



Which way does the toll road go?

And what does Mobility as a Service (MaaS) have to do with it?

David Dick
Senior Consultant

April 1, 2019
IBTTA Technology Summit
Orlando

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Agenda

1. Why does MaaS matter?
2. What is it?
3. How can MaaS work for tolling?

1. Toll Roads are Fine

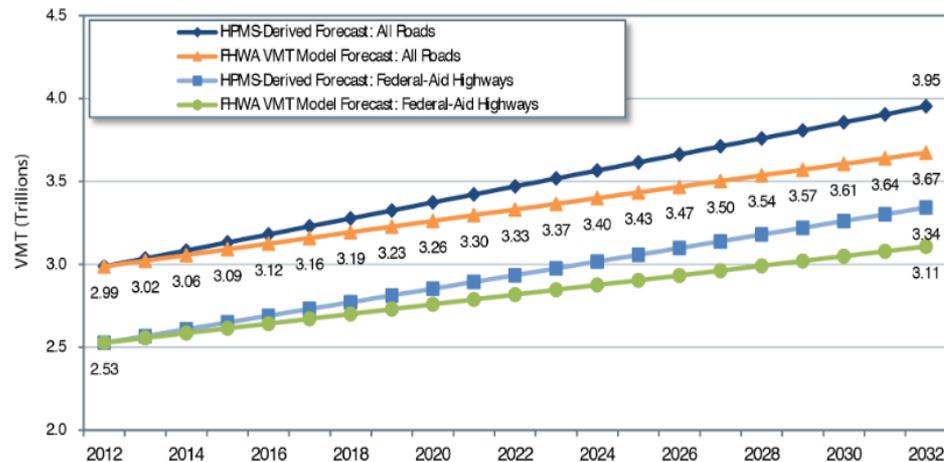
Established



Columbia Toll Road, Est. 1799, NY
Town of Hillsdale, New York, 2016 Newsletter

Increasing VMT

Exhibit 9-3 Annual Projected Highway VMT Based on HPMS-Derived Forecasts or FHWA VMT Forecast Model



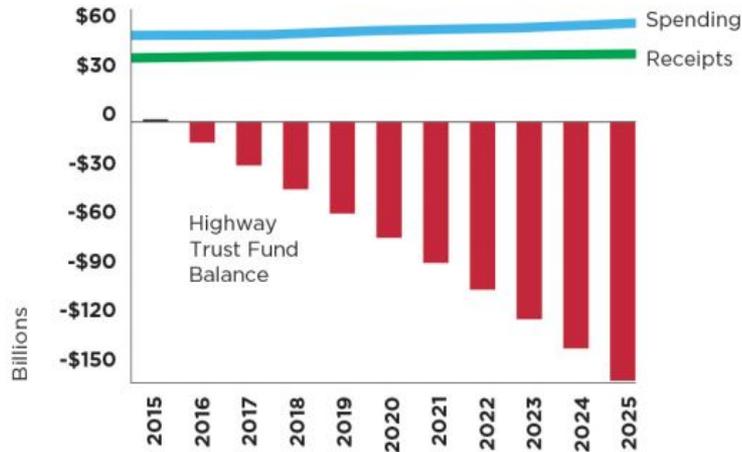
Sources: Highway Performance Monitoring System; FHWA Forecasts of Vehicle Miles Traveled (VMT), May 2015.

2015 Status of the Nation's Highways, Bridges, and Transit: Conditions & Performance, FHWA

1. But...

Funding Forecast

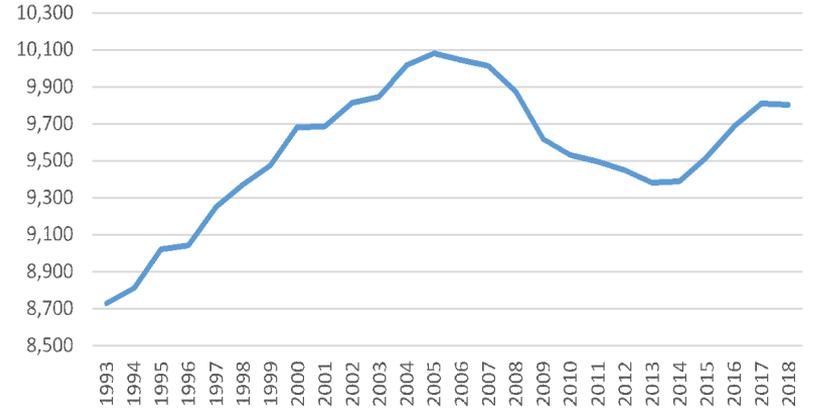
Highway Trust Fund Shortfalls (2015 - 2025)



