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PINION (FROMATOB) WHITE PAPER

GROWTH IN INTERMODAL TRANSPORT

In partnership with



Written by

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About this report

Pinion (FromAtoB) White Paper: Growth in Intermodal Transport

A PhocusWire Report in partnership with FromAtoB

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Introduction

As we move towards a more interconnected society, there is a growing demand for convenient booking of intermodal travel. Today's travelers want to find the best way to get to their destination both for themselves and for the environment. With the rise of the 'Flight Shame' movement, it will be increasingly important to travelers to book rail journeys either for the whole journey of or as part of a rail/flight combination. There are still gaps in last-mile services, especially in local bus and tram schedules, and alternative transport methods like automated vehicles.

Intermodal transport models face both technology and infrastructure challenges today, but government programs modernize transport infrastructure, a public call for greener transportation options, and advancements in data exchange will ultimately address these needs—door to door.

In this paper, we look at the factors driving growth in intermodal transport as well as the hurdles yet to overcome.





The growth potential of intermodal transport is vastly underestimated

Ideally, intermodal travel should be a seamless integration of various transport methods under a combined booking or a single booking with search results showing a balance of affordability and convenience. Future Mobility as a Service (MaaS) service models will rely on systems that can support a single booking through various modes of transport, allowing subscribers to enter departure and destination details with algorithms doing the hard work of finding the optimum combination of transport methods, based on time and price. Getting to this point will require evolution of infrastructure, a greater number of technology integrations between service providers and resellers and field-testing of potential business models to ensure they satisfy consumer needs.

While we are only beginning to lay the foundations for this on-demand transport of tomorrow, fromAtoB already finds high demand for a tool that allows an easy and intuitive way to combine air, rail and bus services at different legs of the journey.

The company's search results data shows that intermodal travel options are most useful for distances greater than 300 km, with the "sweet spot" somewhere between 500 and 800 km. The results also show that 55% of the searched routes today are only available via intermodal solutions.

This is where intermodal options offer the greatest value for money and time, where they find the fastest way to get to the destination and the price is still competitive.

Time is money. Hassle is expensive.



- In 6% to 14% of tested connection-hour pairs (for example: Berlin-Aachen at 14:00) intermodal results are better when duration and price are equally valued by the consumer.
- In 7% of cases, for distances between 500 km and 600 km, intermodal results are faster and cheaper than multimodal results.
- For other analyzed distances, intermodal results save more time than they cost more money

Gunnar Berning, CEO, FromAtoB explains that the company's algorithms find the optimized journey in terms of pricing, duration and number of changeovers to get from departure to destination. This includes filtering through all possible combinations and deriving the best possible results.

"Our Intermodal product is currently built in a way that all results include at least one flight," he says. "This is because combining long-distance ground transportation in our current markets is in most cases outperformed by the respective transport modes alone."

FromAtoB has focused on finding optimum journeys, as a balance of journey time and costs, and delivering search results quickly in a way that makes options easy

for travelers to interpret so that they can find and book the itinerary that works best for them, without hassle.

Search speed is particularly important because, fromAtoB has learned through their analysis of search data, saving just one second in showing page results can boost conversion rate by 27%, and the highest conversion rate when pages load in 2.3 seconds.

But ultimately, fast results have to be backed up by strong filters that weed out trips which might not be practical. fromAtoB has decided to favor convenience.

"We found, for example, that Kiwi is sometimes cheaper for travel within Germany on journeys within 750 km, but that comes at the cost of extraordinarily long journeys. If you want to go 450 miles out of your way, or if you are willing to spend 45 hours traveling," Berning says. "We could show that, but nobody is going to choose that. It does not make sense to show these results."

Helping travelers find the intermodal travel options that work best for them, faster, will become increasingly important as travelers search from options that are not dependent on a single mode of transport and as Mobility as a Service (MaaS) takes off.



Greener cities

While air travel is still the fastest way to travel between two cities and sometimes the only practical way to get to cities over oceans, the Flight Shame movement is making people question their air travel choices, particularly for short-haul connections. Even airlines have taken note, with KLM recently announcing that it will cut one of its daily connections between Brussels and Amsterdam and replace it with Thalys and NS Dutch rail service.

"Intermodal transport involving trains and planes remains a complex and challenging business. Speed is key, not only in terms of the train itself, but also the transfer process at the airport. We aim to make maximum progress in both areas. Reducing our frequency from five to four flights a day is a good way of gaining more experience with Air&Rail services"

KLM President & CEO Pieter Elbers.

EU Policy favors a move to intermodal transport, as part of sustainability initiatives to reduce pollution, climate impact, congestion and other social and environmental costs of multi modal transport.

Intermodal transport - taking travellers to a whole new spectrum of accessible destinations - may also be a valuable tool to reducing, socially and environmentally harmful, overtourism in congested metropolises.

But while air travel has received a lot of negative press for its environmental impact, the EU's own reporting shows that the combined external costs (accidents, congestion, air pollution, climate, noise, well-to-tank, and habitat) damage of air connectivity in Europe are still lower than the combined costs of other forms of transport.

