INNOVATIONS IN AUTOMATED FARE COLLECTION




Overview Of Different Technologies For Transport AFC And Specificities

NOW

- From close range - check-in / check-out

Closed loop systems
Cards, tickets or tokens

Open loop payment
C-less EMV Bank card

Mobile payment
NFC smartphones

QR codes

- To long range AFC - walk-in / walk-out be-in / be-out

NEAR FUTURE ?

- Passive **UHF** or Dual freq. smartcard, mobile powered Bluetooth **BLE** or **facial recognition**

Transit Agencies: Challenges Today

WHY

HOW

High Distribution & Cash Collection Costs

- Cost of paper / smart card issuance and distribution
- Capital of ticket vending machines
- Machine maintenance
- Cost of cash collection

Legacy Hardware Difficult to Upgrade

- Limited funding
- Backend connectivity Challenges … No real time connections
- Large network which is difficult to upgrade

Reduction in Sales & User Satisfaction

- Unsatisfied users expect mobile ticketing to be available
- Users choosing alternatives out of convenience e.g. rideshare

Commuters: Challenges Today

TODAY

Complex Fares

ROOT CAUSE

- No prior knowledge of user
- Fare decision made before trip starts

Confusing Network

- Inherently confusing tunnel network without a map
- No consistent naming conventions for routes

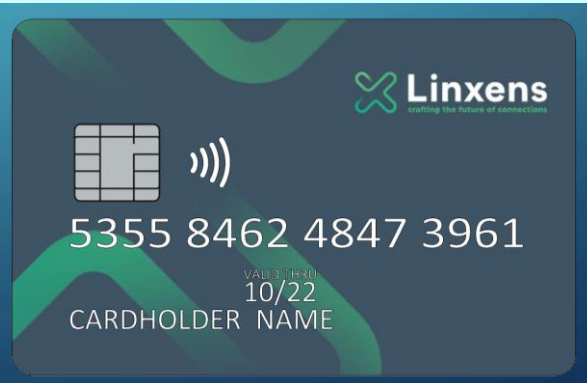
Non-Realtime

- Key information (time, space, cost) is not available to users

Open-loop EMV Will Stay Complementary To Transit Cards

	Closed Loop	EMV Open Loop
ADVANTAGES	• Fastest transaction time • No recurring certification and maintenance on infrastructure • Technology and convenience proven • PTO in full control	• Reduction of media issuance cost for the PTO • Manageable with online & offline transaction • Seamless for occasional users like international travelers • Interoperability proven
LIMITATIONS	• Implementation in multimodal transport system can be complex • Contribution of 2-5 % to OPEX costs	• A financial institute is required to issue the card • Cards produced only by EMV certified facilities • Recurring cost for EMV readers certification • PTO has transferred business ownership to banks

Desfire, Felica, Calypso or Cipurse cards for "PTO known" users



Bank issued payment cards for "PTO not known" users

The Potential For Convergence Is Greater Than Ever

- Moving to account based solutions

Account based rather than card centric means that rather than using a card with a stored amount of money on it, the solution shifts the customers' financial information and fare calculation away from the card. Current implementation includes London, Chicago, Singapore, Sydney.

- Mobile ticketing will co-exist with smartcards

NFC technology to grow fast driven by mobile wallet providers (Apple, Samsung & Google Pay…) and increasing penetration of NFC in smartphone shipments. In transit, mobile ticketing will co-exist while smartcard remain a strong piece of the ecosystem.

- Convergence Transport & Banking
- Lowering the cost of ticketing can also be done with multi-application cards & non transit application.

- Eg : Japan, Hong-Kong, Dubai, Bangkok…

- EMV may lower the cost for public transport operators as the cards and readers equipment would be based on open standard and available of the shelf system. This has to be challenged.

