MaaS but can determine the relative readiness between different cities.

[4] https://discovery.ucl.ac.uk/id/eprint/10063087/1/Contribution_10902_fullpaper.pdf

3.2 MOBILITY AS A SERVICE (MaaS) READINESS LEVEL

The tool is developed under CIVITAS ECCENTRIC project. This tool identifies eight critical indicators to be assessed to determine readiness of a city to implement MaaS[5].

Table 2 - The indicators and sub indicators under CIVITAS ECCENTRIC project

S. NO	INDICATORS	SUB-INDICATORS
1.	Strategic Readiness	Strategic Focus
		Parking Policies
2.	Internal Use	Internal Travelling
		Use of Shared Mobility
3.	Shared Use	Shared Economy
		Public Transport
4.	Shared Understanding	Integration Platform
		Visibility

The output is produced in the form of a spiral diagram for visual representation (figure 1).

The MaaS readiness level indicators give a cross-sectoral view on the preparedness of the city, the decisions it has already made regarding transportation services, and contribution of these decisions to support the implementation of the new transport services.

This tool has been used to assess readiness for the city of Madrid, Munich, Ruse, Stockholm and Turku.

The tool does not provide a score as in MMI developed by UCL but determines each indicator's status.

4 PROPOSED MaaS READINESS TOOL

Based on the review of UCL and CIVITAS indicators, we have looked at the data availability in the context of cities in India and other developing countries. A comprehensive data collection list was prepared and shared with various MaaS stakeholders including city authorities, transport service providers, etc.

Based on the feedback, responses, and consultation with MaaS operators, seventeen indicators grouped across five key areas were identified.

Accordingly, the proposed MaaS Readiness Tool is based on five pillars of MaaS. These five pillars will have key indicators that the cities need to assess while determining their level of readiness for implementing MaaS project.

The five key pillars of MaaS are:

i. Market Potential
ii. Policy Readiness
iii. Data Availability
iv. Infrastructure
v. Travel Behaviour

The key pillars and the indcators of the MaaS readiness wheel are shown in figure 2.

Each indicator was scored on a scale of 1 to 5 using the current status in the respective city. To calculate MaaS readiness score, a feedback survey was conducted with several MaaS experts globally in order to assign weightages to five pillars.

Table 3 - Weightages of five pillars of MaaS Readiness Wheel

S.NO.	PILLAR	WEIGHTAGE
1	Market Potential	20%
2	Policy Readiness	20%
3	Data Availability	25%
4	Infrastructure	10%
5	Travel Behavior	25%

The output of the tool is in the form of a spiral diagram showing the status of the indicator. Further, it also determines the readiness of the city.

The tool will help assess the city the areas they need to work on in order to implement MaaS. Further, the tool will also help a decision maker review the status in various cities and prioritise the city that is relatively ready for MaaS implementation.

[5] https://civitas.eu/sites/default/files/maas_readiness_level_indicators_for_local_authorities_web.pdf

