



TMF SMART Playbook

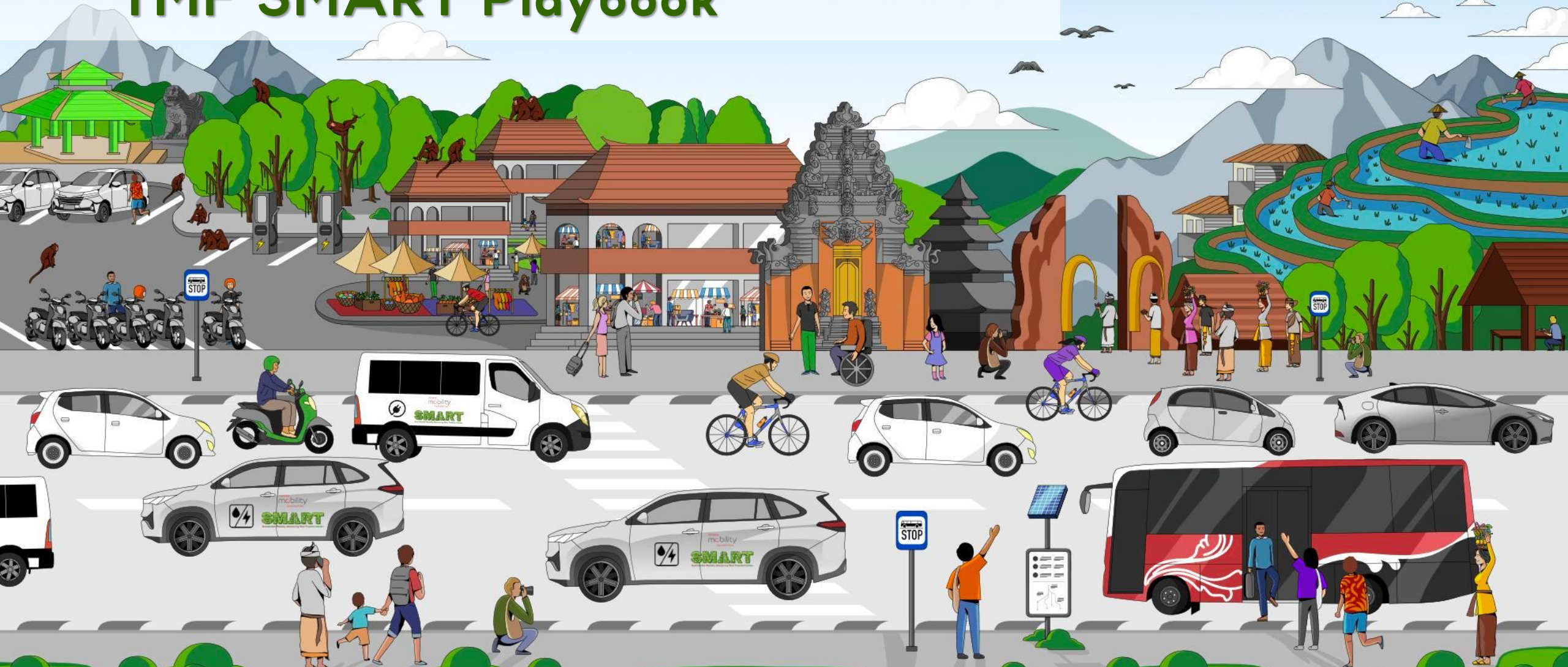


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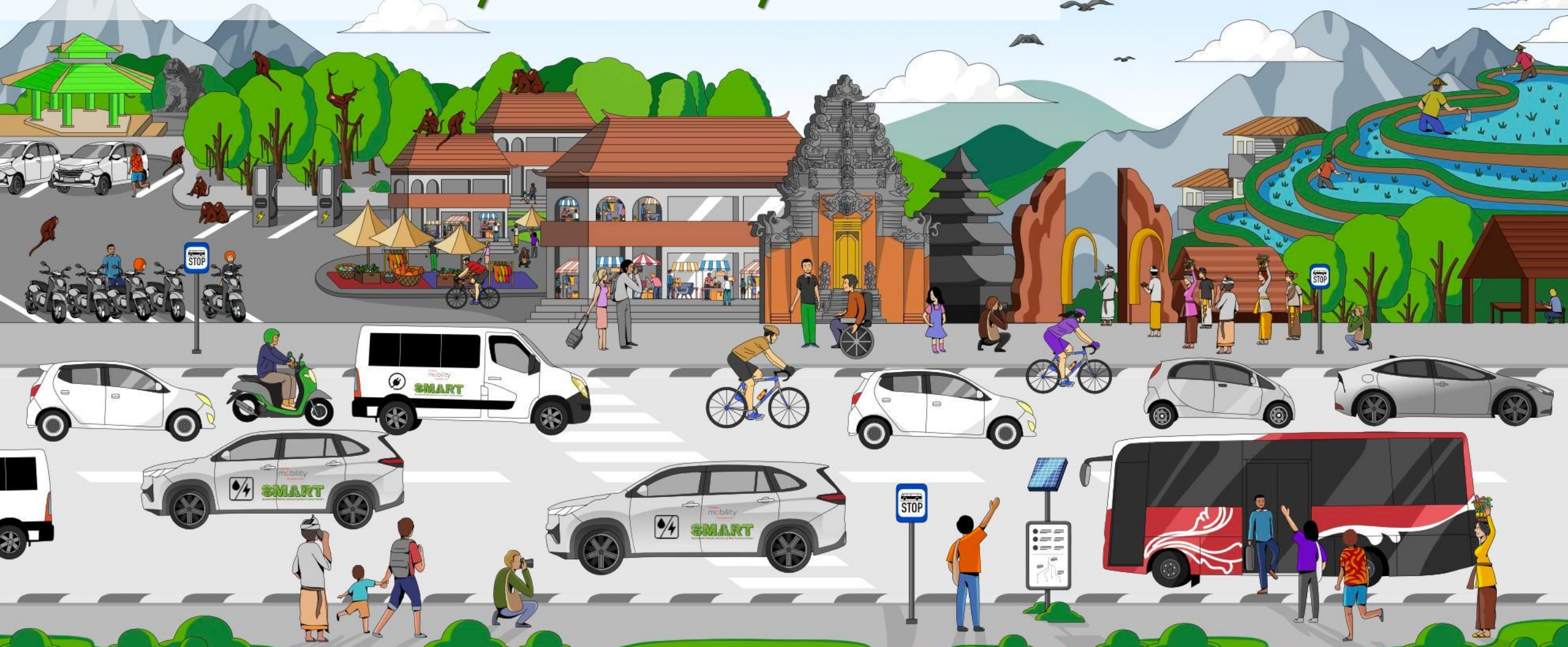
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Contact Us



Overview of Toyota Mobility Foundation



Overview of the Toyota Mobility Foundation

- The Toyota Mobility Foundation is a non-profit organization that leverages the expertise of Toyota and its partners to launch initiatives which seek to improve the state of mobility in each market

Overview

Founded by Toyota Motor Corporation in 2014

Principles



COLLABORATION



INNOVATION



LEGACY

Mission

To enable more people to go more places

Methodology

Leveraging technological, safety and environmental expertise of Toyota and its partners to create a more equitable, sustainable and mobile society

Toyota Mobility Foundation Global Projects

USA

Encourage innovative mobility solutions with winner considered for further funding

Partner Net Impact and Toyota Motor North America Social Innovation
Grantee Students of 15 Universities in USA

USA

Collaboration to launch innovative initiatives to resolve urban mobility issues

Partner New Cities Foundation
Grantee -

Zimbabwe and Kenya

Support small scale farmers (focusing on decreasing women workload) by providing BEV trikes, solar powered charging facilities

Duration Zimbabwe Dec 2019 - Present
Kenya Nov 2020 - Present
Partner Mobility For Africa, EASVRM
Grantee Small scale farmers

Brazil

Improve accessibility to the urban city center

Duration Jan - Dec 2018
Partner World Resources Institute
Grantee -

India (Bengaluru, Delhi, Mumbai, Hyderabad, Kochi, and Pune)

Improve first and last-mile connectivity to Metro transit

Duration Dec 2016 - Jun 2023
Partner World Resources Institute

Global

Support development of assistive devices for people with lower limb paralysis

Duration Nov 2017 - Sep 2020
Partner Nesta Challenges
Grantee Individuals and organizations

Thailand (Bangkok)

Mitigate traffic congestion

Duration Ph 1: Apr 2015-Mar 2017
Ph 2: Apr 2020- Apr 2023
Grantee Chulalongkorn University

Japan

Develop proposals to spur the development of hydrogen society

Duration July 2017 - Present
Grantee Universities and Research institutes in Japan

Japan (Toyota-city, Aichi)

Develop sustainable model for personal mobility in semi-mountainous regions

Duration Apr 2016-Mar 2019 (3years)
Grantee Nagoya University
University of Tokyo

Japan (Mimasaka-city, Okayama)

Develop sustainable model for personal mobility in semi-mountainous regions

Duration Jan 2016 - Sep 2019
Partner Mimasaka City Government, Okayama University, Okayama NPO Center, etc.
Grantee NPO Minna-no-shuraku Kenkyujo
NPO Aida Ueyama Tanadadan

Global (Detroit, Varanasi, Venice)

Improve access to sustainable mobility solutions while building innovation capabilities

Duration 2023 - 2026
Partner Challenge Works and World Resources Institute
Grantee Various cities and innovators

Malaysia (Kuala Lumpur)

Global challenge to encourage innovation to enhance city planning

Duration Feb 2020 - Feb 2023
Partner KL Government, MDEC, etc.
Grantee Innovators
Co-developer Deloitte Future of Mobility Solution Centre

Vietnam (Da Nang)

Mitigate and prevent traffic congestion

Duration Apr 2015 - Apr 2019
Partner Da Nang City People's Committee

Indonesia (Bali)