Smart Cities Build On Smart Transportation

Credential Issuer

Smart wearable

Smart card

Smartphone

Adapt other services / applications

Platform to facilitate collaboration

Personalization agent & channel - TopUp

Marketing platform

100% end-customer reach

Application/Service providers

Bike share

Loyalty scheme

Hospitality

Payment

Travel & Miles

Transport

Identity

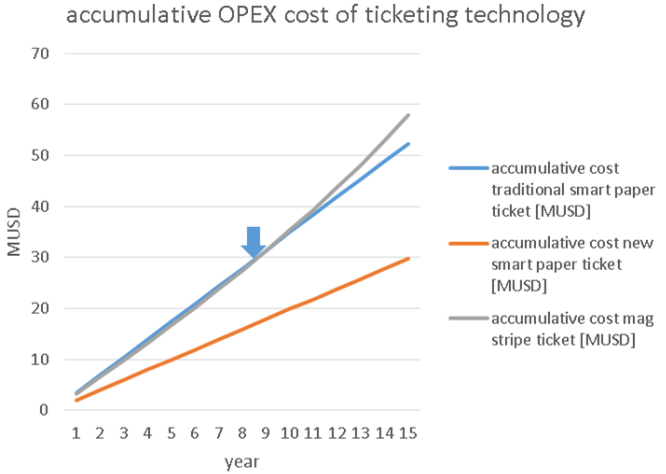
E-Health

Smart Home

Payment

Payment providers

Speed



Cost

Ease of use

Scalability

Urban mobility requires solving for scale, speed and sustainability

MOBILITY – AS – A - SERVICE

WHAT IS MAAS?

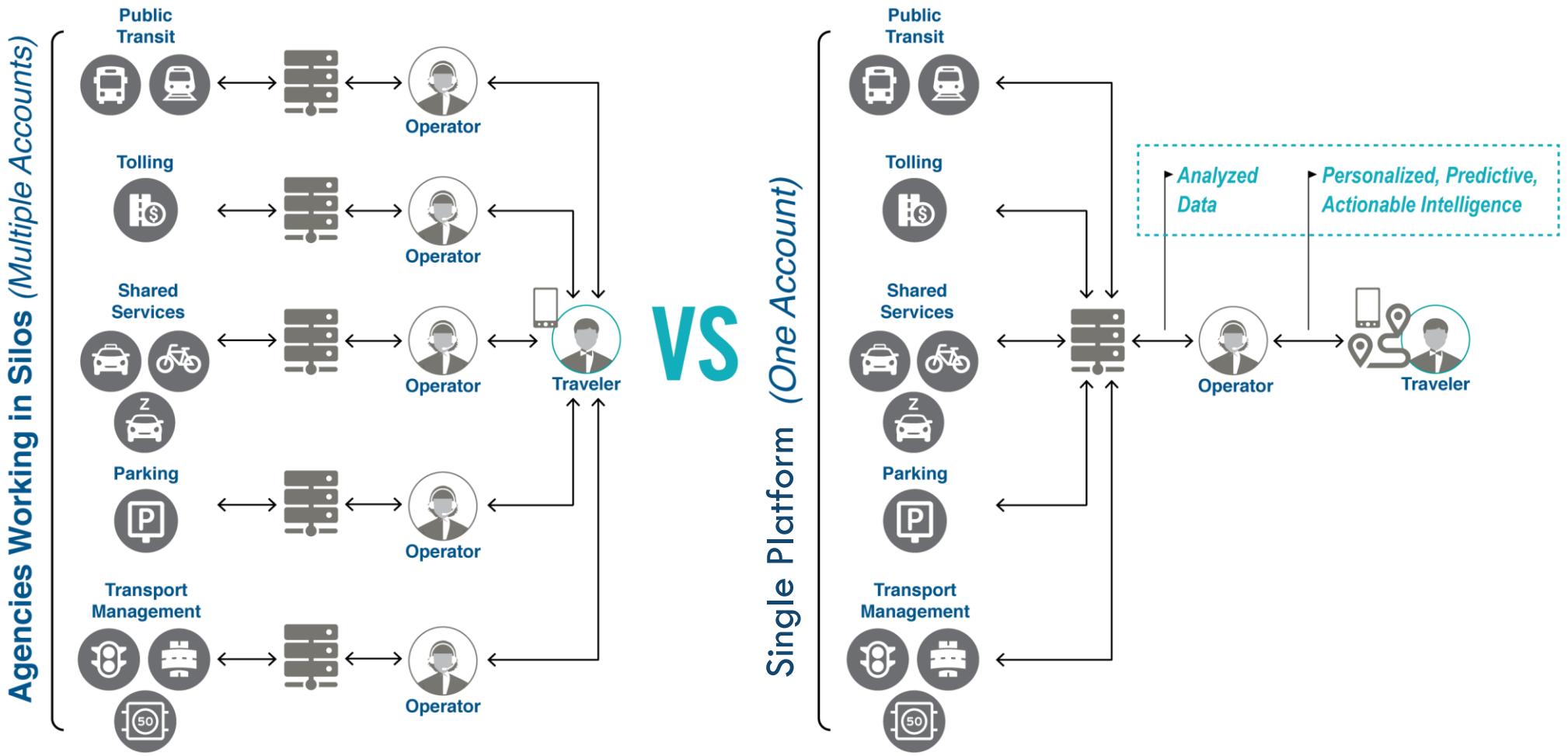
Mobility-As-A-Service Is A Combination Of Public And Private Transportation Services Within A Given Regional Environment That Provides Holistic, Optimal And People Centered Travel Options, To Enable End-to- End Journeys Paid For By The User As A Single Charge, And Which Aims To Achieve Key Public Policy Objectives.

