



# National RTAP

## DRT Data Specifications Working Group Compare and Contrast DRT Standards & (MAT) Standards Support Project Update

March 12, 2026

2:00 to 3:15 Central | 3:00 to 4:15 EST



# Demand Responsive Transportation Standards

Comparing Active Specifications by Applicability  
Across the Passenger Trip Lifecycle

Santosh Mishra

Founder & CEO, Flexlynqs

Co-Chair USDOT MAT-RSD Subcommittee, ITE

US Delegate, ISO Technical Committee on Intelligent Transportation Systems (TC 204)



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Mar 12, 2026

# Discussion on Specifications/ Standards

Context

Comparison Matrix

Trip Lifecycle

Gap Analysis

Standards Details

Path Forward

**Covered today** : GTFS · GTFS-Flex · GOFS · TDS · TOMP API · SUTI · Transmodel / NeTEx · ISO 7874 · NEMTAC

# DRT Modes

**Dial-a-Ride  
Transit**

**ADA  
Paratransit**

**Ride-hailing**

**On-demand/Flex /  
Microtransit**

**HST/  
NEMT**

**Taxi  
Services**

# The Fragmentation Problem

## No single DRT standard covers the full trip.

Each spec solved a different problem, in a different country, at a different time.

### Discovery ≠ Booking

Finding a service and reserving a ride require completely different data models. No spec bridges both.