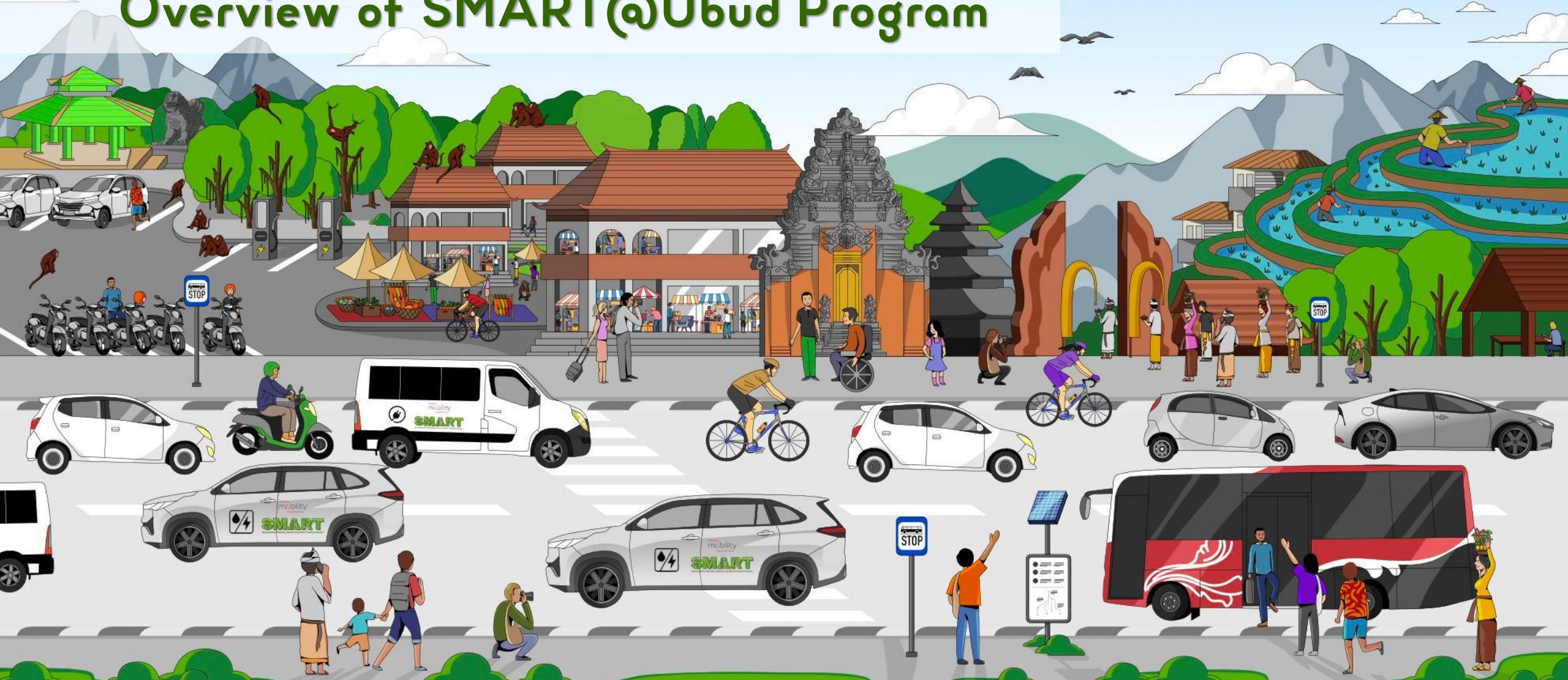
Promote sustainable mobility through electrified, data driven solutions

Duration Aug 2023 - June 2024
Partner Pemerintah Provinsi Bali, Dinas Perhubungan Bali, Kerthi Bali Santhi
Co-developer Deloitte Future of Mobility Solution Centre

SMART@Ubud



Overview of SMART@Ubud Program



Overview of SMART @ Ubud

- ❑ The SMART@Ubud program sought to develop sustainable business models to address mobility issues in Ubud
- ❑ Business models were developed through a trial of two mobility solutions

SMART @ Ubud

Sustainable **M**obility **A**dvancing **R**eal **T**ransformation

Objective and Solutions Implemented

❖ Support **decongestion and emission reduction** by trialing mobility solutions to **develop sustainable business models** for the community, leaving lasting legacy in the process

❖ Solutions Implemented (Aug 2023-May 2024)



App-enabled xEV Shuttle Service



Dynamic Bus Schedule Displays

Digital monitors displaying real-time bus arrival schedule, connecting SMART shuttle with existing public transport system

Program Organizer



Co-developer

Deloitte. FutureOfMobility

In collaboration with Deloitte Center for the Edge

Program Partners



Bali Provincial Government



Bali Land Transport Authority



Kerthi Bali Santhi



SWAT MOBILITY

PAPERCAST®

Facilitator



Impact of SMART@Ubud

- ☐ Transported ~20,000 customers with strong customer satisfaction and support for resolution of mobility issues

4.8/5 customer satisfaction rating

Superior Customer Satisfaction



11% overall cancellation rate, better than industry average of 18%

Low Cancellation Rate



Significant Ridership

20,000 customers throughout trial



Favorable Waiting Time

7 minutes average waiting time, better than industry average of 10 minutes

Contribution of SMART@Ubud

- ☐ Congestion reduction, emission reduction & increased willingness to utilize public transportation



Congestion Reduction

Pooling in **5 out of 7 rides**

7,000 vehicles removed from Ubud,
reducing both congestion and emissions



CO2 Emission Reduction

~51 tons* CO₂e estimated potential total
annual reduction,

absorption of **4,000 mangroves / year**
equivalent

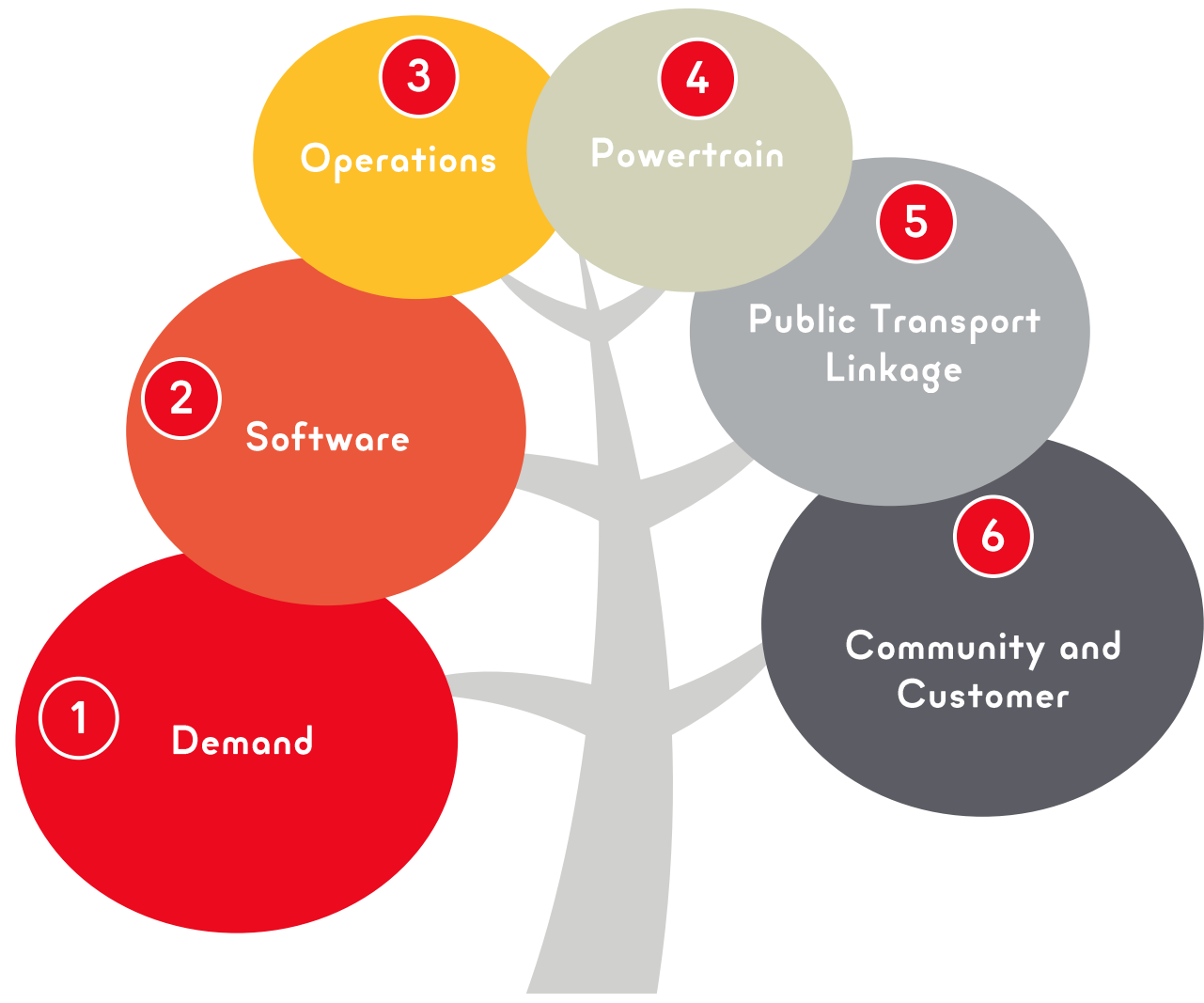


Increase Willingness to Use Public Transport

80% increase in willingness to use
public transport given introduction of
bus schedule displays

* Calculated based on yearly equivalent of emission reduction through xEV usage in comparison to standard ICE shuttle

Summary of Key Learnings



1

Optimization of Vehicle Availability

❑ Cost and supply optimization opportunity through adjustment of vehicle quantity based on hourly demand

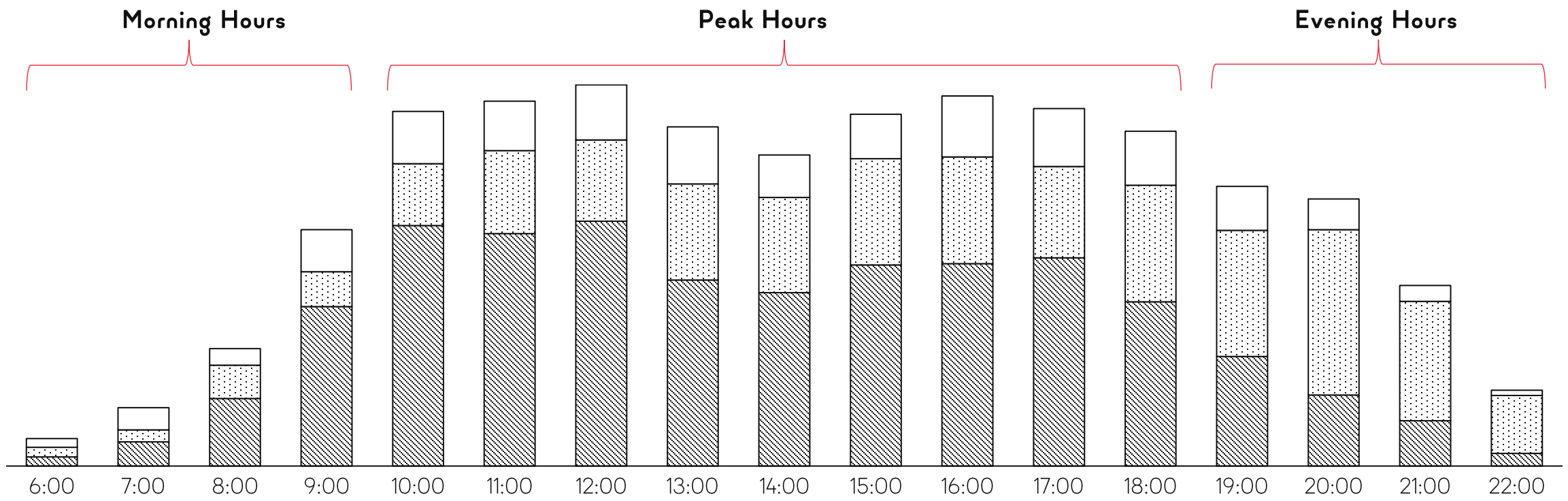
Completed Rides by Time & Destination

☐ Local Transport Facilities ▨ Hotels ▩ Tourist Spots

Operate reduced number of vehicles, with less drivers

Operate maximum # of vehicles to support mobility to tourist sites and help Ubud economy

Operate reduced number of vehicles/drivers (Hotel transport)



Note: Local Transport Facilities includes parking areas and Trans Metro Dewata stops