MOBILITY-AS-A-SERVICE

- END TO END JOURNEYS
  - From door to door
- INTEGRATED PUBLIC/PRIVATE TRANSPORTATION NETWORKS
  - Public (Rail, bus, metro, etc.)
  - Private Ola, Uber, etc.)
- INTEGRATED JOURNEY PLANNING
  - First and last mile services through deep linking with 3rd party apps and APIs
  - Enhancing the overall experience for able and less able users
- HOLISTIC, PREFERRED AND PEOPLE CENTRIC
  - Multiple modes offered for travel
  - Fastest/cheapest/environmental
  - Optimal based on user preferences and service availability
- REAL-TIME PASSENGER INFORMATION
  - Real-time data for planning and execution
- ONE ACCOUNT SOLUTION
  - From an end user perspective having a single account that delivers benefits and simplifies the journey

MOBILITY-AS-A-SERVICE OPTIONS

Mobility-as-a-Service Platform



Overview Of User Process For MAAS

- Buy/upgrade/cancel a subscription model
- Pay As You Go Models (PAYG)
- Provide feedback on your trips
- Manage your account and preferences

Manage

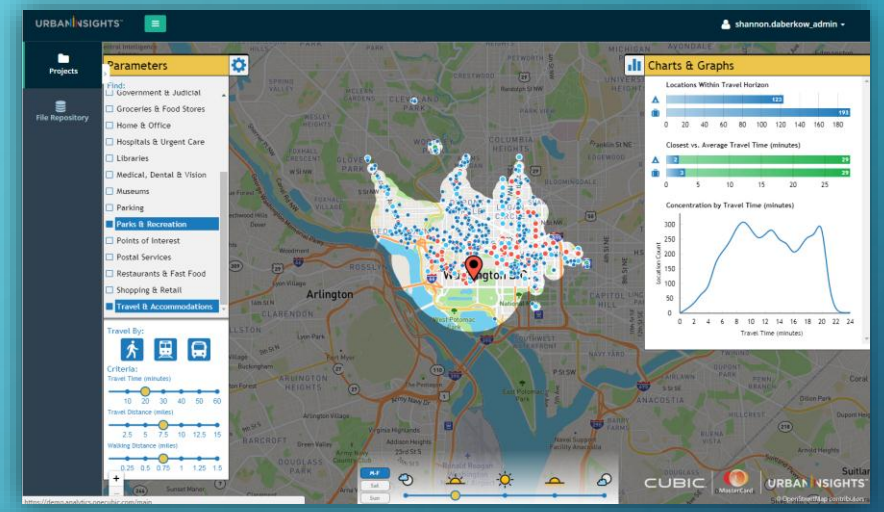
- Real-Time Journey Planner for all services (Public Transport, Road Traffic, Bike/walk)
- Integrated Connected Journey
- Private and Shared Transport Services
- Optimised journeys based on user preferences