The EU's year of multimodality study found that external costs - so environmental and social costs not factored into respective pricing - for transport for the EU28 in 2016 broke down as follows:

- Total external costs in EU28 for road, rail and IWT (inland waterways):
 - € 571 billion, excl. road congestion
 - + € 270 billion (total delay costs) = € 841 billion incl. road congestion

- Aviation (50% allocated to origin; 50% to destination):
 - € 33 billion for all traffic to/from selected 33 EU airports
 - Indicative estimate: €48 billion for all traffic to/from all EU airports
- Maritime shipping (50% allocated to origin; 50% to destination):
 - € 44 billion for all traffic to/from selected 34 EU ports
 - Indicative estimate: € 98 billion for all traffic to/from all EU ports
- Indicative estimate all external cost of all transport modes EU28: € 987 billion (6.6% of GDP)

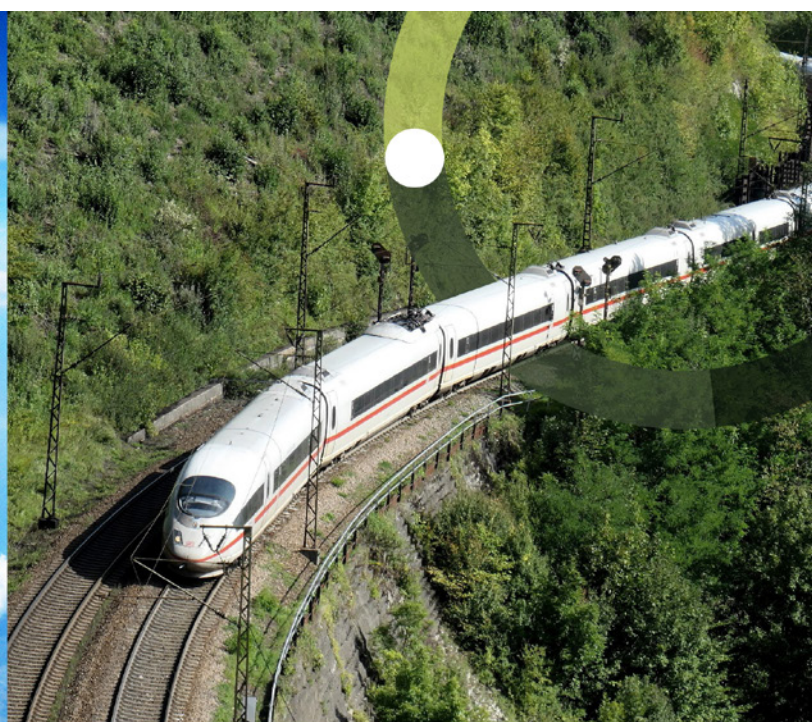
The ultimate vision is one in which electric-powered vehicles, either cars, buses or other inter-city transport,

support the last mile and are coordinated to support a rail, waterways and air infrastructure that will get passengers where they need to be in an efficient manner, with a significantly reduced environmental footprint.

Key goals of the Roadmap to a Single European Transport Area by 2050 include:

- No more conventionally-fueled cars in cities.
- 40% use of sustainable low carbon fuels in aviation; at least 40% cut in shipping emissions.
- A 50% shift of medium-distance intercity passenger and freight journeys from road to rail and waterborne transport.

But the infrastructure to support this vision still needs to be completed.



Railway integration programs at world's airports



Both in Europe and abroad, an intermodal link between rail and air transport methods relies on adequate connections between the two transport systems. This is not always available.

As Anne Graham of the University of Westminster Tourism Research Group writes in her *Managing Airports* 4th Edition:

"Switching from air to rail is feasible only when dense routes are being considered. Such rail links also require huge capital investment. In the end, passengers will choose the rail option when the time, fare, frequency and access characteristics of the service offers them an advantage."

This is consistent with fromAtoB's own findings and forms the basis of its search algorithms.

Graham reviews other times when air-rail partnerships, like the one that KLM is implementing with Thalys and NS Dutch rail services, were implemented successfully. In those cases, too, there was a direct connection between the rail service and the airport terminal.

In 1998, Lufthansa and the railway company Deutsche Bahn (DB) signed a memorandum of understanding to introduce an AIRail product on completion of the high-speed train link on the high-speed routes of Frankfurt-Stuttgart from 2001 and Frankfurt-Cologne from 2003.

"There was a code-sharing agreement between Lufthansa and DB, and similar agreements now exist with other airlines. At Paris CDG, a number of airlines have similar agreements with the French railway, SNCF. The services are also operated with through-baggage check-in and the same transfer times as apply at the terminal. This initiative has switched passengers to high-speed trains and reduced the use of feeder flights as well as shifting some demand from cars and local urban rail services."

There is also a search advantage of such partnerships, with published schedules and reservation systems supporting intermodal bookings.

The last mile

Another element that will need to be factored in over time is last-mile service, or ground transport from the passengers' point of origin (at home or at an away-residence) to the rail station or airport, which can then be linked to the balance of the intermodal booking. But there are challenges in obtaining the necessary data to make those arrangements as part of an intermodal booking: e.g. public transport schedules and some bus schedules are not set up to a data standard or even available for digital bookings.