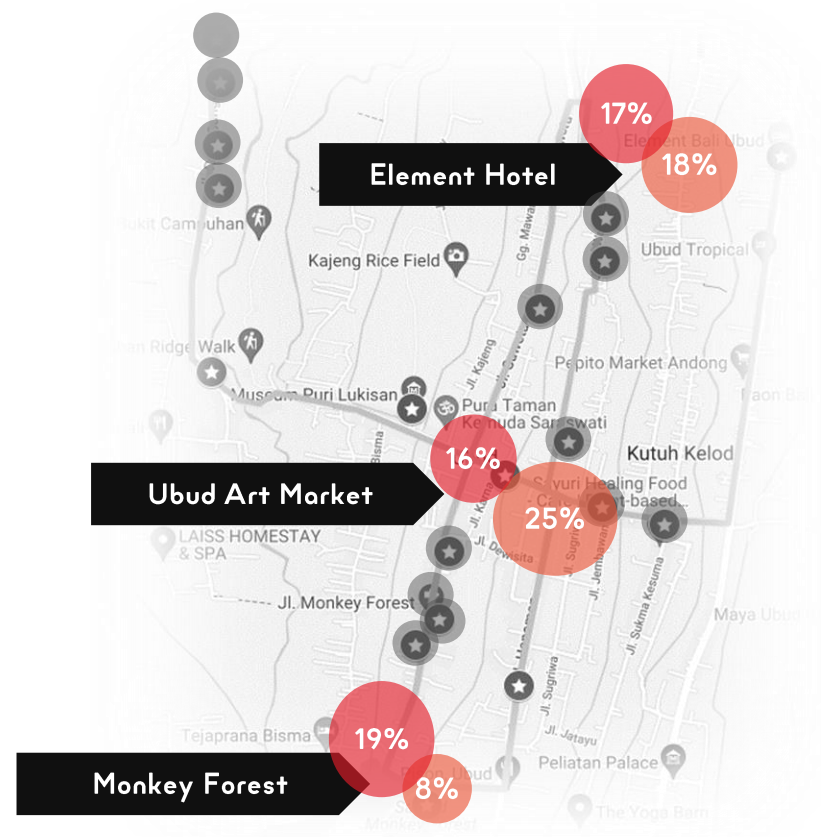
1

Bookings by Location

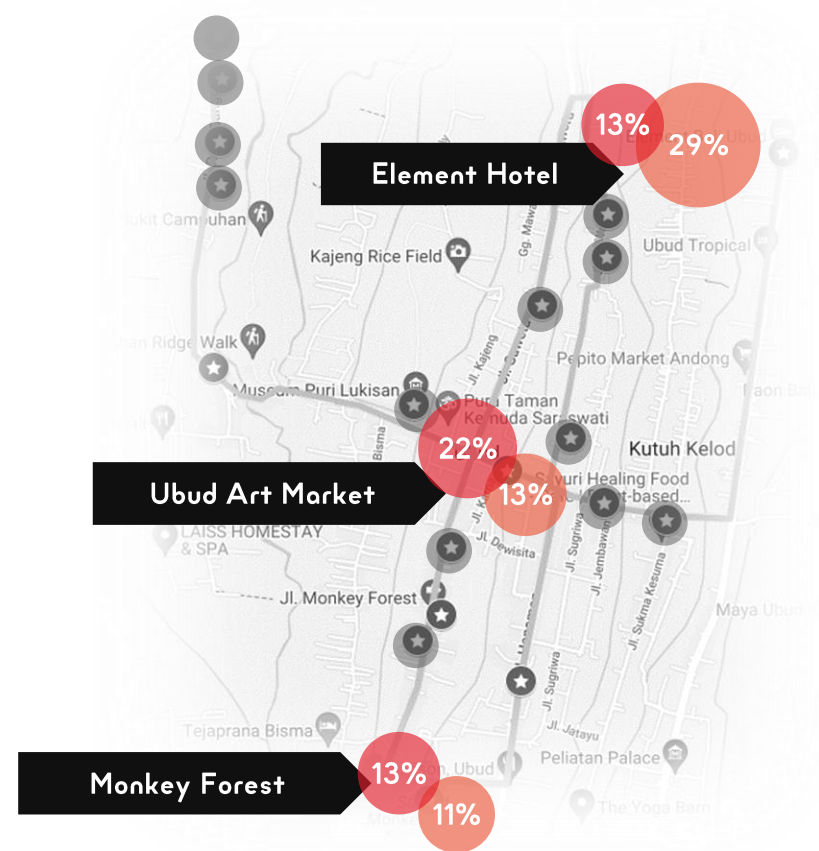
□ Highest demand observed in 3 locations regardless of hours, indicating potential focus area

● Peak ● Non-peak

Top Pick-up Locations



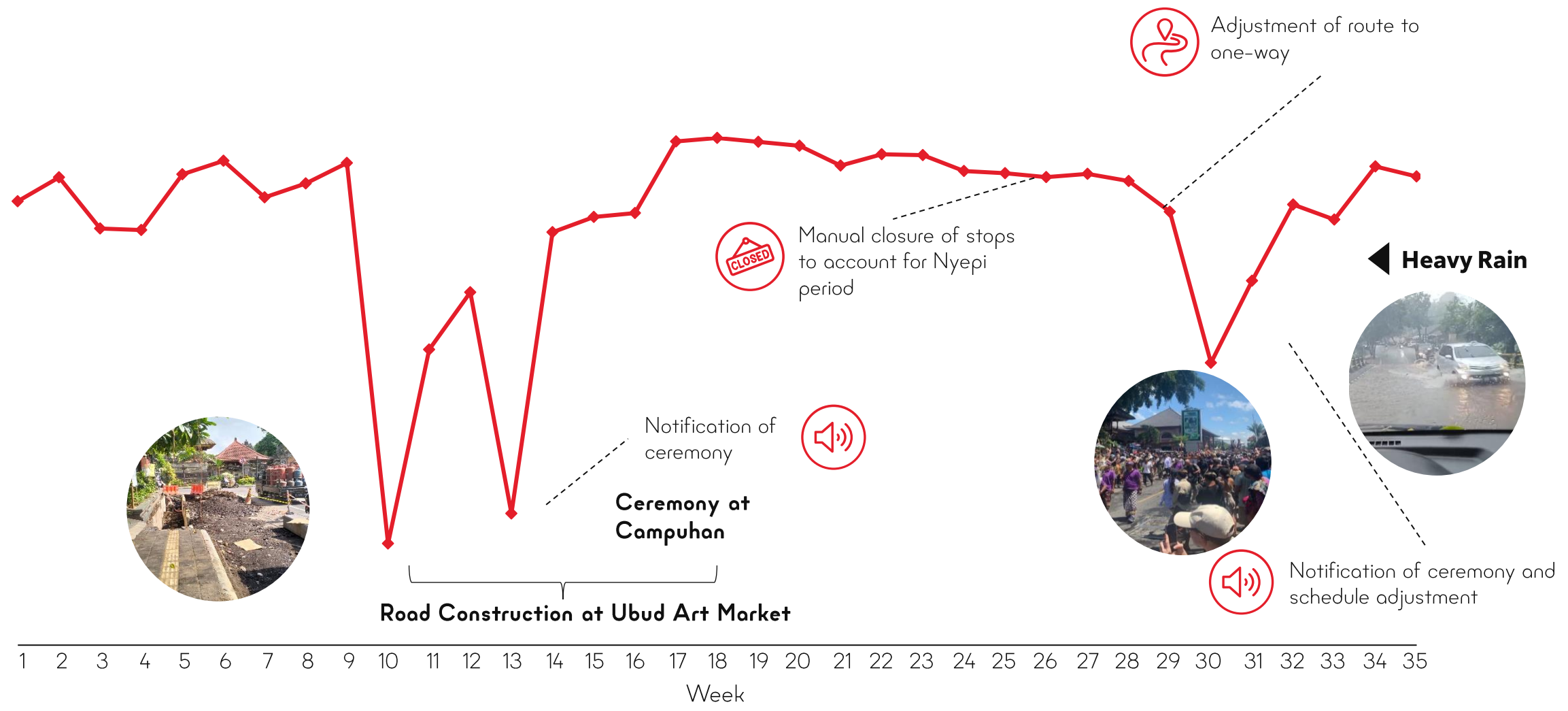
Top Drop-off Locations



2

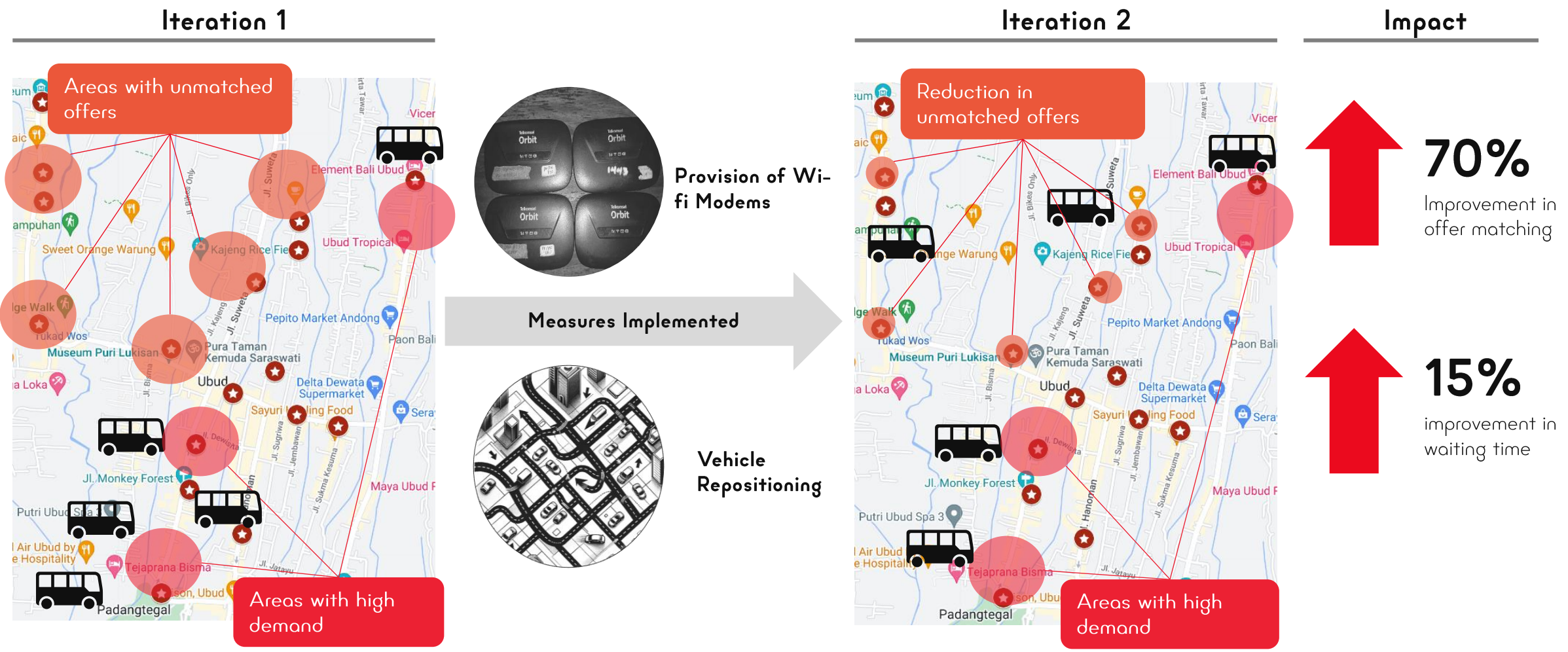
Software Limitations

- Human intervention still required due to algorithm limitations in adapting to disruptions from local events and inclement weather