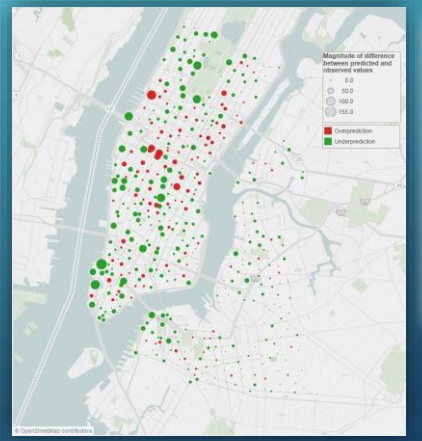
- Book and Reserve tickets/services for entire journey
- Single Interface for Payment
- Ability to update and cancel bookings before travel

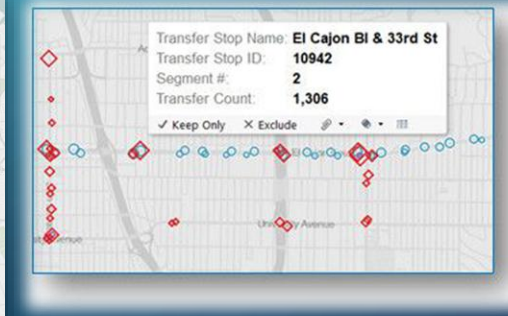
- Review your trip progress against plan
- Receive in-journey alerts
- Re-plan your journey while enroute

The Role Of Artificial Intelligence?

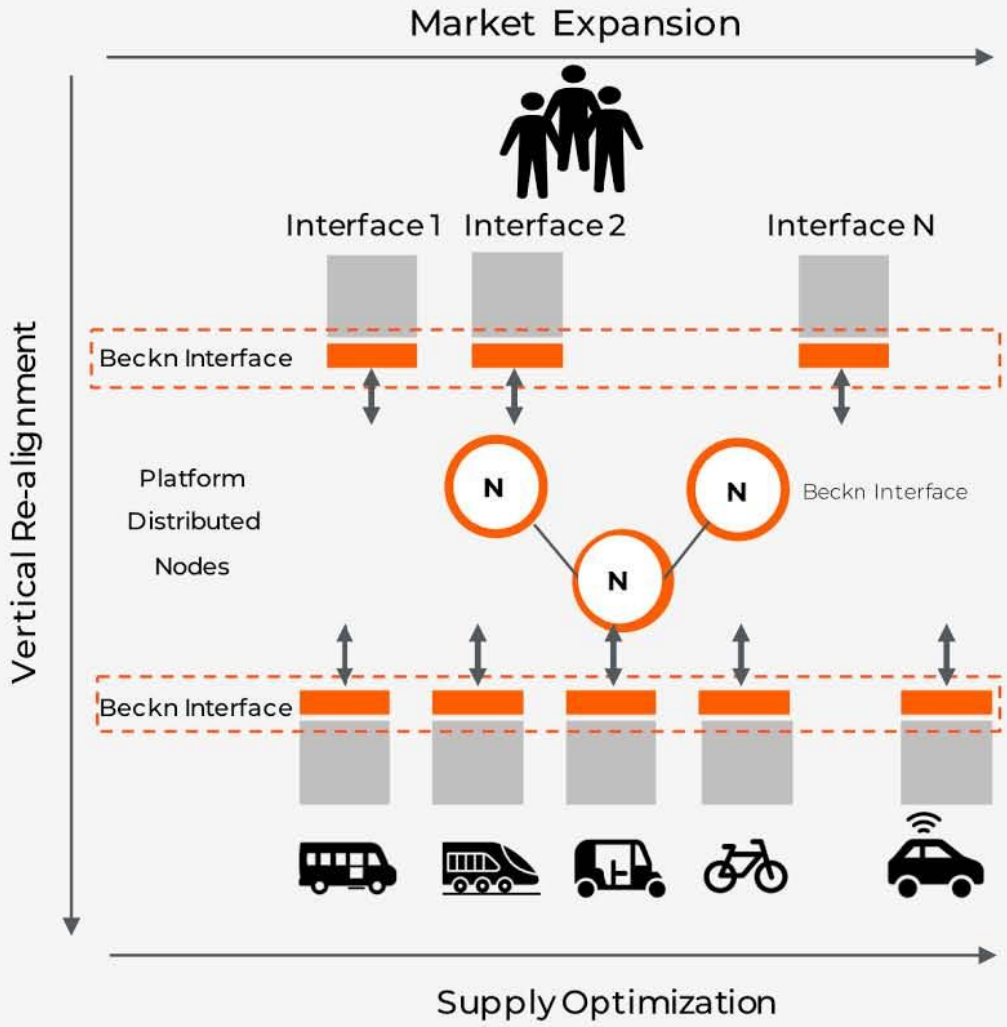
- Make sense of Big Data
- Put mobility options to their best use:
  - *Micromobility and ride hailing for first and last mile*
  - *Mass transit as the heavy lifter*
- Develop optimised integrated connected journeys
- Based on the user's preferences and travel patterns
- Pre-emptive guidance to the user
- Demand responsive network
- Network AI to create a Predictive Mobility Network
- Points of supply in place prior to demand is realised
- Connecting people to journeys not cars