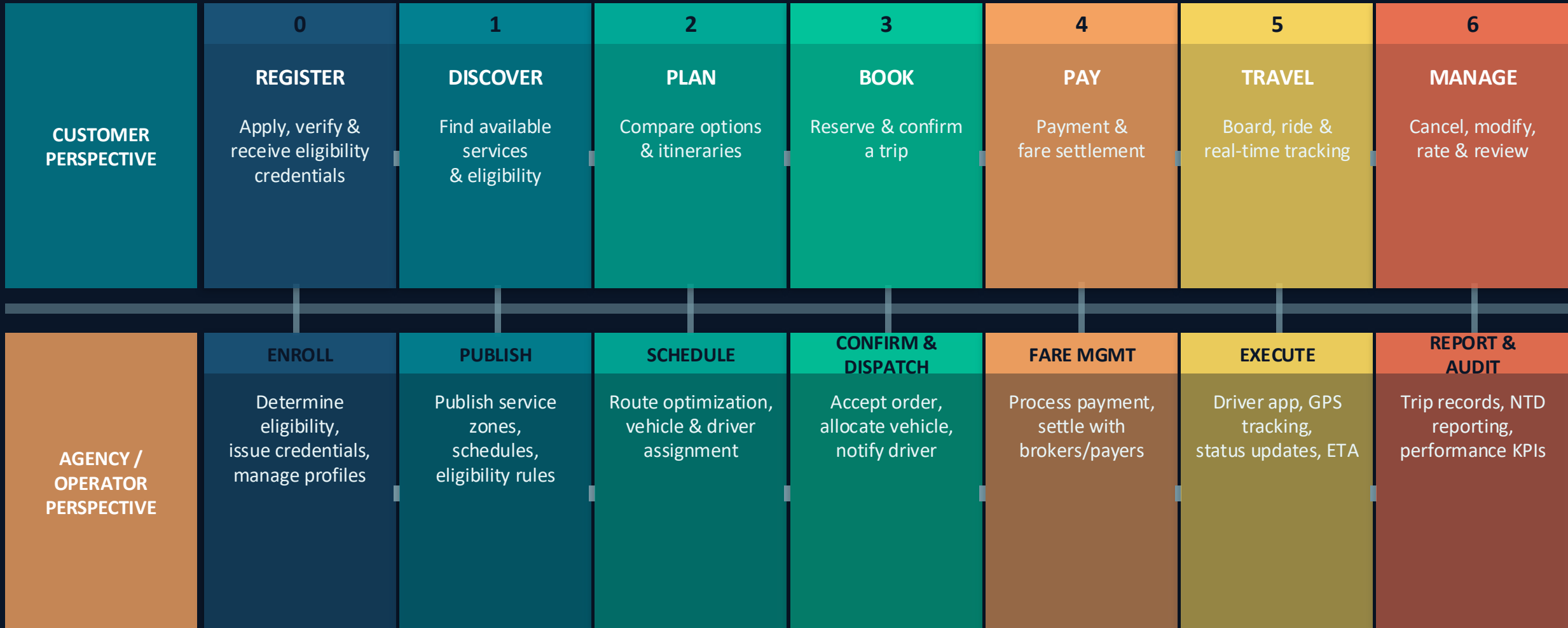
### Customer ≠ Agency

Passenger-facing specs (GTFS-Flex, TOMP) don't reach dispatch. Operator specs (SUTI, TDS) are invisible to riders.

### Payment left behind

Every comprehensive spec either excludes payment entirely (TDS) or limits it to operator settlement (TOMP). No consumer-facing fare standard exists.

# Two Perspectives on the DRT Trip Lifecycle



# Transactional vs. Non-Transactional

The most important fault line in DRT interoperability.

## NON-TRANSACTIONAL

*Discovery & Static Data*

Read-only data feeds that describe services. Consuming the data changes nothing in any live system.

### Examples

- GTFS-Flex — service patterns and booking contact rules
- GOFS — on-demand service zones and deep links. Initiates transaction but doesn't track state.
- Transmodel / NeTEx — network timetable and fare data model

VS

## TRANSACTIONAL

*Live State Changes*

API calls that create, modify, or cancel records in a live system. A booking is made, a trip is confirmed, a vehicle is dispatched.

### Examples

- TDS — trip reservation, scheduling, dispatch, reporting
- TOMP API — plan, book, execute, pay across MaaS
- SUTI — B2B trip order messages and real-time status

# Core Principles of Specifications Development

(Source: TCRP Report 210)

## Sufficiency

Covers all typical transactions and required data elements for parties.

## Simplicity

Minimizes complexity in message structures while supporting complete transactional workflows.

## Flexibility

Supports variations in transaction types and optional data exchange scenarios.

## Adaptability

Allows modifications for new situations without redesigning the entire specification

## Compatibility

Aligns with existing standards, data exchanges, and operational practices.

## Technical Appropriateness

Uses technologies, terminology, and methods suitable for industry systems and software.

## The discovery gateway for DRT. Not a booking system.

### Scope

Publish details of flexible services . Formally adopted by MobilityData in 2024

### Key win

Vermont Go!, Maine DOT, OpenTripPlanner, Transit App

### KEY GAP

*BookingRules is contact info only — a phone number or URL. There is no booking API. Riders still call or click out to another system to reserve a trip.*

### TRIP STAGE COVERAGE

	CUSTOMER	AGENCY / OPERATOR
<b>REGISTER</b> <i>ENROLL &amp; ELIG.</i>	PARTIAL	NONE
<b>DISCOVER</b> <i>PUBLISH</i>	FULL	FULL
<b>PLAN</b> <i>SCHEDULE</i>	NONE	NONE
<b>BOOK</b> <i>CONFIRM &amp; DISPATCH</i>	PARTIAL	NONE
<b>PAY</b> <i>FARE MGMT</i>	NONE	PARTIAL
<b>TRAVEL</b> <i>EXECUTE</i>	NONE	NONE
<b>MANAGE</b> <i>REPORT &amp; AUDIT</i>	NONE	NONE

## On-demand discovery with deep links for booking.

### Scope

Mobility Data took over stewardship of GOFS-lite which is continuing as GOFS; no support for full booking, pricing or ETA

### Success

Real-time availability and deep links to providers (Uber, Lyft) and platforms (Via, Space RideCo)

### KEY GAP

*No post-booking state. No fare settlement. Once the rider taps the deep link, GOFS has no signal about what happened next.*