3 Data-Driven Operational Adjustments

Improvement in service availability made possible through analysis of unserved demand



Note: Unmatched offers are customer orders that cannot be met due to distance/lack of signal from drivers

4

Identification of Suitable Powertrain

HEV identified as suitable vehicle given operational downtime and infrastructure required for BEV

Number of available units + additional cost

Vehicle Hours in Operation vs. Charging

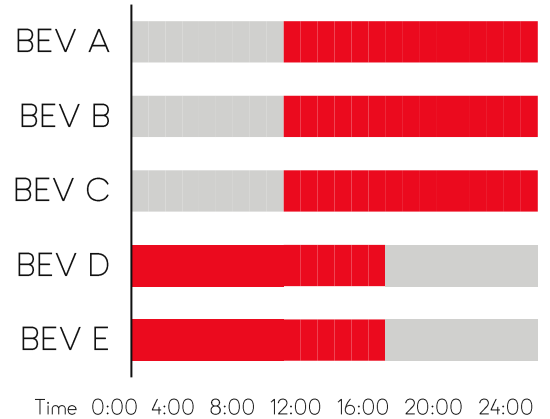
Charging time
Operational time

Downtime per vehicle and Total Operational Hours per Vehicle

BEV Usage with Slow Chargers



3 existing connectors in Ubud



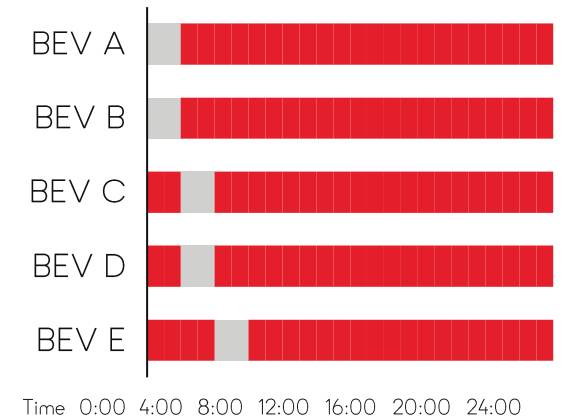
Time 0:00 4:00 8:00 12:00 16:00 20:00 24:00

9 hours average charging downtime;
70 operational hours per week

BEV Usage with Fast Chargers



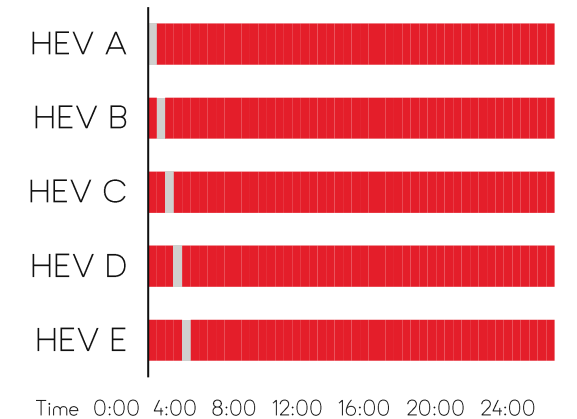
Simulation using 2 connectors, Additional Cost of ~USD 35,000



Time 0:00 4:00 8:00 12:00 16:00 20:00 24:00

2 hours average charging downtime;
100 operational hours per week

HEV Usage With regular refueling



Time 0:00 4:00 8:00 12:00 16:00 20:00 24:00

5 minutes average refueling downtime;
120 operational hours per week

In addition to longer operating hours, for over **60%** of its operations during the SMART Program, HEVs operated at **Zero Emissions**

Note: Range of EV vehicles did not match driving distance per day, requiring charging (and wait time due to infrastructure availability)

5

Enhancement in Public Transport

- ❑ Opportunity for further congestion reduction through promotion of public transportation

Barriers to TMD Usage

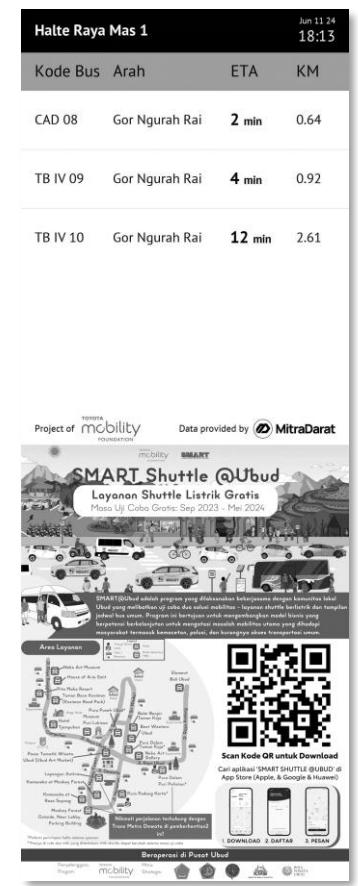
Lack of Awareness
Lack of accessible information on bus schedules

Lack of Last Mile Connectivity
Lack of vehicle to transport riders from TMD stop to next destination

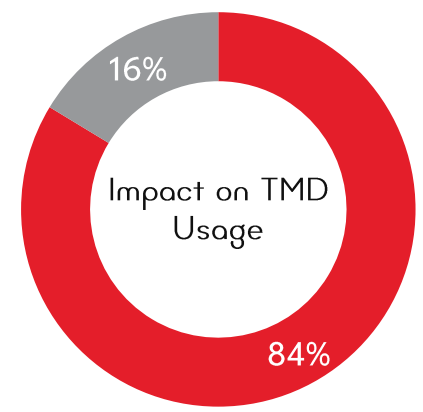
Limited Access Card Availability
Card required to access TMD unavailable at designated locations

Implemented Solution

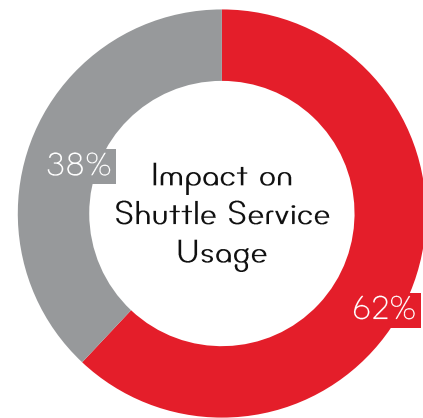
Dynamic Bus Schedule Display



Customer Insights



84% of the survey respondents indicated that digital signage would increase their usage of TMD, **decreasing the number of vehicles entering Ubud**



62% of surveyed individuals who have viewed the display expressed interest in **utilizing a shuttle service for transportation from/to TMD stops**

6

Importance of Shared Understanding

- Program success enabled by development of mutual understanding and securing cooperation of all stakeholders towards achievement of shared goal of sustainable mobility



National / Provincial Government

Program Endorsement towards community

Ubud District

Shuttle stop approvals, socialization with local drivers

Collaboration to Realize Sustainable Mobility

Solution Partners

Installation of charging infrastructure, provision of operators and drivers, etc.

Local Businesses

Shuttle stop installation, provision of POI's



6

Ensuring Customer Satisfaction

- Building staff capability to ensure service quality and increased customer satisfaction

Developing Staff Capabilities

Holistic training conducted

on:

- Operational guidelines
- Code of conduct
- Software training



Allowing for Improved Customer Experience



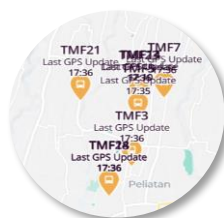
Superior Customer Service

- Providing hospitable service to guests to ensure maximum satisfaction



Local Insights Enhancing Tourist Experience

- Answering customer inquiries and providing information on locale

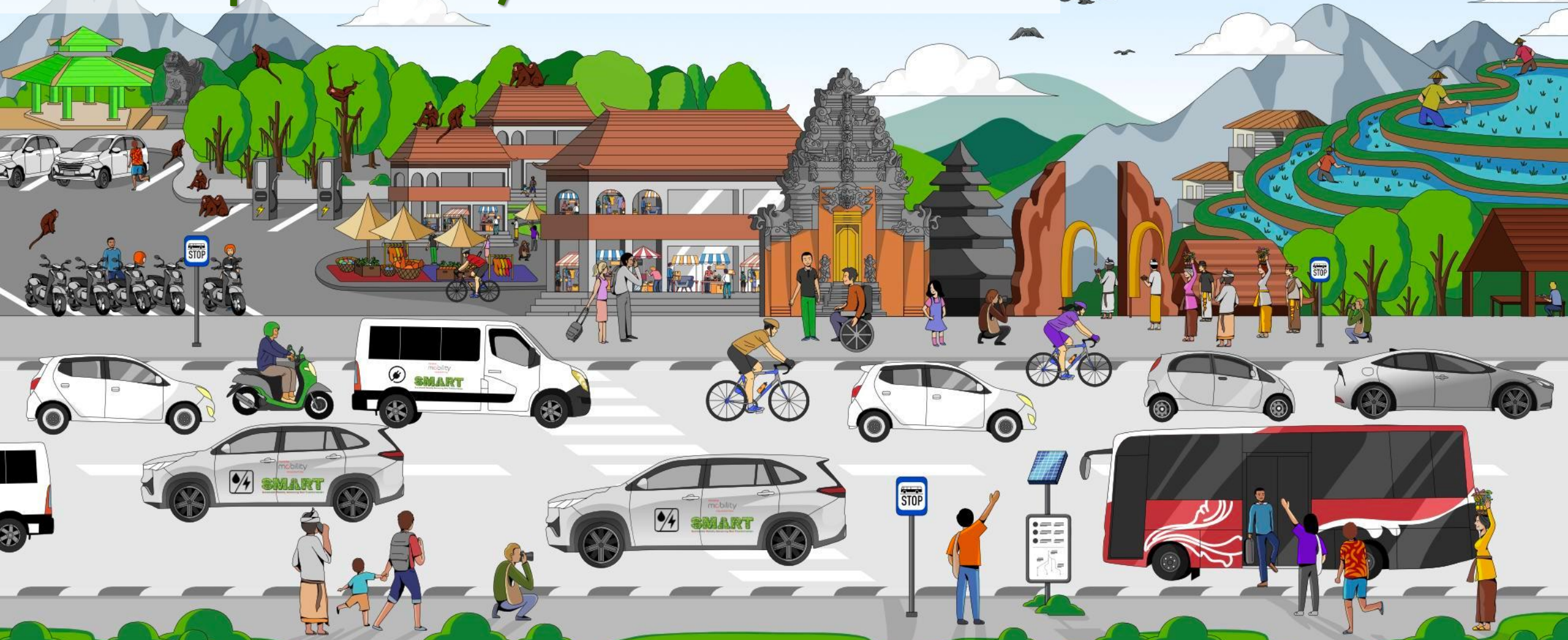


Timely Service Monitoring and Issue Resolution

- Ensuring supply is available at high-demand areas
- Managing customer complaints and post-ride issues (e.g. forgotten items)