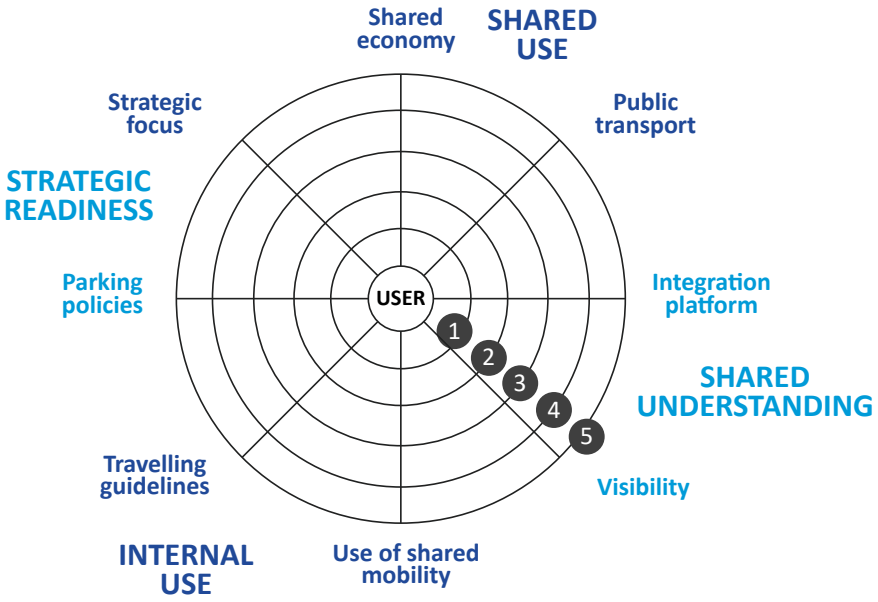


Figure 1: MaaS Readiness Index by CIVITAS

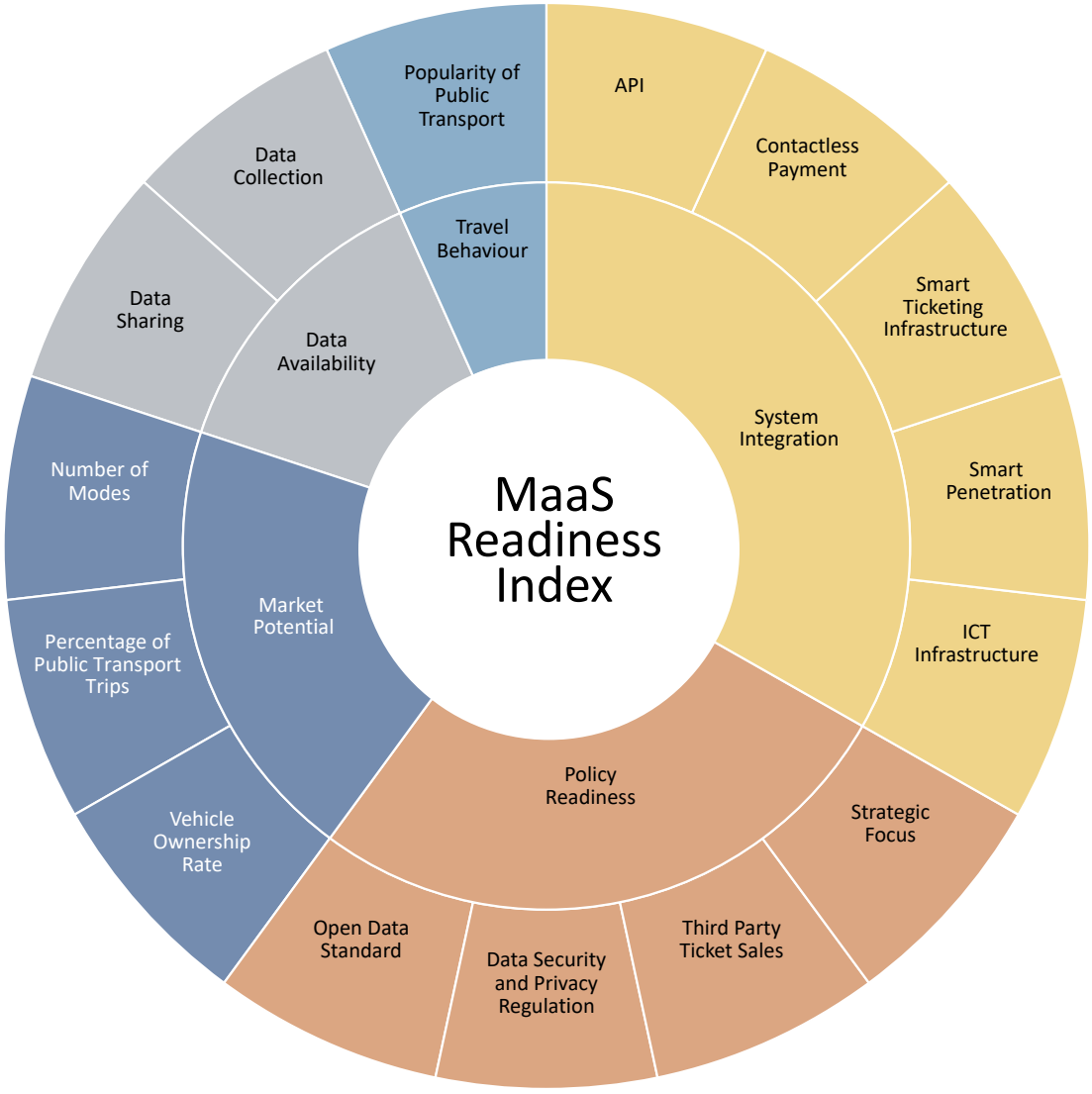


Figure 2: MaaS Readiness Wheel

5 MaaS READINESS: PILLARS AND INDICATORS

5.1 MARKET POTENTIAL

This section outlines the indicators required to evaluate the readiness of the Indian market for the implmentation of MaaS. The indicators for the tool were developed through a consultation with the MaaS operators. The focus of the consultation was to understand their perspective on the potential market and the essential elements to set up the business for MaaS in Indian cities.

Under this pillar, three indicators are identified:

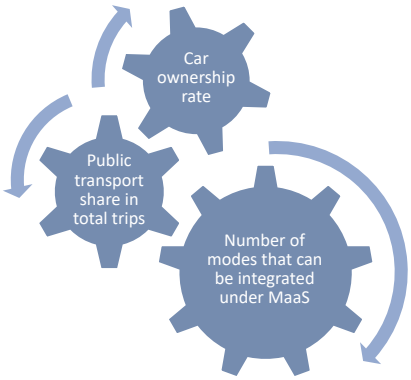


Figure 3 - Indicators of market potential

5.1.1 Number of Modes

One of the important measures for successful implementation of MaaS is the number of transport modes available in the city. Since MaaS focuses on a door-to-door service, for all the legs of a trip including last-mile connectivity, various mode options should be avalaible to provide multiple combinations of transport services for the users. In the MaaS readiness tool, the user has to select the number of modes that can be integrated under the proposed MaaS project.

5.1.2 Public Transport Share

Globally, it is seen that in cities with a higher public transport share, the implementation and success rate of MaaS is better. This includes all forms of public transport including but not limited to buses, rails, trams, BRT, etc. Under the public transport share indicator, the user must input the percentage of the trips being performed on public transport.

5.1.3 Vehicle Ownership Rate Per Person