### TRIP STAGE COVERAGE

	CUSTOMER	AGENCY / OPERATOR
<b>REGISTER</b> <i>ENROLL &amp; ELIG.</i>	PARTIAL	PARTIAL
<b>DISCOVER</b> <i>PUBLISH</i>	FULL	FULL
<b>PLAN</b> <i>SCHEDULE</i>	PARTIAL	NONE
<b>BOOK</b> <i>CONFIRM &amp; DISPATCH</i>	PARTIAL (deep link)	NONE
<b>PAY</b> <i>FARE MGMT</i>	NONE	NONE
<b>TRAVEL</b> <i>EXECUTE</i>	NONE	NONE
<b>MANAGE</b> <i>REPORT &amp; AUDIT</i>	NONE	NONE

## The most complete North American back-office DRT standard.

### Scope

Reservation → scheduling → assignment → execution → reporting

### Success

Rural OR · Minnesota DOT · NEORide · MTC-SF · DRCOG

### KEY GAP

*Request/response message model (“telegrams”) — implementation details are defined by the integrator.*

*Payment explicitly excluded by design.*

*Fare processing requires a separate system or a bilateral agreement*

### TRIP STAGE COVERAGE

	CUSTOMER	AGENCY / OPERATOR
<b>REGISTER</b> <i>ENROLL &amp; ELIG.</i>	NONE	NONE
<b>DISCOVER</b> <i>PUBLISH</i>	NONE	NONE
<b>PLAN</b> <i>SCHEDULE</i>	NONE	FULL
<b>BOOK</b> <i>CONFIRM &amp; DISPATCH</i>	FULL	FULL
<b>PAY</b> <i>FARE MGMT</i>	NONE	NONE
<b>TRAVEL</b> <i>EXECUTE</i>	FULL	FULL
<b>MANAGE</b> <i>REPORT &amp; AUDIT</i>	FULL	FULL

## The strongest customer-facing API. Links Transport Operator (TO) and MaaS Provider (MP)

**Scope** Operator Info · Plan · Book · Execute · Pay (B2B settlement only) · Support

**Success** Adopted in multiple European countries

### KEY GAP

*No scheduling or dispatch interoperability. Operator back-office is deliberately out of scope. Payment includes only settlements data (B2B clearing).*

### TRIP STAGE COVERAGE

	CUSTOMER	AGENCY / OPERATOR
<b>REGISTER</b> <i>ENROLL &amp; ELIG.</i>	NONE	NONE
<b>DISCOVER</b> <i>PUBLISH</i>	PARTIAL	PARTIAL
<b>PLAN</b> <i>SCHEDULE</i>	FULL	NONE
<b>BOOK</b> <i>CONFIRM &amp; DISPATCH</i>	FULL	PARTIAL
<b>PAY</b> <i>FARE MGMT</i>	NONE	PARTIAL
<b>TRAVEL</b> <i>EXECUTE</i>	FULL	PARTIAL
<b>MANAGE</b> <i>REPORT &amp; AUDIT</i>	PARTIAL	NONE

## Pure B2B. The agency interoperability standard that inspired TDS.

### Scope

B2B transactional workflow coverage: client → provider trip order + real-time status acknowledgments

### Success

20+ years in Nordic region . FlexDanmark

### KEY GAP

*Zero passenger-facing capability. No discovery, no booking UI, no payment. The rider never sees it — by design.*

### TRIP STAGE COVERAGE

	CUSTOMER	AGENCY / OPERATOR
<b>REGISTER</b> <i>ENROLL &amp; ELIG.</i>	PARTIAL	PARTIAL
<b>DISCOVER</b> <i>PUBLISH</i>	NONE	NONE
<b>PLAN</b> <i>SCHEDULE</i>	NONE	FULL
<b>BOOK</b> <i>CONFIRM &amp; DISPATCH</i>	NONE	FULL
<b>PAY</b> <i>FARE MGMT</i>	NONE	NONE
<b>TRAVEL</b> <i>EXECUTE</i>	FULL	FULL
<b>MANAGE</b> <i>REPORT &amp; AUDIT</i>	FULL	FULL