Chapter 1. Playbook Introduction



Introducing the Business Model Playbook

- As a result of its SMART@Ubud Program the Toyota Mobility Foundation developed this playbook to allow readers to understand, design, and potentially implement sustainable mobility solutions



WHAT THIS PLAYBOOK OFFERS

- Business Model Framework
- Guidelines
- Templates



WHO CAN BENEFIT

- Business Owners
- City Planners
- Transport Players
- Academics

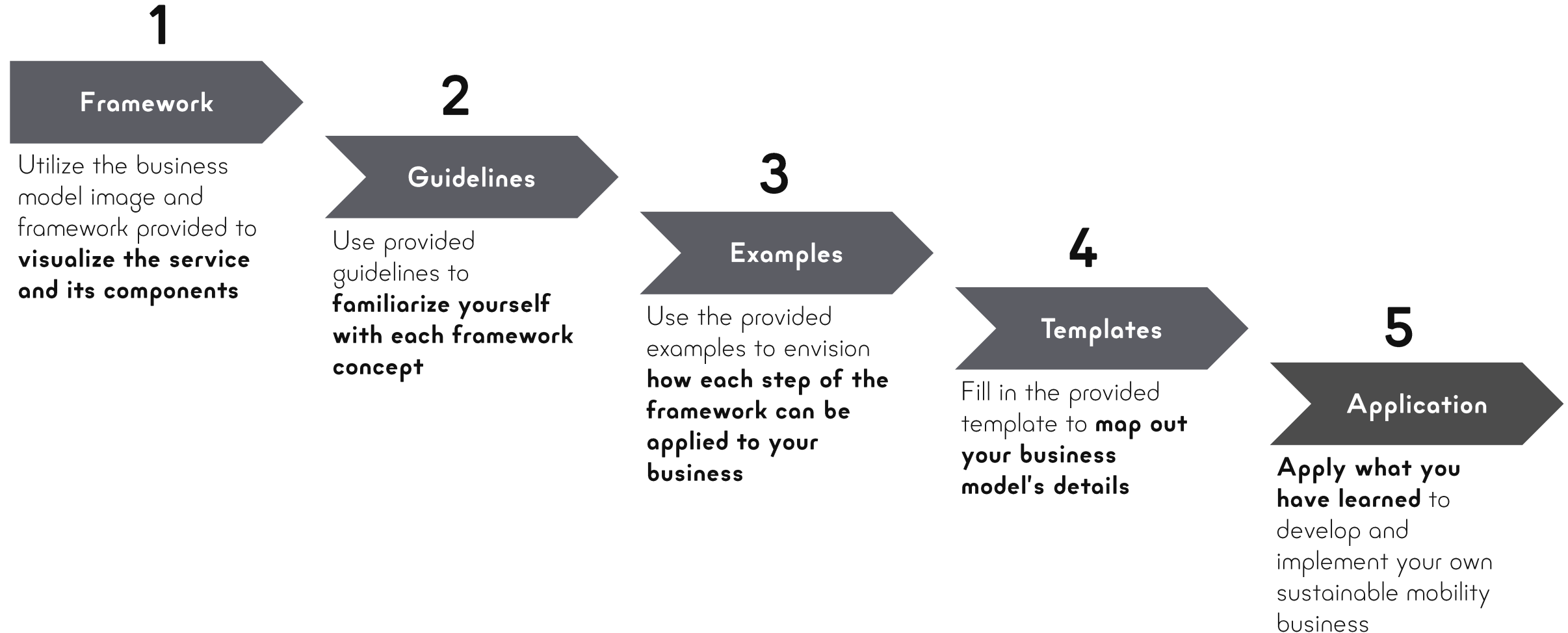


WHAT CAN BE GAINED

- Framework on developing and implementing sustainable mobility solutions
- Templates to guide potential program design

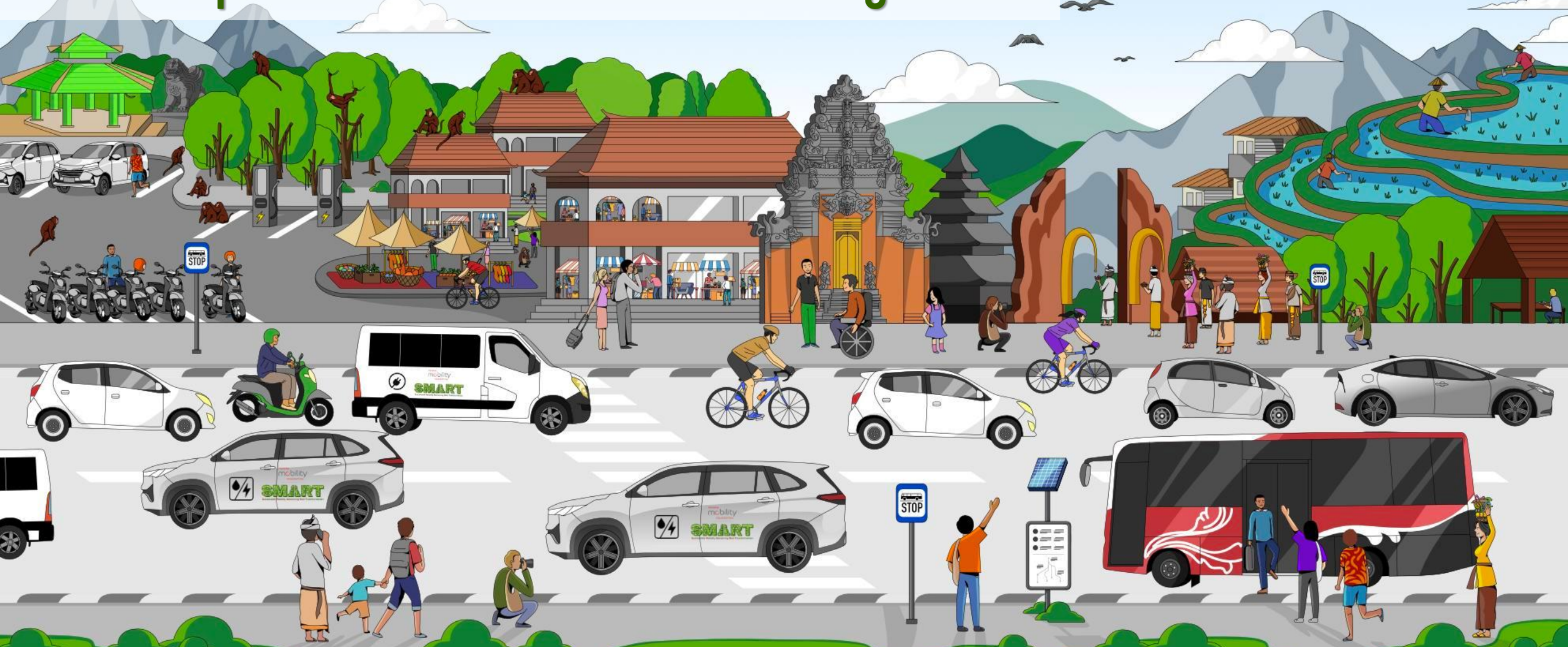
How to Use This Playbook

- ❑ Utilize the playbook's guidelines, examples on applications to xEV shuttle service, and its templates to design your own sustainable mobility-based business model





Chapter 2: Business Model Design



Approach to Business Model Design

- Two-phase approach including business model design and implementation used to ensure model feasibility and sustainability

BUSINESS MODEL DESIGN

IMPLEMENT AND ITERATE

Assess Situation



- Perform an **initial study of key locations** with similar conditions (congestion, etc.)
- Perform a preliminary **feasibility study**
- Identify **potential partners**

Develop Solution



- Create and refine solution from **initial study**
- Collaborate with the **local community** to refine solution to **identified needs** (workshops, seminars, etc.)
- Get initial feedback from **potential users**

Secure Funding



- Identify and secure investment from **potential investors**
- Identify **potential sponsors** (e.g., local businesses interested to be customers)
- Identify **potential subsidies** from **local government**

Trial and Monitor



- Initiate **trial phase**, replicating proposed solution
- Obtain **data on usage, trends, customer satisfaction, and feedback**
- Refine solution in **iterations**

Scale



- **Finalize** solution, collaborating with **sponsors, users, and local community**
- Identify **further funding and partners**
- Scale up to **other regions** in the key locations

Business Model Design Framework

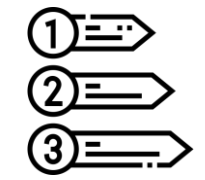
- Our framework focuses on a business's customers, required resources, partnerships, marketing strategy and financials to allow you to have a holistic approach towards business model design

Customer	Target Customers	Target customer segments for business's products
	Service Area Selection	Determining appropriate service area for business model
	Value Provided	Value provided by business model towards customers
Resources	Hardware	Key hardware resources required for operation of business model
	Software	Software required for operation of business model
Partnerships	Strategic Partners	Collaborative partnerships to support in development and implementation of business
	Vendors	Suppliers for key resources required for business operations
Marketing	Framework	How the company reaches out to its customers to sell its service
Financials	Cost Structure	Costs incurred to enable business model operations
	Revenue Streams	The different types of revenue generated from direct/indirect business customers

Customer

Understanding Customer Segments

- Based on the identified service area, identify your potential customer segments, their pain points and how these can be addressed



Identify **potential customer segments** to target for business



Identify **what requirements/goals** your customers are trying to achieve



Identify **challenges/pain points** that your customers may face in meeting their requirements



Identify **potential benefits** your customers may obtain through your business model



Prioritize customer segments based on importance of needs, pain points and potential value added

Potential Customer Segments

- Travelers, employees, & students are potential customer segments that can benefit from a shuttle service due to their respective mobility needs



Travelers

Employees

Students

Customer Needs

- Transport to tourist destinations
- Transport to residences

- Transport to offices
- Transport to residences

- Transport to schools
- Transport to residences

Customer Pain Points

- Lack of available public transportation
- Difficulties booking transport due to language barrier

- Limited last mile transport from available public transportation
- Difficulties obtaining transport for return commute

- Limited safe transport options for younger students
- High relative cost of transport for students

Potential Value Added for Customers

- Shuttle service facilitating travel to well-known locations
- Flexible booking timing to provide freedom of transport

- Available shuttle service facilitating office transport
- Linkage to public transport touchpoints

- Readily available shuttle service facilitating school transport
- Safe transport to assuage parent concerns