One of the key elements of MaaS is to develop a customer oriented service which integrates the public transport and shared modes to make individual vehicle ownership unnecessary, which may ultimately lead to a reduction in private vehicle use, congestion, and harmful external costs. High vehicle ownership will hinder the shift from private vehicles. Therefore, a city needs to measure the vehicle ownership rate per person as part of readiness indicator.

5.2 SYSTEM INTEGRATION

The working of MaaS relies on collaboration between the commuters, aggregators, and service providers. The alliance of the three design the ecosystem of Mobility as a Service. The first step to build a MaaS ecosystem is collecting the data to provide personalised mobility services to the users. With penetration of smartphones, the data is increasingly collected using the smart devices. However, a comprehensive infrastrucute network is required in order to collect the data, feed data into the MaaS ecosystem, and offer services to the users. Therefore, it is important to asses infrastructure related to MaaS while determining the MaaS readiness.

The Infrastructure pillar will have five indicators as shown below:

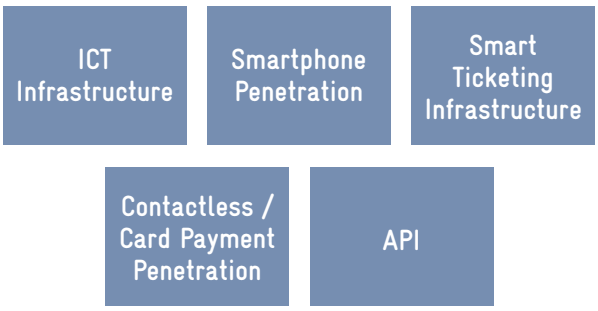


Figure 4 - Indicators of Infrastructure pillar

5.2.1 ICT Infrastructure

As MaaS is a smart mobility solution, ICT Infrastructure and internet connectivity are the backbone of MaaS. Smart devices collect data related to travel such as frequency, mode, payment method, etc. MaaS service providers and aggregators can then optimise the usage of mobility service by analysing the collected data. Using this data, service providers can