## The EU mandatory reference model. Publish everything. Transact nothing.

### Scope

NeTEx Part 5 (2021): zone-to-zone, hail-and-ride, booking rules, DRT patterns

### Success

ITS Directive — all EU member states must publish in NeTEx formats (Transmodel-based) for multimodal travel

### KEY GAP

*A data model, not a transactional API. Live booking, real-time trip management, and payment all require separate specs alongside (TOMP, TDS, SIRI).*

### TRIP STAGE COVERAGE

	CUSTOMER	AGENCY / OPERATOR
<b>REGISTER</b> <i>ENROLL &amp; ELIG.</i>	PARTIAL	PARTIAL
<b>DISCOVER</b> <i>PUBLISH</i>	FULL	FULL
<b>PLAN</b> <i>SCHEDULE</i>	PARTIAL	PARTIAL
<b>BOOK</b> <i>CONFIRM &amp; DISPATCH</i>	NONE	NONE
<b>PAY</b> <i>FARE MGMT</i>	PARTIAL	PARTIAL
<b>TRAVEL</b> <i>EXECUTE</i>	NONE	NONE
<b>MANAGE</b> <i>REPORT &amp; AUDIT</i>	NONE	PARTIAL

## NEMT's shared data language. Schemas without the transaction layer.

### Scope

**Approved:** 1001 Levels of Service · 1002 Modes of Transportation · 1006: Passenger Verification  
**Draft:** 1003: Data Definitions · 1004: KPIs · 1005: Data Exchange

### Success

Only ANSI-accredited standards body for NEMT · Medicaid, MCO, VA, funded transportation

### KEY GAP

*1003, 1004, and 1005 are still in draft.  
No live API spec exists yet.*

### TRIP STAGE COVERAGE

	CUSTOMER	AGENCY / OPERATOR
<b>REGISTER</b> <i>ENROLL &amp; ELIG.</i>	PARTIAL	FULL
<b>DISCOVER</b> <i>PUBLISH</i>	NONE	NONE
<b>PLAN</b> <i>SCHEDULE</i>	NONE	PARTIAL
<b>BOOK</b> <i>CONFIRM &amp; DISPATCH</i>	PARTIAL	PARTIAL
<b>PAY</b> <i>FARE MGMT</i>	PARTIAL	PARTIAL
<b>TRAVEL</b> <i>EXECUTE</i>	PARTIAL	PARTIAL
<b>MANAGE</b> <i>REPORT &amp; AUDIT</i>	PARTIAL	PARTIAL

# Standards Comparison Matrix — Trip Stage Coverage

1 row per standard · left half C = Customer · right half A = Agency/Operator

FULL    
  PARTIAL    
  NONE    
 Each cell:  C  A = Customer | Agency/Operator

STANDARD	AUDIENCE	TRANSACTIONAL?	REGISTER		DISCOVER		PLAN		BOOK		PAY		TRAVEL		MANAGE		PRIMARY FOCUS
			C	A	C	A	C	A	C	A	C	A	C	A			
<b>GTFS-Flex</b> <small>MobilityData / Global</small>	Customer	NO	service area						rules only			fare metadata					Fixed → Flexible route discovery
<b>GOFS / GOFS-lite</b> <small>MobilityData / Global</small>	Customer	PARTIAL	service info	service info			no pricing/ETA		Real-time feed, deep link								On-demand discovery + deep link booking
<b>TDS</b> <small>TCRP / USA</small>	Both	YES															DRT trip lifecycle management
<b>TOMP API</b> <small>NL / International</small>	Customer	YES			operator info	operator info				receive only		Settlements only		no dispatch	no eligibility		MaaS end-to-end (customer view)
<b>SUTI</b> <small>Sweden / Nordic</small>	B2B Only	YES	transport auth	transport auth													Operator platform interoperability
<b>Transmodel/NeTEx</b> <small>CEN / Europe</small>	Agency	NO	static only	static only			no real-time	no real-time			fare model	fare model				static pub.	Network data model + static exchange
<b>NEMTAC 1000</b> <small>ANSI-ASD / USA (NEMT)</small>	Both	PARTIAL	provider data					schemas only	schemas only	schemas only	claim data	claim data	trip data	trip data	trip data	trip data	NEMT data definitions & exchange