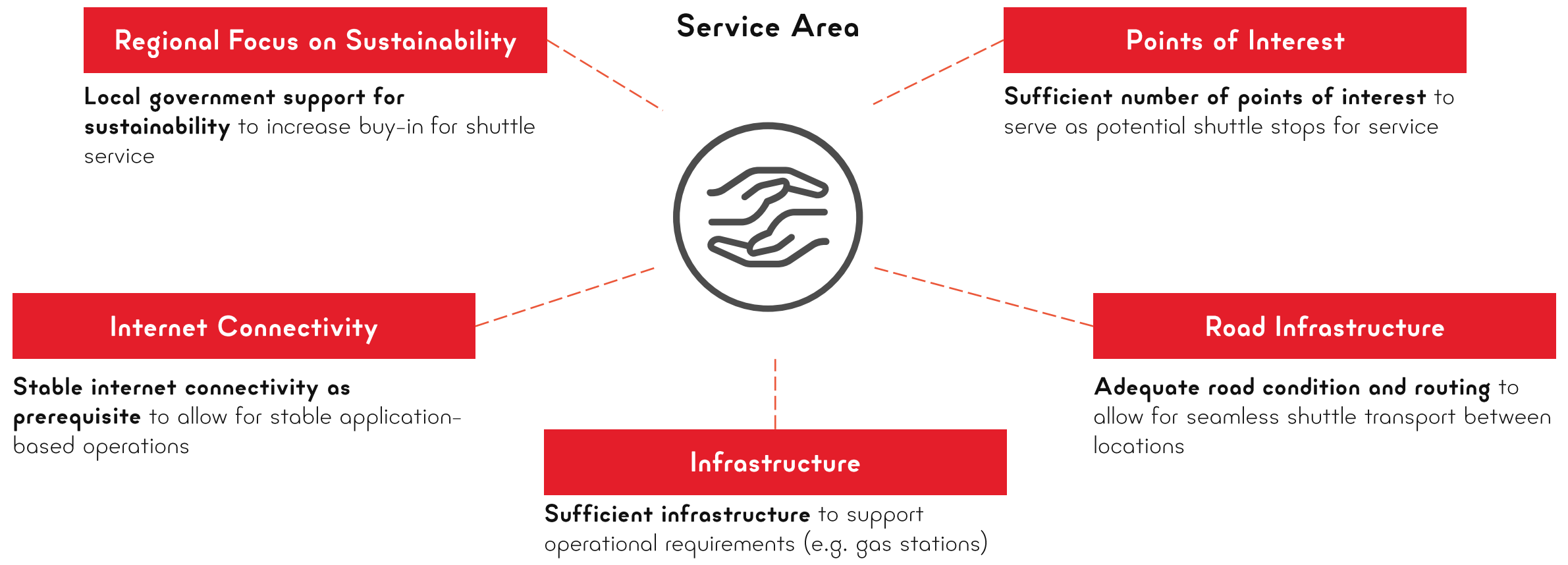
Template: Customer Segments

Use the template below to identify potential customers to be served by your business

Customer Segment	Needs to be Met	Pain Points	Potential Value Added	Priority
Example: Schools	<ul style="list-style-type: none"> Transport for students to and from school area 	<ul style="list-style-type: none"> High cost of transport for students Potential safety concerns for independent travel for younger students 	<ul style="list-style-type: none"> Added free facility for students to travel to and from school Safe means of transport 	Guideline: Determined based on importance and ability of business to meet requirements <ul style="list-style-type: none"> Medium

Selecting a Service Area

- ❑ Selecting your shuttle service's operational area requires careful consideration of factors such as available infrastructure, and determines the expected customer segments for the business



Selecting your Shuttle Stops

- Select your shuttle stops with identified customer needs and public transport linkage in mind, ensuring that the key mobility needs of your customer segments are met

Guidelines



Area Demand Identification

Pinpoint **high-demand areas** based on **identified customer segments** of service areas and **potential public transport linkage**

Identified by using on-ground surveys, interviews, statistical data, route data from map services



Public Transport Connectivity

Linkage **with existing public transport (minimizing overlap)** to position shuttle service as **last mile solution**

Examples of Potential Stops

1

Tourist City

Key tourist attractions and hotels



Oberoi Beach Resort



Ayana Komodo Resort



Monkey Forest



Borobudur Temple

2

Industrial/ Commercial City

Factories/ offices, residential areas, and public transport terminals



Bundaran HI



Harmoni



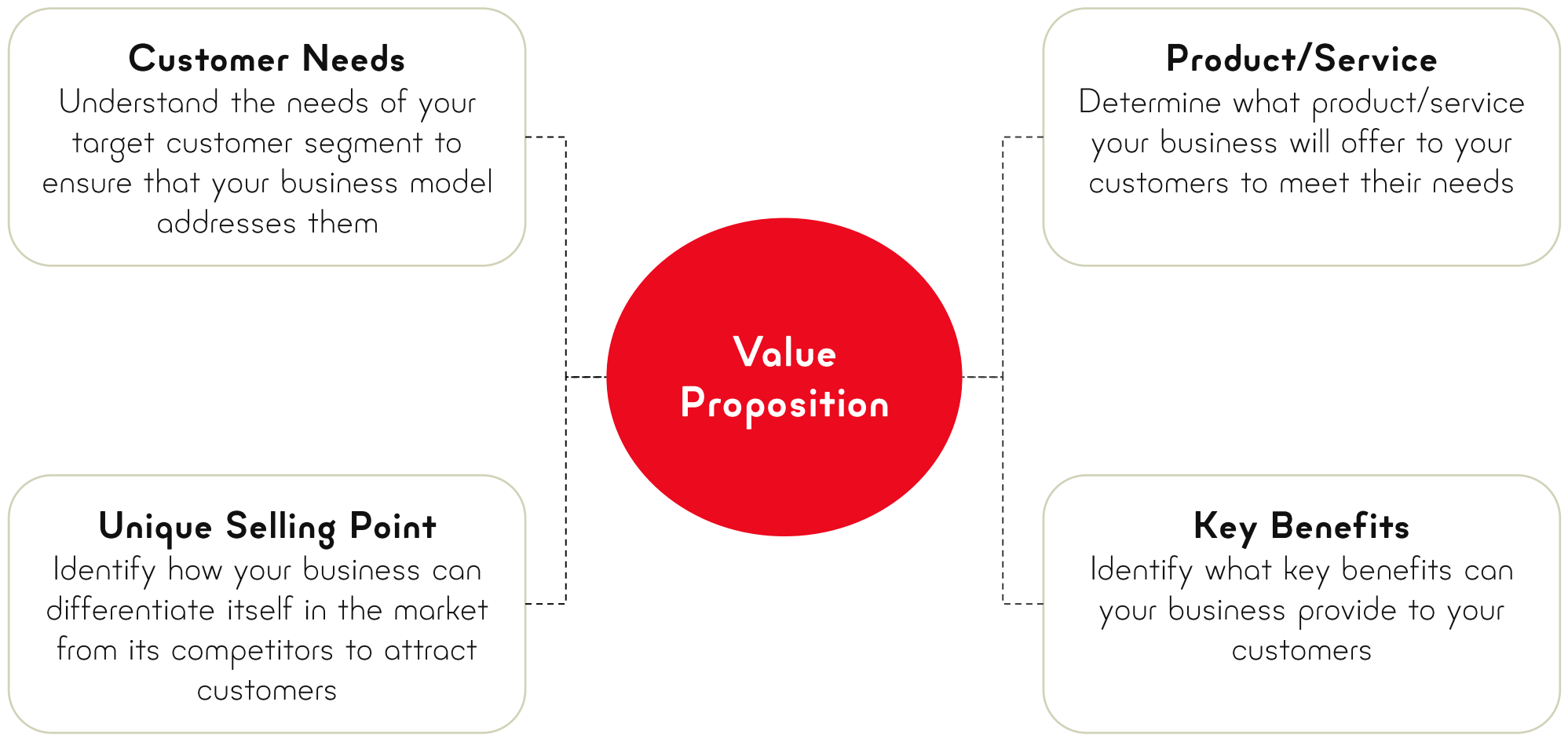
Karawang



BSD City

Forming your Value Proposition

- ❑ A successful value proposition allows your business to provide the right product with the right benefits to meet customer requirements



Tips to Develop your Value Proposition

☐ Utilize the following guidelines to further verify your value proposition to ensure business feasibility



Does it focus on the most crucial **needs**, major **pain points**, and essential **value added**?



Does it concentrate on only a **few** pain points and value added yet **does so particularly well**?



Does it address **functional, emotional, and social needs** simultaneously?



Does it align with how customers **value success**?



Does it focus on the needs of **many** customers, or **fewer** customers **who are willing to pay more**?



Is it **differentiated** from its competitors in a meaningful way?



Is it **significantly competitive** on at least one dimension?



Is it **difficult to copy**?

Template: Value Proposition

- ☐ Use the template below to develop your value proposition, ensuring that it meets your customers' needs and stands out amongst its competitors

<p>Customer Needs <i>What requirements need to be met from a customer perspective?</i></p>	<p><i>Example:</i></p> <ul style="list-style-type: none"> <i>Tourists: Transport from accommodations to tourist locations and vice-versa</i>
<p>Product/Service <i>What can you offer to meet your customer's needs?</i></p>	<ul style="list-style-type: none"> <i>App-enabled shuttle service operating on-demand and along fixed shuttle stops</i>
<p>Key Benefits <i>How does your service benefit your customers?</i></p>	<ul style="list-style-type: none"> <i>Sustainable mobility solution to facilitate transport</i> <i>Readily available mobility solutions catered to destination hot spots</i>
<p>Unique Selling Point <i>What makes your value proposition unique?</i></p>	<ul style="list-style-type: none"> <i>Vehicle fleet dedicated to serve specific area to support mobility needs and provide customers with required transport information</i>



Resources

Capabilities Required

- ❑ To allow for smooth service implementation and operation, the following operational, communication and stakeholder management capabilities should be fulfilled by the business's human resources

Key Capabilities	Operations	Data	Routine data analysis and anomaly monitoring
		Driver	Driver hiring, training and scheduling
		Fleet	Vehicle maintenance, rescheduling and repairs
		Service Adjustments	Modification of shuttle stop & service schedule based on on-ground conditions
		Technology	Development and operation of system to manage service
	Marketing & Communication	Customer Service	Management of customer inquiries and complaints
		Digital Marketing	Social media content development and distribution
		Physical Marketing	Physical media development and placement, & on-ground socialization
	Stakeholder Management	Local Community	Communication with local government, businesses and community
		Vendor	Timely payment and coordination with vendors to resolve issues

Guidelines for Staff Operations

- The following guidelines serve as a baseline to ensure that your service's drivers and operators can maintain service levels and customer satisfaction

Driver



Prerequisite

- Install mobility application on phone
- Understand and memorize shuttle route



Operations

- Standby at before and within working hours
- Perform tasks within working hours
- Return vehicle at the end of shift and ensure vehicle is ready for the next day
- Daily incident reporting



Customer Interaction

- Assist and interact with customers politely
- Encourage customers to fill in survey



Equipment Maintenance

- Maintain vehicle cleanliness and condition
- Ensure all equipment are running during operations and report issues
- Wash uniform daily and keep it undamaged

Operator



Prerequisite

- Install mobility application on phone
- Understand and memorize shuttle route



Operations

- Standby at before and within working hours
- Monitor driver and ensure they are operating within designated area and hours
- Daily incident reporting



System Mgmt.

- Manage driver and customer accounts
- Perform trouble shooting in case of system issues



Issue Mgmt.

- Receive query and perform issue resolution
- Proactively report issues observed during operations



Equipment Mgmt.