also offer the best mode and route of travel for every individual. Once the data is collected, aggregators can build platforms and applications that operate on the blockchain technology and provide a user interface to commuters for choosing end-to-end travel options. All these processes and transactions need a high speed internet connectvity. The ICT Infrastructure indicator would help city to review the status regarding internet connectivity and required infrastructure.

5.2.2 Smartphone Penetration

Under MaaS platform, transport services are offered over a smartphone application therefore access to smartphone data becomes a necessity for MaaS services to be viable. Smartphones also enable the users to pay online through various payment methods. This indicator would capture the potential of smartphone penetration to access the MaaS services.

5.2.3 Smart Ticketing Infrastructure

Smart Ticketing captures the data related to different user groups' origin, destination, and time of travel. It is important to evaluate level of coverage of smart ticketing infrastructure and the number of transit mode covered under the smart ticketing options. This indicator would capture the smart ticketing infrastructure status in a city to facilitate MaaS project implementation.

5.2.4 Contactless Card Payment Penetration

In India with rapid adoption of smartphones and a nationwide initiative to move to a cashless economy, the government has set standards for national transit ticketing protocol in the form of National Common Mobility Card (NCMC). However, these efforts are still in early stage. This indicator would capture the relevant status of contactless payment methods for transit services which is a key requirement for MaaS implementation.

5.2.5 APIs

Application Programming Interface (APIs) are prerequisites for journey planning, booking, ticketing, and pricing data and interoperability of systems for the involved stakeholders in a MaaS scheme. In order to benefit from integrated service and new sale channels, transport operators should be willing to share their data with the MaaS operator. The data is likely to be made available via APIs, which are a set of procedures and tools for building software applications that interact with the features or data of another application or operating system. For example, access to the booking API of a transport operator allows MaaS operators to use that data and offer an integrated booking using multi modal systems in their application.

This indicator would capture the relevant status of API whether these are available as open API or private API and if real time APIs are available.

5.3 POLICY READINESS

Under this pillar, an evaluation of various policy measures regarding the MaaS impementation can be measured. The pillar comprises four indicators that give a comprehensive view of the MaaS associated policy measures.

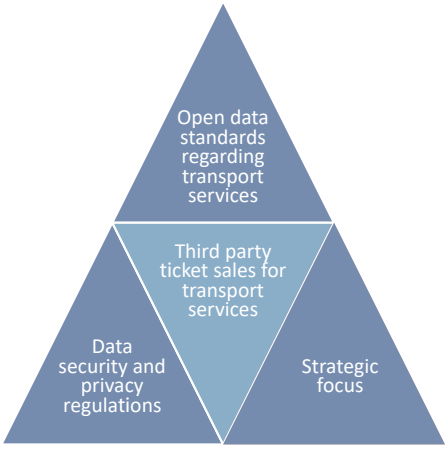


Figure 5 - Indicators of policy readiness pillar

5.3.1 Open Data Standards

The development of MaaS market segment relies heavily on data, APIs, and interoperability of the systems. The availability of high quality data, supported by interoperability between various transport systems integrated with booking, payment, ticketing, and security systems binds the entire MaaS application together.

The most prominent hurdle in integrating various transport services to a common platform (MaaS) is the availability and access to the relevant data in digital, machine readable, and non-proprietary format. These data may include timetables, stops, fare information, accessibility information, and other dynamic data like vehicle location, traffic flow, disruptions, etc. In addition, the ticketing and reservation systems are also of utmost importance. Generally every public transport operator or private mobility service providers has its own proprietary data format. This coupled with lack of industry consensus on data formats is crippling the efforts to integrate transport services into a single MaaS platform and application, and dramatically increasing the transaction costs within the ecosystem.