TIDES-DRT, an extension of TIDES specifications for fixed-route archived operations data, is being considered by the DRT Community in the US for Reporting purposes

## The pricing architecture all DRT standards currently lack.

ISO 7874 is not a booking spec — it defines the rule sets that govern how fares are calculated, who is eligible, and how revenue is split across operators.

### Usage Rules

Stages 0–2

Who is eligible for what service, in what context, under what policy.

### Pricing Rules

Stages 3–4

How fares are calculated, capped, discounted, and applied per mode.

### Commercial Rules

Stage 6

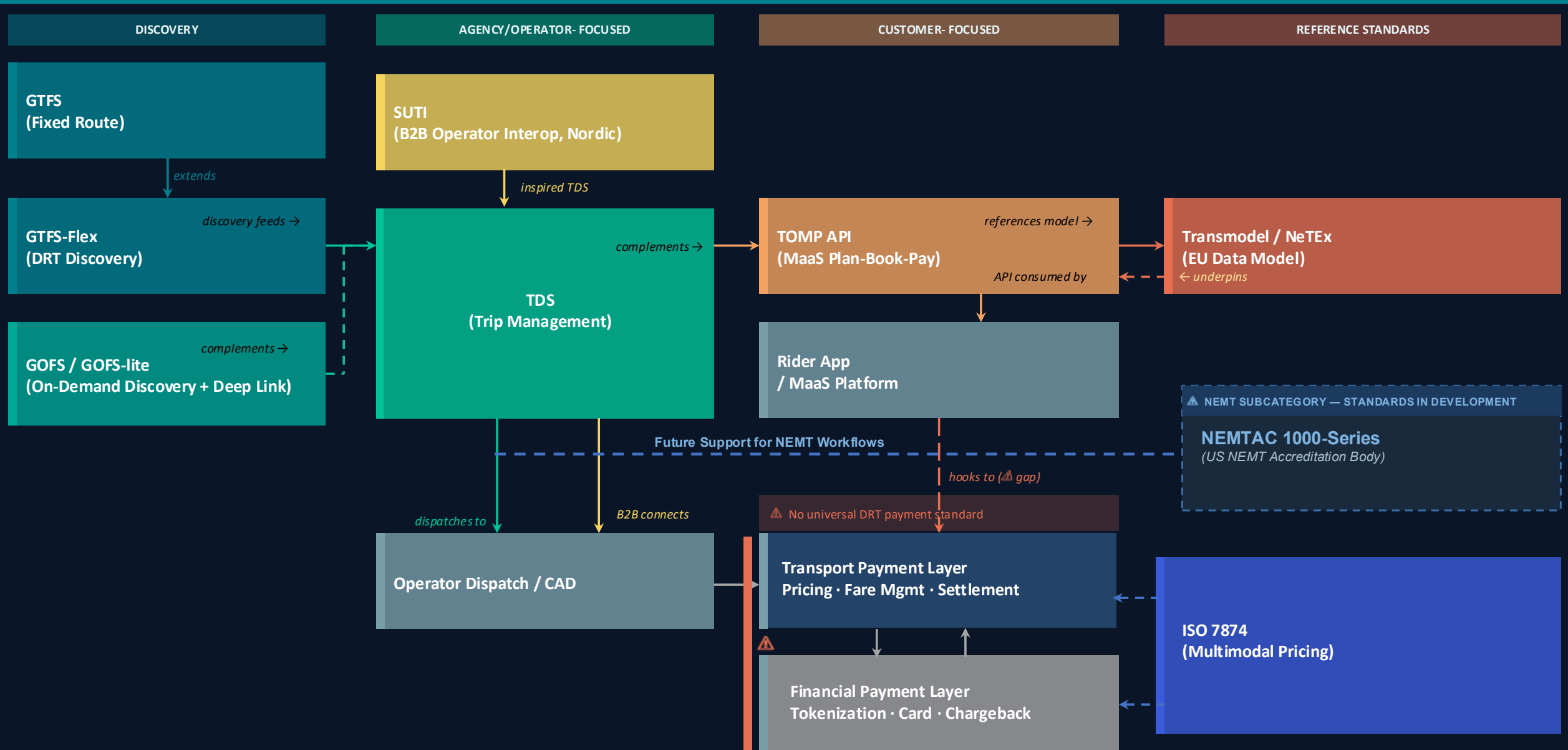
How revenue is split between operators, brokers, and payers via MoU.