- Maintain condition of equipment and report issues to upper management
- Wash uniform daily and keep it undamaged

Template: Designing your Solution

☐ Use the template below to determine the hardware and software requirements most suited for your business model

Hardware

Vehicle Type *Example: Mini-van*

Vehicle Model *Example: Hiace*

Required Features

Example:

- Capacity of 8 passengers
- Sufficient battery life to operate over 12 hours

Required Prerequisites *Required Prerequisites*

Software

Software Type *Example: Mobile application*

Operating System *Example: Android, IOS, web app*

Required Front-End Features

Example:

- Account registration
- Order booking function
- Real-time GPS tracking for vehicles
- Payment function

Required Back-End Features

Example:

- Order management function
- Account management function
- Vehicle tracking function
- Customer service



Partnerships

Selecting the Right Partners

- Identifying the right partners, from strategic partners to vendors, starts from understanding what your business requires so that you can develop the right criteria and select appropriately



- Engage stakeholders and study hypothesis to understand pain points
- Recognize lacking linkage to important stakeholders (e.g., local government)



- Identify potential partners with local expertise and suitable experience
- Establish a communication to assess suitability and align on goals
- Perform due diligence



- Establish a trial to test out partnership and assess cultural fit
- Initiate touchpoints for feedbacks
- Make necessary adjustments



- Given that the partner is suitable, establish contractual and legal terms
- Negotiate for a mutually beneficial terms (scope of work, termination, etc.)



- Continue partnership with regular reviews
- Adjust behavior or approach accordingly
- Consider more partners if deemed necessary

Potential Shuttle Service Partners

- Potential shuttle service partners include strategic partners and solution vendors, providing support throughout the implementation process and key operational resources respectively



Strategic Partners

Non-transactional partners aligned with business model vision, enabling the implementation of the business model through means such as regulatory support and socialization.



Solution Vendors

Transactional partners providing the required equipment/services for the business model to operate effectively.



Local Government

Collaboration with local government through supporting existing sustainability initiatives



Local Community

Collaboration with local community to ensure business model fit within local ecosystem



Business Associations

Collaboration with local associations to promote service and identify partners interested in sustainability



Hardware

Vendors supplying required hardware such as:

- Vehicles
- Required Infrastructure



Software

Vendors to develop required software:

- App
- Back-end Database
- Dashboard
- Web Portal

Leveraging the Local Community

- ❑ The local community may serve as a potent strategic partner, capable of supporting the business from its design phase up to actual implementation through collaborations with local businesses

Involvement in Service Design



Collaboration with local government to align with existing sustainable mobility initiatives and obtain support for service implementation



Initial socialization of service to community to ensure acceptance and encourage local usage of service



Local hiring to provide economic benefits to local community and ensure knowledge of service area



Incorporation of community feedback on shuttle stop locations and operational considerations

Involvement in Service Operations



Partnerships with local businesses (restaurants, transport agencies, hotels) to provide exposure and potential promotions upon shuttle usage



Transport integration with local transport players, providing interconnected transport ecosystem for service users



Service benefits (e.g. discounts) to students or elderly in the community to encourage usage and instill sustainability mindset



Feedback loop to optimize service performance and operational considerations

Sample Vendor Selection Criteria

☐ We have provided 5 potential criteria to help you select the right vendors to develop your business

5. FEASIBILITY (COST & TIMELINE)

The partner provides a decent cost estimation, able to communicate in a timely manner and meet the project timeline

1. COMMERCIALIZATION STAGE

The solution has been sufficiently established - having already been commercialized, ready for go-to-market, and sustainable in long term

4. FIT TO BUSINESS VALUES

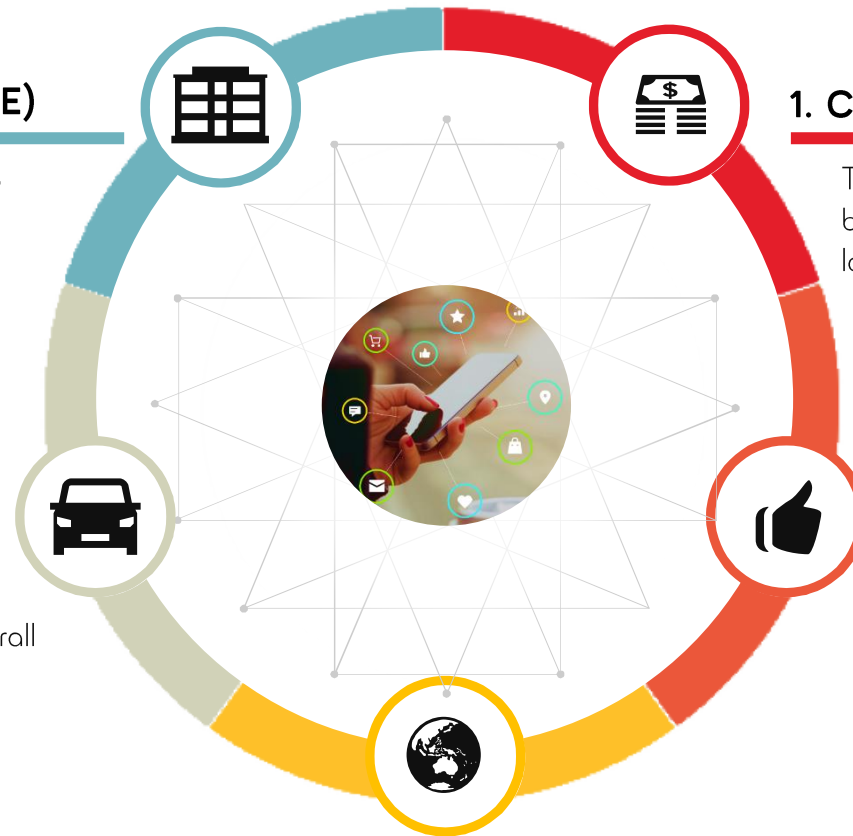
The partner entity aligns with business vision and objectives, able to provide benefits to society and overall ecosystem

2. FULFILLMENT OF BUSINESS REQUIREMENT

The solution covers the requirement of the program and utilizes technology that is not only feasible but also innovative & cutting edge

3. FOOTPRINT IN SERVICE AREA

The partner entity has a base in identified service area or has the capability to implement the solution and expand further within the region





Marketing

7P Marketing Framework

- ❑ Focusing on each of the 7P elements will enable us to enhance our offering, thus gaining a competitive advantage over other similar service providers

Framework

Product	Create a product/service to meet the demand of the target market
Price	Determine the cost of the product/service and its perceived value
Place	Decide how and where the product/service will be delivered to customers
People	Focus on the individuals involved in the product/service delivery process
Promotion	Communicate the product/service benefits to persuade customer to make a purchase
Process	Define the procedures and systems used to deliver the product/service
Physical Evidence	Provide tangible elements to reassure customers of the product/service's quality and reliability

Tips to Apply 7P

<p>Focus on highlighting unique benefits or features</p>	<p>Develop a promotional plan that uses a mix of channels</p>
<p>Consider offering various pricing models such as subscription fee, daily/single ride pass</p>	<p>Invest in high-quality physical touchpoints</p>

Potential Marketing Channels

- ❑ Through understanding your customer's characteristics, the appropriate marketing channels can be identified to help your business reach them



Direct Outreach

- Direct approach towards selected potential partner businesses (e.g. hotels) through **cold calling & physical visits**
 - Targeted approach facilitating relationship building with potential clients

Digital Advertising

- Advertising of shuttle service through targeted digital ads, utilizing channels such as **LinkedIn or Google Ads**
 - General approach allowing for expanded targeting, minimizing need for initial identification.



Email Marketing

- Targeted advertising of shuttle service through **advertising emails**
 - Targeted approach requiring initial development of mailing list, reducing costs required for physical visits

Print Advertising

- Advertising of shuttle service through print ads, capturing consumer attention in **high-traffic areas**
 - Use interactive elements like QR codes to drive digital engagement



Reward Programs

- Reward program implementation to incentivize repeat purchases such as **Referral Program, Loyalty Card**
 - Offering an effective reward program can strengthen customer relationships

Template: Selecting the Right Channels

Use the template below to evaluate potential marketing channels for your business

Channel	Description	Target Audience	Advantages	Disadvantages
<i>Example: Digital Marketing</i>	<i>Advertising of shuttle service through targeted digital ads</i>	<i>Tourists</i>	<ul style="list-style-type: none"> • <i>Wider reach</i> • <i>Targeted advertising</i> 	<ul style="list-style-type: none"> • <i>High competition</i> • <i>Complexity</i>

Financials

Understanding Costs for Shuttle Service

- The implementation of an xEV shuttle service will involve a variety of cost components ranging from vehicle purchases to potential supporting equipment such as phones for admin usage

1 Capital Expenses

Non-Current Assets

Fixed Asset

- Vehicle unit purchase & customization

Intangible Asset

- Application (development and integration cost)

2 Operating Expenses

Cost of Service

Labor Wages

- Driver wages
- Operator wages

Fuel Costs

- Refuel costs

General & Administrative Expenses

Location Costs

- Office rent
- Parking costs
- Office utilities

Operational Support

- Admin phone
- Vehicle modems

Maintenance

- Vehicle maintenance
- App maintenance

Selling Expenses

Marketing

- Digital marketing (social media campaigns, digital advertising)
- Physical marketing (banner, flier etc.)

Cost Considerations – Vehicle & Infrastructure

- ❑ Parking fees, insurance and security systems are among the potential costs to be considered from a vehicle & infrastructure perspective

Potential Cost Considerations



Operational Support

Cost needed for daily operation including GPS units, communication devices, data plans and connectivity, maintenance and replacement



Maintenance, Spare Parts, and Upgrade

Costs for replacement/spare batteries, parts, and costs associated with vehicles and infrastructure



Parking Facilities

Payment to establish secure parking locations for shuttles when not in use



Advanced Safety and Security System

Costs incurred for installation of security-related measures such as security cameras in shuttles for passengers' and drivers' safety



Insurance and Licensing

Coverage for the vehicles, drivers, and passengers as well as fees for necessary permits to operate the service



Marketing and Promotion

Additional costs may be incurred for vehicle wrapping customization to meet specific branding needs

Cost Considerations - Application

- ❑ Besides application development, additional software costs such as integration fees and required server infrastructure must be considered from a software perspective

Potential Additional Costs



Backend Infrastructure

Costs needed for the supporting application to run smoothly, potentially including server hosting, database management, among others



Third-Party Integration

Including third-party integrations, such as payment gateways or public transport APIs, may incur additional costs for licenses or API usage fees



Security Features

Costs to ensure application data and account security such as implementing encryption, two factor authentication, etc.



