Building a Nationwide Multimodal Ticketing Platform

~ by Leveraging Transmodel and NeTEx Standards





Kenneth Gulbrandsøy, Chief Architect

ENTUR

Facilitation Company established in 2016
 Owned by the Norwegian Ministry of Transport
 Is responsible for

- ✓ Collection of all public transport data (NAP)
- ✓ National services for journey planning (OTP)
- ✓ National services for ticketing (mandatory for rail, optional for the rest)
- Public transport data insights and analytics





PTA & PTO

Entur ensures that everyone who manages public transportation in Norway may provide their customers with effective trip planning and ticket sales.

Train Operators

Entur manages the railway ticketing systems for all train operators in Norway, as well as the service operations at the stations and the railway's customer service center.

Public Transport Users

Travelers may locate all public transportation itineraries in one location with the Entur App, and they can buy all train tickets, tickets from many county municipalities, and get assistance from our station sales and customer service.

Service Providers

Anyone who chooses to can obtain public transportation data from Entur via open APIs and utilize it in their services.

Target Audiences for Our Services



Entur Value Chain and Services



Data-Driven Multimodal, Multi-Operator Ticketing Platform as a Service



We Follow These Data Management Principles

□ Always use standards end-to-end

Conversion of data is never lossless, degradation in quality is inevitable.

□ Avoid "black box" patterns

Be open and transparent about solutions, make data and services available to everyone with an interest or need for it.

□ Prefer self-service and automation

Provide feedback loops (validation, notifications) and never force manual steps on data managers if not needed.

Do not compensate for poor data quality Focus on functionality that helps data managers to produce high quality data.





Why use Open Standards?

- How do you describe a **bus stop**?
- How do you describe a **rail service**?
- How do you update a specific journey with real time forecast?
- How do you describe **seating arrangements**?
- How do you describe **access rights** and **conditions**?
- How do you describe **static** and **dynamic pricing** rules?

Because open standards

- Establishes common terminologies and concepts
 All speak the same "language"
- Allows exchange their data at predictable ability & cost
 All use a common exchange format
- Prevents national, sector or provider-specific format lock-in \rightarrow Increases interoperability and markets opportunities



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Open Standards & Specifications in Use



Examples Leveraging Transmodel and NeTEx Standards





Dataflow for Sales and Booking



Dataflow for Scheduled Stock



Dataflow for Service Interruption



Ticketing platform overview - functions and domains













Towards Cross-Border Ticketing

~ with a Nordic-First Approach



Nordic Cross-Border Approach

- Based on data from National Access Points
- Utilizing national ticketing solutions
- □ Shared open source components
- □ Transparency for the traveler
- Collaborative model
- □ Thin layer of integration
- □ Compliance with EU/ERA regulations
 - □ MMTIS
 - □ TSI Telematics
 - □ MDMS



Nordic Mobility Data Flow





We Need a Standardized API for Multimodal Ticketing Operations

(trips, offers, booking, fulfilment, clearing)



The Future of Transmodel-based APIs

Public Transport has many stakeholders and they need to share complex data with each other. For this, a stable and comprehensive foundation is needed.



TOMP API for Mobility





OSDM Online API for Rail



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Transmodel-based Ticketing API



Convergence towards a Standardized Ticketing API

The best from TOMP, OSDM, Entur APIs, and others, made in CEN, project CoRoM



Key takeaways

□ Open data **standards** levels the playing field

- □ A data driven approach simplifies onboarding and interoperability
- □ Combining modalities in one single ticketing platform is feasible
- □ Operators have **greater freedom** to experiment and innovate
- □ Data quality is essential for everything above
- □ Collaboration on standardisation, development and business cases

Contact information

Kenneth Gulbrandsøy

- Chief Architect

mobile: +47 932 58 930 twitter.com/@kengulb linkedin.com/in/kengu medium.com/@kengu email: <u>kenneth.gulbrandsoy@entur.org</u>