Beyond Traffic 2045, U.S. Dept. of Transportation

Travel Trends

U.S. VMT per capita
(12-month periods ending in June)



State Smart Transportation Initiative, News, September 3, 2018

1. Emerging Priced Multi-Modal Transportation

Established
Services &
Systems



Fare Collection



Toll Collection



Parking Meters

Innovative
Services



Managed Lanes



Congestion Pricing



Road User Charging

Private
Sector
Advances



Alt. Fuels



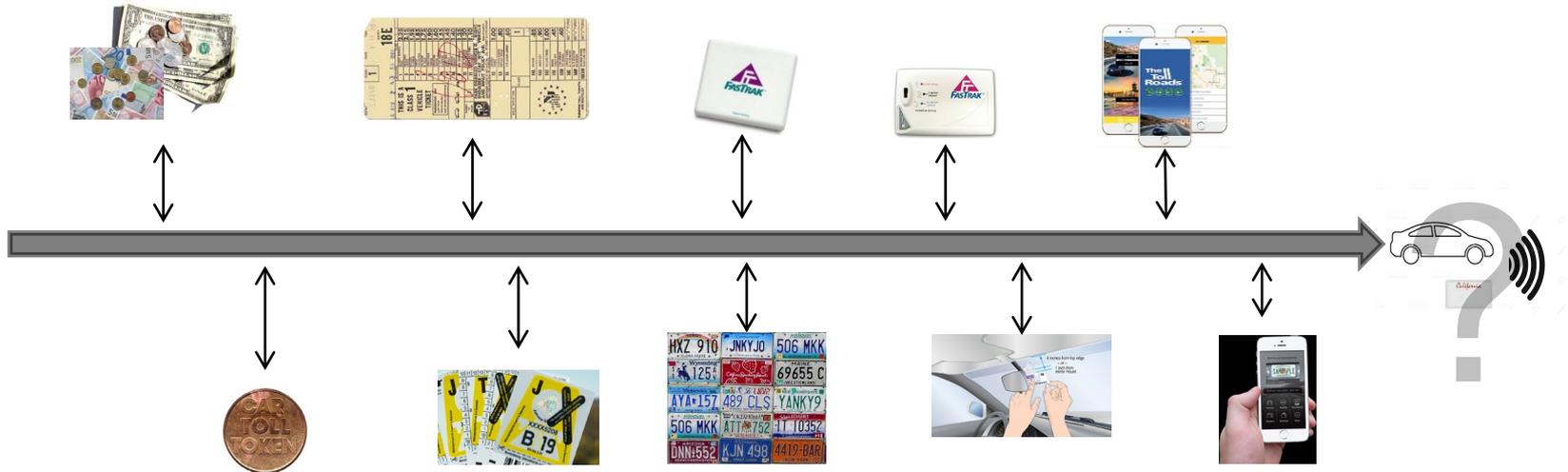
Shared Services



On-Demand

1. Change is the Only Constant

Payment Media



2. Concepts of MaaS

*... the integration of various forms of transport services into a **single mobility service accessible on demand.***

MaaS Alliance

*... brings every kind of transport together into **a single intuitive mobile app.***

MAAS Global

*... emphasizes **mobility aggregation, smartphone and app-based subscription access, and multimodal integration...***

Mobility on Demand Operational Concept Report, FHWA, Sept. 2017

2. Mobility Space

MaaS in Europe



- Subscription-based transportation bundle
- Multi-modal – car rental, transit, taxi, bike
- Purpose – pay for what you use, no need to own