App Store Costs

Payment to keep app downloadable from app store platforms, which may include initial submission, updates, and hosting charges



Maintenance and Updates

Costs incurred to keep the app free of bugs and issues, including engineering support wage and server costs among others

Template: Cost Structure - CAPEX

Fill in the template below to identify the expected amount of initial investment required for your xEV shuttle service

Cost Item	Description	Cost per Unit	Quantity	Total Cost	Useful Life (years)	Depreciation per Year
Vehicle	Cost of vehicle purchase and customization					Total cost / useful life
Application	Cost of application development					
Total Cost						

Note: Cost items are non-exhaustive and may differ depending on respective business models

Template: Cost Structure – OPEX (1/2)

Fill in the template below to identify the potential monthly COGS required for your shuttle service

Category	Cost Item	Description	Cost per Unit	Quantity	Total Cost
COGS	Driver Wage	Wage for shuttle service drivers			
	Operator Wage	Wage for service operators			
	Application Maintenance	Cost for monthly application maintenance			
	Fuel	Estimated monthly fuel usage			
Total Cost					

Note: Cost items are non-exhaustive and may differ depending on respective business models

Template: Cost Structure – OPEX (2/2)

Fill in the template below to identify the potential SG&A expenses required for your shuttle service

Category	Cost Item	Description	Cost per Unit	Quantity	Total Cost
Selling & Marketing Expenses	Sales Wage	Wage for sales staff			
	Physical Marketing	Cost of physical marketing tools (e.g. banners, fliers)			
	Digital Marketing	Cost of digital marketing (e.g. social media posts)			
General & Administrative Expenses	Office Rent	Monthly rent for business office			
	Utilities	Monthly utility cost for office (e.g. water, electricity)			
Total Cost					

Note: Cost items are non-exhaustive and may differ depending on respective business models

Primary Revenue Streams

- Understand your business model's market conditions to select the appropriate revenue streams, with options ranging from transaction-based revenue to recurring revenue



Transaction Based Revenue

Proceeds from sales of goods that are usually one-time customer payments



Service Revenue

Generated by providing service to customers and are calculated based on time



Project Revenue

Revenues earned through one-time projects with existing or new customers.



Recurring Revenue

Ongoing revenue for continuing services/ after-sale services including subscription fees, advertising fee, etc.

Secondary Revenue Streams for Shuttle Service

- ❑ Secondary revenue streams such as advertising and commissions from interested businesses can supplement your shuttle's primary revenue stream



Revenue



In-App Advertising

Advertising fee to be **featured on the supporting app** depending on an **agreed upon variable** (e.g., Cost per Click, Cost per Mile, per advertisement, etc.)



On-Vehicle Advertising

Advertising fee to have business logo **on vehicle sticker** depending on an **agreed upon variable** (e.g., per month advertised, per logo, etc.)



Shuttle Stop Commission

Commission fee to make business location **one of the offered stops** for the shuttle service, which could be incurred **one-time** or **recurring with a flat or variable rate**

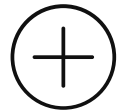
Selecting the Right Pricing Strategy

- ❑ Determining the appropriate pricing for each revenue stream is crucial in maintaining business competitiveness

Pricing Strategy

Pricing Model

Least to most adjustable



Cost Plus Margin Pricing Strategy

Adding a set markup to a given cost level



Competitive Pricing Strategy

Setting price based on competitors pricing, adjusted based on offering features



Price Skimming

Setting price to its maximum price and making adjustments as needed



Penetration Pricing

Enter market with attractive price, increasing it along with market share



Value Pricing Strategy

Price setting based on understanding of customer value

1 Flat Rate



One Time

One-time sum payment



Recurring

Payment for each period of service

2 Consumption Based



Unit

Certain sum paid for each unit



Tier

Differing price per tiers with different usage, features, or quantity – higher price for higher tier



Volume

Differing price depending on quantity – lower price for higher quantities



Coverage

Additional fee for amounts over a certain limit

Template: Revenue Streams

Use the template below to map out potential revenue streams and their contributions towards overall business revenue

Revenue Stream	Stream Type (Primary/Secondary)	Description	Enablers to Implement	Projected Pricing	Projected Year on Year Growth
<i>Example: Ride Fee</i>	<i>Primary</i>	<i>Charge per ride per person</i>	<i>Payment integration to provide multiple payment options</i>	<i>~USD 1 per ride per customer</i>	<i>5%</i>

Business Model Design Tips

- Upon completing the templates from this section, use the following questions to further assess your business model design and determine its feasibility before committing to implementation



Customer Loyalty

How easy is it for customers to switch to competitors?



Recurring Revenues

Is every sale a great effort, or will it result in semi-guaranteed follow-up revenues and sales?



Earnings to Spending

Are revenues earned before costs are incurred?



Competitive Cost Structure

Is the cost structure unique and competitive?



Cost of Value Creation

How much does the business model get customers or affiliated parties to create value for free?



Scalability

How easy is it to expand or grow the business?

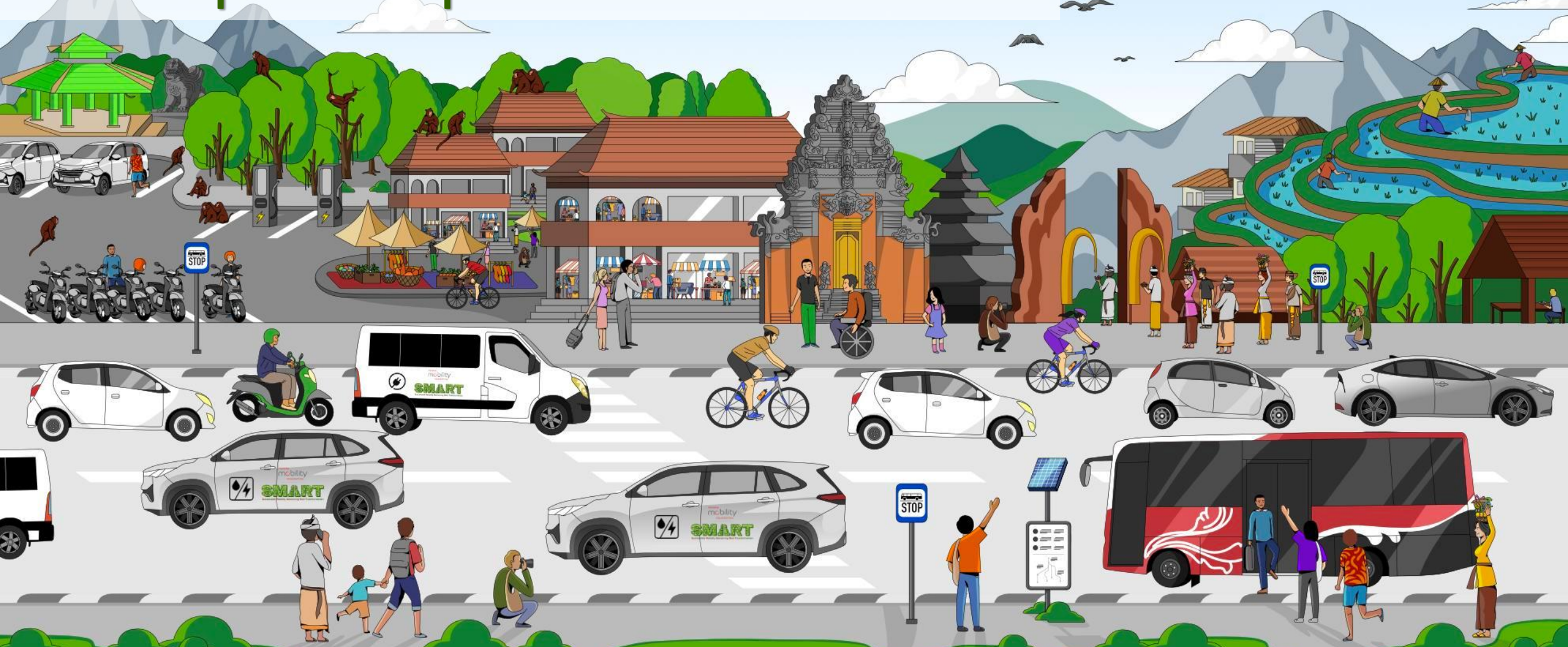


Protection from Competition

How much is the business model protecting you from competition?



Chapter 3: Implementation & Iteration



Standard Implementation Approach

- ❑ A product-based approach in business model implementation will allow you to evaluate and build upon your business' strengths and weaknesses, ensuring product viability and growth



- 1 Create Initial Hypothesis**
Identify pains to be addressed and create an initial plan
- 2 Create and Test Initial Prototype**
Create a very limited trial to proof feasibility of concept with a test group (e.g., single route shuttle service)
- 3 Make Necessary Adjustments**
Adjust service based on customer input

- 1 Create Testing Measures**
Determine small-scale trial version of service, with simple operational and technical aspects and testing KPIs
- 2 Implement Trial**
Perform market trial to gather feedback and input on prototype version

- 1 Create Minimum Viable Product**
Scale up to a wider scope and more fleshed out operations, enough to get initial customers
- 2 Obtain Initial Adopters**
Introduce MVP to targeted customer segment and test service viability/ attractiveness
- 3 Adjust through Iterations**
Create new iterations with adjusted services based on feedback

- 1 Continuous Improvements**
Improve business models based on insights gained
- 2 Adjust Marketing and Pricing**
Utilize an adjustable customer acquisition and pricing strategy based on gathered data
- 3 Customer Acquisition**
Introduce product/ services to wider markets

Tip! Principles of Testing

- ☐ Use the following considerations during business model implementation to ensure the right inputs and outputs are considered throughout the process



Evidence over opinions

Initial hypotheses can be disproven by evidence



Learning from mistakes

Minimize risks by creating trials where mistakes are not costly and time consuming



Prioritize testing

Gather initial insights with early and less costly experiments before adding more details



Experiments differ from reality

Experiments are merely an indicator yet will differ from reality



Balance learnings and hypothesis

Integrate test outcomes yet stay consistent to the original vision



Recognize idea hurdles

Evaluate key assumptions that could potentially undermine idea



Understand customers

Test customer needs, pain points, and benefits before testing solutions



Ensure insight measurability

Ensure measurable learnings to ensure it is actionable and impactful



Mind reliability of facts

Different sources might differ in opinion, thus reliability must be considered



Test irreversible decisions

Ensure that decisions that have an permanent impact are particularly well informed

Risk Assessment

- ❑ Thorough risk assessment should be performed before committing to implementation, assessing risks based on impact, likelihood, vulnerability & velocity

Risk Assessment Criteria

Impact

Measures the **impact** of a risk event on an enterprise, including financial, reputational, regulatory, health, safety, security, environmental aspects, etc.

Likelihood

Represents the **chance of an event occurring**, described qualitatively (frequent, likely, possible, unlikely, rare), as a percentage, or by frequency

Vulnerability

Indicates an **entity's susceptibility to risk** based on its preparedness, agility, and adaptability, helping in assessing risk management effectiveness

Velocity

Refers to the **time between a risk event and when its effects are first observed**, critical for developing effective risk response plans

Risk Response



Improvement of **internal controls**



Focused **training** for areas of vulnerability



Increased **monitoring frequency or scope**



Collaboration to harness strengths and capabilities

To ensure effective execution of risk responses:

- Consider the **costs**
- Establish **accountability**
- Develop a **timeline** with priorities based on identified risks
- **Follow up** on implementation and operational effectiveness

KPI Selection

- ❑ Selection of the right key performance indicators is vital to properly measure business performance and identify whether your business is headed in the right direction



Template: Designing Iteration Plan

- ☐ Use the template below to design an iterative plan, identifying the objective of each iteration and what needs to be tested to achieve said objective

	Iteration 1	Iteration 2	Iteration 3	Iteration 4
Description	<i>Example: Initial operational launch of service</i>			
Objective	<i>Identify acceptance from customer segment</i>			
Variables to Test	<ul style="list-style-type: none"> <i>Number of vehicles</i> <i>Number of shuttle stops</i> <i>Operating hours</i> 			
Monitoring Indicators	<ul style="list-style-type: none"> <i>Ridership</i> <i>Customer satisfaction</i> 			



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