### CSRP Role

All Stages

Common Service Rights Provider — manages credentials, access rights, and settlement across all TSPs.

# How the Standards Relate to Each Other



# Key Gaps : No Single Spec Covers Entire Workflow

CRITICAL

## Payment and Settlement Not Standardized

No specification defines interoperable pricing rules, payment authorization, subsidy logic, and settlement across providers.

HIGH

## On-demand Booking Standards Incomplete

GOFS attempted to bridge discovery and booking but stalled before defining full transactional booking capabilities.

MODERATE

## Eligibility & Service Rights Not Standardized

Eligibility verification, digital credentials, and service rights for ADA, NEMT, and other programs lack interoperable frameworks.

CRITICAL

## Discovery ↔ Booking Handoff Is Broken

Trip planners can discover services (GTFS-Flex / GOFS), but there is no standardized interface to create a live booking in transactional APIs (TDS / TOMP).

HIGH

## Operator Lifecycle Standards Are Regionally Fragmented

TDS (US), SUTI (Nordic), and TOMP (EU) solve overlapping problems but lack harmonized interoperability. Results in limited vendor solutions.

MODERATE

## Operator System Invisible to Standards-based MaaS

Back-office dispatch systems (scheduling, CAD/AVL, driver management) remain proprietary and disconnected from MaaS platforms.

# Path Forward: Six Actions

## 1 Standardize Discovery → Booking Interoperability

Define a common handoff between discovery feeds (GTFS-Flex / GOFS) and transactional booking APIs (TDS / TOMP)

## 2 Develop Cross-Standard Interoperability Profiles

Publish mapping and interoperability profiles across TDS, SUTI, and TOMP

## 3 Create Open Standards for Pricing, Payment, and Settlement

Define interoperable pricing rules, payment authorization, subsidy logic, and settlement across providers.

## 4 Standardize Service Eligibility and Digital Identity

Develop interoperable frameworks for eligibility verification, digital credentials, and access rights.

## 5 Demonstrate a Reference Interoperability Architecture

Pilot a layered architecture integrating discovery, booking, operations, and payment standards

## 6 Adopt Standardized Operational and Reporting Data Feeds

Establish common schemas for trip records, performance metrics, and national DRT data reporting

# Adjacent Standards: The “Curb/PUDO Access” Layer

No current DRT spec has a defined interface to any of these standards — yet every DRT vehicle physically interacts with the curb layer on every trip.