5.3.2 Data Security and Privacy Regulations

Since MaaS requires an open data sharing system, the privacy and security are an inevitable concern. In the absence of data security and privacy regulations, users and transport operators may be unwilling to share the data. A robust data security and privacy regulation, thus, becomes an important ingredient for implmentation of MaaS.

5.3.3 Third Party Ticket Sales

A single entity handles the implementation and operation of MaaS. This entity generally is a MaaS operator (third party independent of transport service provider and authority) is responsible for providing the options of various transport services, their operations, and payment mechanisms. If a transport operator is not willing to allow a third party to sell its tickets on their behalf, the services of the transport operators cannot be included in MaaS.

In many countries, public transport tickets have been strictly regulated and the operators sell their tickets on their own thus prohibiting any third party involvement. With this restriction, the integration of ticketing of various modes may not be possible, thus obstructing the implementation of MaaS. This indicator captures the status of third party ticket sales requirement, a prerequisite under MaaS project.

5.3.4 Strategic Focus

To succesfully implement MaaS, government is a key stakeholder. It plays a crucial role in developing the ecosystem by formulating various policies, regulations, and legislations at national, state and city level. Some important regulatory areas include data security and privacy, open data standards, third party ticket sales, market access of new mobility services, competition law framework and subsidisation of transport.

5.4 DATA AVAILABILITY

The availability of high quality data sharing and interoperable systems are the prerequisites for developing the MaaS ecosystem. Anonymised user data (travel patterns, mobility mix, user behaviours, etc.) collected through the course of every transaction provides the mobility service providers and MaaS operators precious insights that are valuable to all stakeholders in the MaaS ecosystem. These data sets allow operators to identify gaps and offer possible opportunities to match the user needs with the available fleet and, in the process, develop new capabilities.

Similarly, transportation data generated by public transport operators is solely used to manage the public transport systems efficiently. However, there is a growing trend of public transport authorities opening up static and limited dynamic data APIs to innovators working in the urban mobility areas. The integration of the data from both the public transport authorities as well as the private mobility operators will greatly improve the MaaS ecosystem and provide accurate and timely information to the users. Most of these data sets are sadly still very siloed and proprietary.

In the MaaS ecosystem, the mobility service provider can also be responsible for the traffic optimisation which is offered to the users as an advance feature. Such traffic management data can be provided through various sources, including mobility service providers, transport authorities, public transport operators, transport management operators, or even the users themselves. This indicator would allow the city

to assess the readiness with respect to data availability.

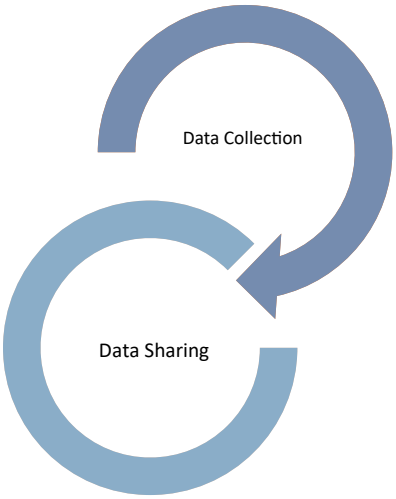


Figure 6 - Indicators of data availability pillar

5.4.1 Data Collection

The MaaS service providers need static and dynamic data from both the government and private operators like timetables, delays, disruptions and deviations from the route etc. Predominantly,the quality of available transport data is rather poor and incomplete. In many cases, data related to transport services is inaccurate, outdated, not in digital format, or even missing certain components. The low quality and defective data sets makes it difficult for the Maas operators to provide quality service to the users. This indicator captures the status of data collection practices.

5.4.2 Data Sharing

The data related to the user's personal preference regarding the mobility services submitted to one service provider may not be available for use on other service provider's platform. As a result, the user have to re-enter the same data or preferences for each mobility service used, which cause inconvenience. Therefore, there is a need to upgrade existing infrastructure to share acceptable quality data with strict privacy control measures.

