

Flying On Rail Tracks across Europe

A case study for the introduction of quantitative pricing methods

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FORTE is a new company formed by several industrial companies. Its mission is to establish international highspeed train service operations across Europe. This consortium comprises partners from national railway authorities, from the railway industry, as well as experts from specifying and promoting transport operations. FORTE is the abbreviation for Flying on Rail Tracks across Europe. It was founded by an initiative of the European Union (EU) in response to the inquiry of the Europeans to make transportation more sustainable. The mandate of FORTE contains the innovation of so far nationally oriented rail services, but also the development and, additionally, the establishment of new railway technologies. FORTE has quite a high budget, and the consortium partners have agreed to cover every cost for the next years. Therefore, each income from operations is 1:1 transformed into a gain of FORTE.

FORTEs so far made efforts are standing on three primary pillars. These pillars are the “enablers” for FORTE’s success.

- First, all affected countries have agreed on standards in the control and safety of railway operations. The EU establishes a new European agency to control FORTE’s operations following the aim to enable reliable and seamless cross-border train operations.
- Second, rolling stock is improved to enable more efficiency in daily operations.
- Third, FORTE has compiled innovative mobility products, which seem to attract sufficient demand.

The emphasis on environmental aspects is evident in the promotional efforts undertaken by FORTEs. However, passengers also feel that a precise “deceleration” accompanied by significantly increased travel comfort is needed.

An innovative train composition concept forms the technological backbone of FORTE’s daily operations. The deployed rolling stock is a mixture of a block train and single wagons. Individual wagons can be moved by a small auxiliary engine so that the deployment of a shunting locomotive becomes superfluous. The insertion, as well as the removal of different types of wagons between the two engine end cars, can be handled by one train conductor only. Therefore, every train reconfiguration takes only a few minutes.

Three different types of wagon types are available for the train composition. Among them are two different passenger car types, as well as one freight compartment wagon (FCW). The latter type of wagon is prepared to carry up to 30 EURO-pallets. A side sliding door enables

the loading by a fork lifter on a common nearly same-level platform. An Economy Type Wagon (ETW) offers 60 passenger seats. The ad-hoc transformation of an economy seat into a reclining chair is possible and makes overnight rides as comfortable as possible. Four shared restrooms offer quite a high standard for personal refreshment. A Business Class Wagon (BCW) hosts 30 passenger seats in 15 passenger compartments. Each compartment has a private restroom and office equipment (like a desk, a printer, ...). Due to legal issues a composed train cannot have more than 8 wagons between the two engines but every mixture of wagons is allowed.

After several market surveys and a careful inspection of the available facilities, FORTE decides to construct a star-shaped network. The center of the star is Leipzig. Enough capacity on the tracks, as well as for a depot, is available there. Five rail routes ("lines") originate from and end here.

- The Northwestern Service shuttles daily between Glasgow and Leipzig, calling at London as well as at Brussels but also Frankfurt.
- Daily service in both directions between Barcelona and Leipzig with intermediate stops in Paris, Zurich, and Munich realizes the Southwestern Service.
- Bookings of the Southeastern Service between Budapest and Leipzig (also serving Vienna, Prague, and Dresden) are possible.
- The Scandinavian area is connected with Leipzig by the Northern Service, which offers daily shuttles between Stockholm and Leipzig, also serving Copenhagen, Hamburg as well as Berlin.
- Finally, the Eastern Service goes from Moscow to Leipzig. Trains on this service are also calling Minsk as well as Warsaw.

The operating concept relies on the idea to offer one service on each line in each direction every day. The departure time from one terminus of each service falls into the period of the late morning. After several technical and organizational improvements become effective, the ride time along a line will be approximately twenty hours for each service. A train arrives at its terminus early in the morning. Some hours are available to clear the train for its next ride in the reverse direction (including train recomposition, shunting, cleaning, and replenishment of catering materials).

In order to be able to use the rolling stock with the highest possible utilization, FORTE has decided to sell tickets as well as cargo space according to a demand-oriented pricing scheme. The idea is to copy several pricing mechanisms from the airline industry. There, demand-based pricing schemes have been applied successfully for passenger tickets as well as for air cargo. Tickets are sold exclusively online via a website to enable quick and cheap price adjustments.

FORTE installs a comprehensive pricing team in its headquarter. Experts from market observation, capacity procurement, IT as well as pricing and marketing cooperate to identify suitable prices for FORTEs services. During the first general meeting of the pricing team, a list of questions arises.

Q1. How many seats should we offer in Economy as well as Business Class on each service?

Q2. How many wagons should we purchase?

Q3. What are the fair prices for tickets for each service?

Q4. How can we avoid that business customers book in Economy Class instead of Business Class and vice versa?

Q5. How can we react if the prices we set are too high or too low?

Q6. Is it possible to sell tickets at different prices for the same service? If this is possible, how can we ensure that we earn the maximal money from the market?

FORTE also wants to offer a high-quality freight carriage service using the FCW wagons. The sales processes should be as simple as possible. Can they use the same pricing systems and mechanisms as for the ticketing of passenger seat tickets?