STANDARD	SDO / STATUS	TRANSACTIONAL?	PRIMARY DRT STAGE	WHY APPLICABLE TO DRT	GAP / LIMITATION
<b>ISO 25614</b> ITS — Orchestration of Vehicles for Fixed Locations	ISO TC 204 Committee Draft (Part 1 active)	YES	3 BOOK 5 TRAVEL	Defines the full transaction layer for curb slot reservation: space-to-vehicle matching, scheduling, reservation, delays, rescheduling, cancellation, and queueing-in-motion. Covers crewed and uncrewed vehicles. Hospital PUDO bays, transit center shared stops, and multi-operator pick-up zones are exactly the shared-space problem it solves.	Still at Committee Draft — no published API yet. No linkage defined to TDS, TOMP, or any DRT booking spec.
<b>CDS</b> Curb Data Specification (OMF)	Open Mobility Foundation v1.0 Published	PARTIAL	3 BOOK 5 TRAVEL	Curbs API publishes geo-coded PUDO zone definitions (location, rules, vehicle type restrictions, hours). Events API tracks real-time curb occupancy — arrive, available, pick_up, drop_off, leave. Agencies can enforce and measure compliance.	Events are reported after the fact — not a reservation system. No booking handshake with DRT dispatch.
<b>MDS</b> Mobility Data Specification (OMF)	Open Mobility Foundation v2.0+ Active	PARTIAL	5 TRAVEL (Policy layer)	Policy API publishes right-of-way rules as digital geofences — dwell time limits, vehicle type restrictions, PUDO-only zones, and time-of-day rules that DRT/NEMT vehicles must respect. Adopted by 90+ agencies globally. Works in conjunction with CDS to manage approved PUDO zones and operational requirements.	Originally designed for micromobility (scooters, bikes). No passenger service eligibility or booking state machine. Policy is one-way broadcast — DRT dispatch cannot query slot availability.
<b>GBFS</b> General Bikeshare Feed Specification (MobilityData)	MobilityData (NABSA origin) v3.0 Active	NO	1 DISCOVER 2 PLAN	Applicable specifically for kerb-to-kerb DRT (not door-to-door). Where DRT drops a passenger at a kerb rather than a door, GBFS surfaces real-time shared mobility options — bikes, scooters, carshare — at that same kerb for the onward leg, and vice versa for the origin leg. TOMP is the natural integration point.	Only relevant for kerb-to-kerb service models — inapplicable for door-to-door NEMT and paratransit. Read-only feed; no booking or eligibility. TOMP integration with GBFS is possible but not standardized
<b>APDS</b> Alliance for Parking Data Stds (→ ISO TS 5206-1)	IPI · BPA · EPA ISO TS 5206-1 Published 2023	NO	4 PAY (Pricing model)	Defines the data model for kerbside pricing — occupancy-based fees, time-of-day rate structures, vehicle class exceptions, and revenue settlement. For NEMT and paratransit operating in paid curb zones, APDS provides the pricing vocabulary that no DRT spec currently carries. Now formally adopted as ISO TS 5206-1 under ISO TC 204.	Data model only — no transactional payment API. Does not integrate with DRT fare structures or NEMTAC claims data. Parking-industry focused; transit adoption minimal.

CDS + MDS together cover the curb event layer · ISO 25614 adds the reservation/orchestration transaction · APDS/ISO TS 5206-1 covers kerbside pricing · GBFS applies only for kerb-to-kerb DRT via TOMP MaaS chaining · None currently interface with TDS, TOMP, GTFS-Flex or any DRT booking spec

# Key Takeaways

## No single standard covers the full DRT workflow

Multiple specifications address parts of the DRT lifecycle, but they evolved independently and do not interoperate cleanly

## Discovery, booking, and dispatch use different architectures

Static discovery feeds (GTFS-Flex / GOFS) and transactional booking APIs (TDS / TOMP) require different architectures

## Identity, Payment and Settlement remain unsolved

Existing standards defer pricing, payment authorization, and revenue settlement causing buildout of fragmented solutions.

## Interoperability will require a layered standards ecosystem

Discovery, transactions, operations, and financial settlement will likely be handled by complementary standards.

# Further Reading

## ITE/MAT White Paper Reservations, Scheduling & Dispatching Multimodal for All Travelers Support Project

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## Mobility Standards and Guidelines Resource (MSGR) Tool



## Contact

**Santosh Mishra**

**Flexlynqs**

39899 Balentine Drive, STE 200  
Newark, CA 94560

E: [santosh.mishra@flexlynqs.com](mailto:santosh.mishra@flexlynqs.com)