Mobility-as-a-Service through Beckn Protocol



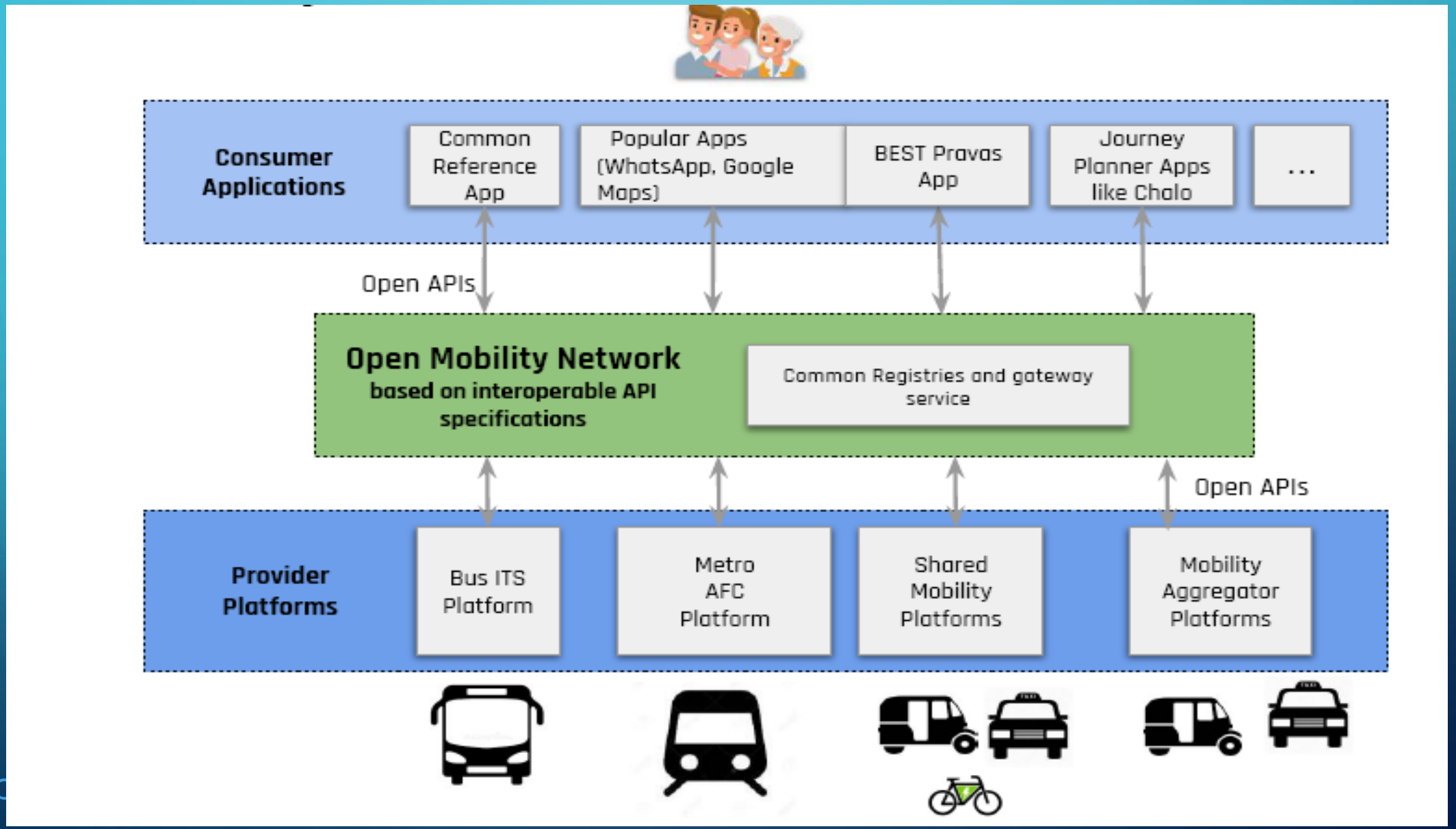
Enabling interoperability across players