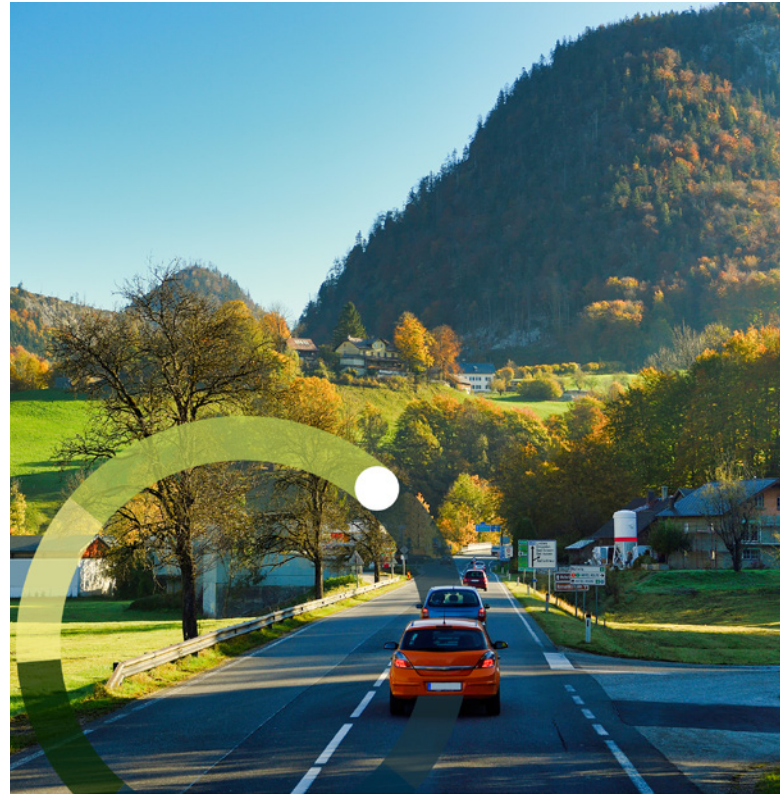
"You have to keep in mind that there are 130 different local transport companies in Germany alone," Berning explains. "You would have to integrate 130 different APIs. It's an interesting proposition, but compared to the long-distance market it is significantly less mature. It may take a couple of years for the technical situation to mature to the point where you can really do that."

"As an aggregator, we rely on the speed of others in the transport chain. One thing that we are dealing with are players that are very slow in terms of decision-making. The data we digest is partly very unstructured. Bookability also is an issue: You usually cannot book regional transportation tickets less than 48 hours, sometimes even 2 hours, in advance."

The integration of regional transportation providers will be key though to the future of intermodal transport and to Mobility-as-a-Service.

Lars Thomsen, founder and chief futurist of Future Matters, who studies evolving technologies in transport, believes that both the transport and IT framework for this will be mature within the next decade, supported by artificial intelligence as well as alternative transport business models.

"At the moment, we are still working with trains and transportation methods that are running on a schedule as well as individual services. That will change by the middle of the next decade," he says. "Around 2024–2026, we will



have a switch to a system that knows who, where and when someone needs to be picked up and delivered, as well as advanced self-driving vehicles."

Algorithms that can unify transport methods, like the one developed by fromAtoB, will become critical digital infrastructure for future digital agents.

"You'll have personal AI agents that negotiate your transportation. This will create a new marketplace for last-mile transportation. We are not quite sure whether this will be met by train providers or bus providers or by ride-sharing like Uber, Lyft," Thomsen says. "We are looking at a tipping point where most of the planning for transportation needs will be done by artificial intelligence systems. They will determine the best way to get from point A to point B, whether that's across the city or across the country or internationally."



"We believe that public transport systems will come under increasing pressure over the next decade, both in regard to operational costs and fares, when compared with shared fleet or individual transport services," Thomsen adds. "If we come to the point where we have fully autonomous vehicles to deliver you to your destination within 50 miles, those individual transports will not be much more expensive than the fares for a train or a local bus service. Those will be point-to-point on-demand, comparable to a taxi today, but you can buy them for a price of a bus ticket. It is interesting to see whether public system can come up with pricing and service quality schemes that can compete with autonomous transport in future. This is being discussed in many cities. It might become a real threat within the next decade."

Ultimately, Thomsen believes that AI will find the best price and the best journey time, by combining transport methods, and package transport as part of a subscrip-

tion-based or fixed-rate solution. "In the end it will be a market-driven system," he says. "Basically looking at flat rate and using three to five means of transportation, or just deducted from a personal travel account."

As a result of the work of individual start-ups, like fromA-toB, and the work of search giants like Google, Thomsen believes that AI-search for optimum travel will advance at a rapid pace.

"In the next five years there will be a big rush for platform economy, both on the personal assistant side and also the planning of trips and travel," he says. "The only way to participate in the system is to have a transparent system of every asset. It will be very important that local trains or privately driven taxis, or shared cars, or inner city transport systems, be integrated into both scheduling and pricing schemes. There will be a need to have full transparency for every asset that will participate."



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