Tech-enabled commute programs



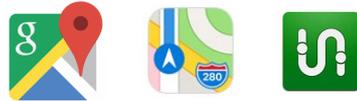
- Multi-modal transportation management – large institutions
- Pricing incentives, benefits, gamification and “feebates”
- Targeted transport services for program participants

Growing private service providers



- Ride hail becoming bundled transportation service provider
- + bikeshare, + transit – offering competing services
- Mobile app – ride hailing, trip planning, payment

Widely used travel tools



- Trip planning – multi-modal
- Open data, non-restrictive
- Global reach

Expanding goals and services.

Which route from here?



- Build & maintain infrastructure
- Congestion & capacity management – emerging
- New customer interfaces

2. MaaS – Working Definitions

Customers

MaaS **reduces the obstacles** customers face in making **transportation choices** that best meet their needs

Agencies

MaaS leverages technology to provide **greater operating efficiency, flexibility in managing infrastructure** and/or service delivery, and **improved customer interface**.

3. How can MaaS Work for You?

Identify Goals and Objectives, e.g.

- Facilitate casual toll payment –ad hoc customers, interoperability
- Reduce operating costs – cost of collection
- Accommodate future advances in payment technology

Assess Alternatives

Develop Strategic Plan

- Grounded in goals and objectives

Leverage appropriate tools for implementation

- Application program interfaces (API)
- Open interfaces and data standards

3. Tools for Mobility – APIs & Data Standards

Application Program Interfaces (API)

Defines interaction between two systems to perform targeted functions,
enabling integration of services provided by third parties

Open interfaces and data standards

Standardized, non-proprietary interface and data specifications

Allows third parties to **independently create new, multi-function and multi-modal applications**

3. Case Study- Portland TriMet Fare System

Agency Goals and Objectives

- Modernize fare payment system
- Reduce operating costs
- Increase customer convenience
- Promote electronic payment
- Serve unbanked

Procurement Approach

- Leverage new technologies to modernize transit back office
- Streamline business rules to align with agency objectives
- **Define APIs for a flexible system**
 - Facilitate new services and providers



3. TriMet Fare System – APIs in Practice

Hop Fastpass Fare Payment System Launch – July 2017

Separate providers & integrated services

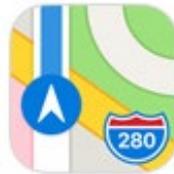
- Retail network – 500 locations
- Card supplier
- Mobile app
- Biketown bikeshare payment
- **Open, contactless payments** – no account required
 - Contactless credit cards
 - Google Pay
 - Apple Pay



3. Data Standards in Practice – GTFS

General Transit Feed Specification (GTFS)

- Published transit agency schedule data, expanding to real-time
- Collaboration – transit agencies and Google
- Open source data, publicly available
- Used by mapping applications – transit data around the world



3. Tolling Mobility Options

Expanding goals and services.

Which route from here?



- Build & maintain infrastructure
- Congestion & capacity management – emerging
- New customer interfaces

APIs

Payment – enable new methods

- License plate tolling apps
- MaaS / multi-modal app
- Fare payment, ride hail systems

CRM – cross-service acct. registration

- “Transportation Account”
- Fare payment, road usage charge, parking, ride hail, bike share, etc.

Data Standards

Publish system data – enable third-party app development

- Customer info – real-time toll rates
- Payment app – GPS toll point data

Example – MTLFS, Santa Clara VTA

- Managed and Toll Lane Feed Specification
- Draft toll system data standard

MaaS – Collapsing Transportation Boundaries

Opportunities

- Harness emerging technologies and customer-focused services
- Facilitate customer travel choice and payment
- Reduce agency operating costs
- Develop a more dynamic, multi-modal transportation network

Challenges

- Multi-modal, multi-agency coordination (public and private, tolls and transit)
- Ownership – revenue collection, customer relationship, etc.
- Not the technology

Thank You

David Dick
Senior Consultant
Jacobs Engineering Group

415-533-6274

david.dick@jacobs.com

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April 4, 2019

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