The availability and access to quality data that is shared in a standardised format is critical for the success of a MaaS platform providing integrated transport services.

5.5 TRAVEL BEHAVIOR

Since MaaS is a customer centric service, its success rate is primarily depenedent on the travel behaviour of the users in a city.

Understanding local travel behaviour is a key element in understanding a city's readiness for MaaS. For the users in a city, MaaS can simplify the daily life as each member in a family can avail their preferred transport services via a single subscription.

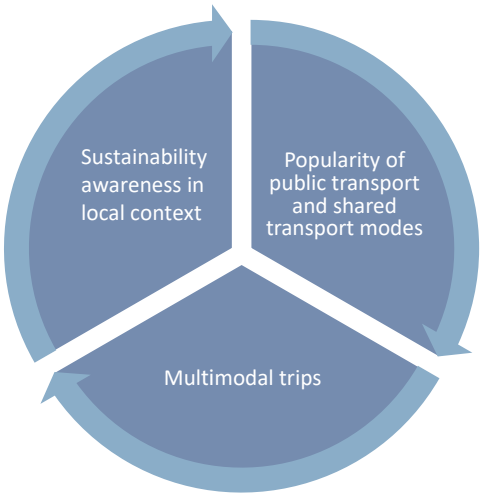


Figure 7 - Indicators of travel behaviour pillar

5.5.1 Popularity of Public Transport and Shared Transport

The key objective of MaaS deployment is to promote use of public transport and shared transport. The popularity of these modes help in implementation of MaaS as the people are already significantly using these modes. However, in the cities with high vehicle ownership, the shift from private vehicles to shared mobility is slow and difficult. Therefore, it is important to assess the level of usage of public trasnport and shared modes in a city before planning for MaaS.

5.5.2 Multimodal Trips

The share of multimodal trips influence the MaaS implementation as it is one of the key elements of MaaS. The more these trips are, the better is the chance for adoption of MaaS in a city. This indicator would capture the relevant status on mutimodal trips within a city.

5.5.3 Sustainability Awareness in Local Context

MaaS offers a solution that has potential to transform the way we use transport services. MaaS can, in principle, help individual travellers meet their transportation needs by shifting to a more environmental friendly modes such as public transport, cycling, and walking.

MaaS acknowledges the need for private vehicle based travel, but encourages the use of shared modes in place of low-occupancy and privately owned vehicles. Awareness and sensitivity to sustainability play a key role in making a shift to public transport and other shared modes through a MaaS platform.

Under this indicator, awareness of sustainability is captured as part of readiness index.