Unified journey across modes
Smooth booking and payment
Expand distribution of access

Form and operator agnostic interoperability
Smart policy making
Promote participation and innovation

Empower Mobility Micro-entrepreneurs
Benefit from Mass-transit linkage
Expand outreach
Better utilization of existing infrastructure
Reduce cost of distribution

Open Mobility Network



Beckn Mobility

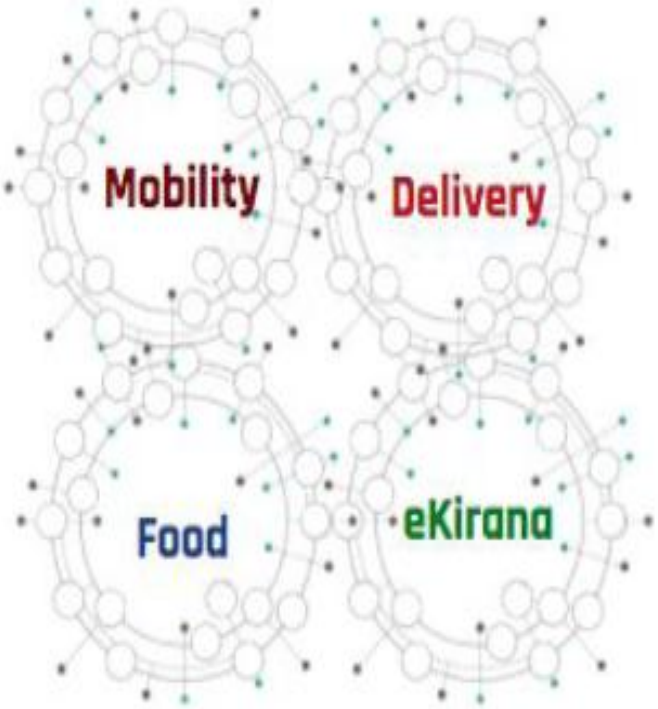
Open API specifications, not a platform or an app

Enables Open Network marketplace

Open source, Free to Use, Voluntary

One API specs across sectors

Community Contributed



Beckn enabled Open APIs can be used as beyond mobility

THANK YOU