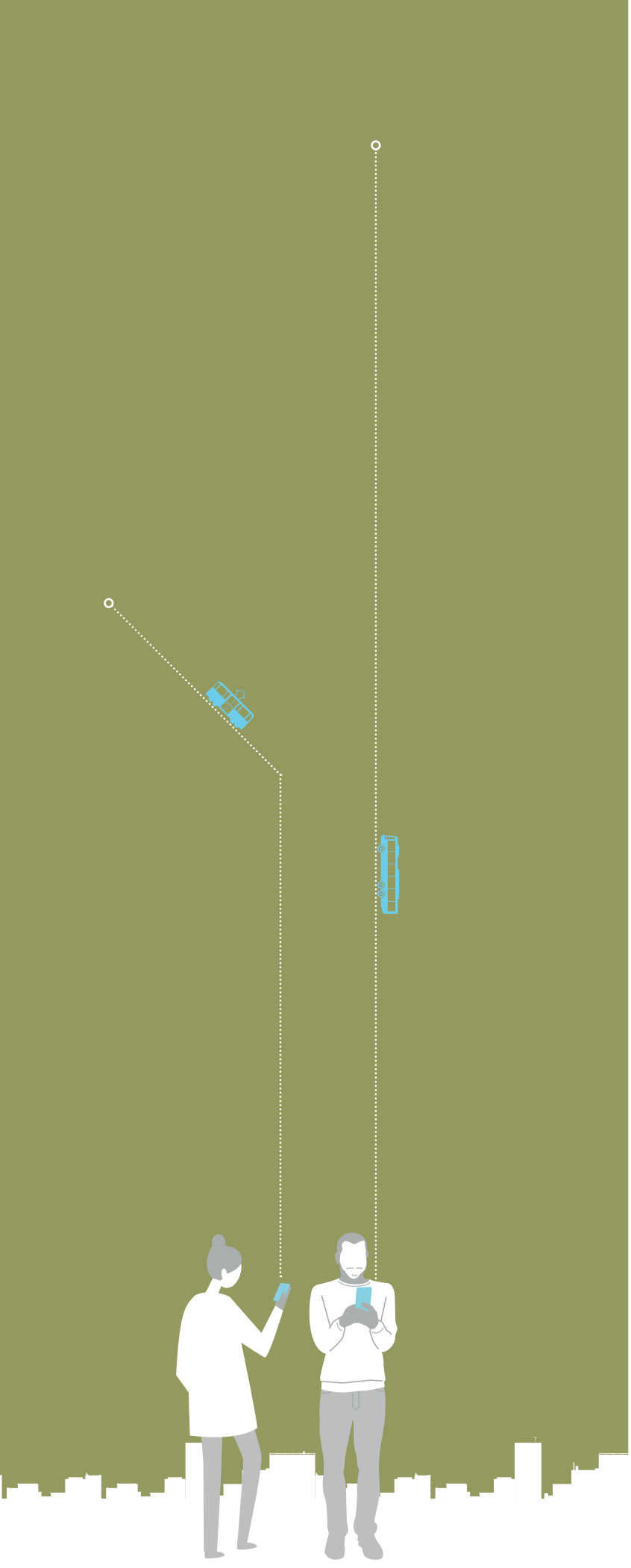
6 SUMMARY AND CONCLUSION

Urbanisation level in India is growing at a rapid pace and as a result the existing cities are facing several challenges with managing the transport systems. Further, due to economic opportunities, residents are becoming more mobile and connected.New technologies and business models are disrupting the urban mobility landscape and cities are looking for ways and means for efficient modes of transportation.

Mobility-as-a-Service (MaaS) is one such potential moblity business model that priortises the use of shared modes over privately owned vehicles. MaaS describes a concept that aims to integrate the fragmented modes and services and offer a seamless trip to the user. The integration allows customers to access and combine the variety of mobility services based on their individual needs. The first step that a city needs to undertake before introducing MaaS is to assess the key factors and drivers required to implement MaaS project in their local context. With this background, a MaaS readiness tool has been developed to investigate the applicability of MaaS in Indian cities. It helps the cities to analyse the current status of the infrastructure it requires to develop MaaS.

The tool is web based, where the user can easily browse through the pillars and indicators. Based on the guidance provided under this document and within the tool, the user can feed in the data and run the model to determine the MaaS readiness.

NOTE



Ministry of Housing and Urban Affairs (MoHUA) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH are jointly implementing the technical cooperation project "Integrated Sustainable Urban Transport Systems for Smart Cities (SMART-SUT)", commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). The project works with the three Smart Cities of Bhubaneshwar, Coimbatore, and Kochi and respective state governments of Odisha, Tamil Nadu, and Kerala to promote low carbon mobility planning, and to plan and implement sustainable urban transport projects.

As part of the Indo-German bilateral cooperation, both countries have also agreed upon a strategic partnership – Green Urban Mobility Partnership (GUMP) between Ministry of Housing and Urban Affairs (MoHUA) and Federal Ministry for Economic Cooperation and Development (BMZ). Within the framework of partnership's technical and financial cooperation, the German government will support improvements in green urban mobility infrastructure and services, strengthen capacities of national, state, and local institutions to design and implement sustainable, inclusive, and smart mobility solutions in Indian cities. As part of the GUMP partnership, Germany will also be supporting expansion of public transport infrastructure, multimodal integration, low-emission or zero-emission technologies, and promotion of non-motorised transport in India. Through this strategic partnership, India and Germany intend to jointly achieve effective international contributions to fight climate change.