

# DEUTSCHLANDTICKET

## A Technical Challenge

The Deutschland Ticket was launched on May 1st, 2023. The policy behind the Deutschland Ticket was agreed upon by federal and state transport ministers on January 27, 2023.

Federal and state governments have made it clear that the Deutschland Ticket is intended to be offered digitally – in an app or on a chip card. A few transport companies are not able to provide digital tickets, so they will issue a paper ticket with a QR code that can be checked digitally. This paper option will only be valid during the transitional period until December 31, 2023.

Digitization provides transport operators and authorities with an opportunity to make public transport services more convenient and tailor them even further to meet people's needs. The public transport sector needs to be more active in this ongoing process and a digital Deutschland Ticket is an important step along the way.

### What MENTZ Provides

Both chip cards and paper tickets have to be distributed. The solution is the barcodes in the app that are created each month.

In the past, getting a subscription ticket was a bit cumbersome. Passengers usually had to fill out a form and allow for direct debit from their bank account. A chip card needed to be issued that could be picked up at a service center or sent by mail.

A new subscription method is being launched along with the Deutschland Ticket. Customers can purchase the Deutschland Ticket in the app by selecting the subscription and the month when its validity should start. The ticket is then issued and appears promptly in the app. If the selected month is the current month, the ticket is paid immediately. If the ticket should start its validity the following month, it is paid at the beginning of the month of validity. Next month's ticket is sent directly to the app a few days before the end of each month. The period of validity is written on the ticket and in the barcode and can be read by applicable devices. Customers have the option to cancel the subscription on a monthly basis before the end of each month.

For customers, this new subscription method is easy and convenient. So much so that customers with chip cards are expected to switch to the new method in the app in due time.

MENTZ ticket shops are prepared for a large volume of transactions. In the short term, we are expecting the first 100,000 Deutschland Ticket subscriptions in the VRR ticket store. This means that the store will have to quickly process paying for 100,000 tickets with barcodes at the financial service provider. And because payments can only be made after the validity period has begun, the process may take several days. Financial service providers will set the pace in this regard. If a payment fails because of insufficient funds, we will have to immediately delete the ticket, terminate the subscription contract, and inform the customer and the transport company or authority that sold the ticket. Further handling of such exceptions is still an open question.

### VDV CA or UIC Barcode

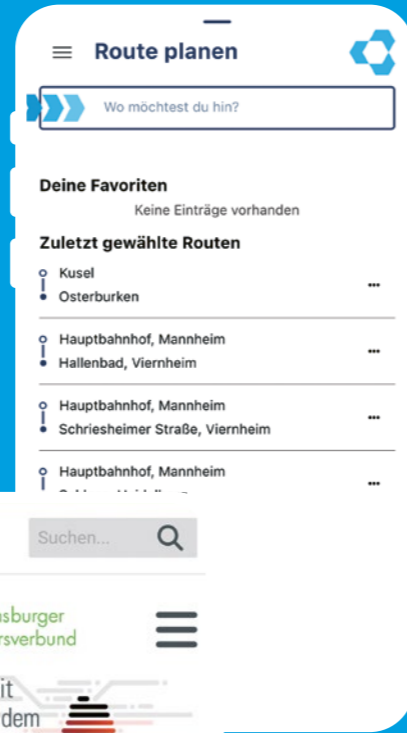
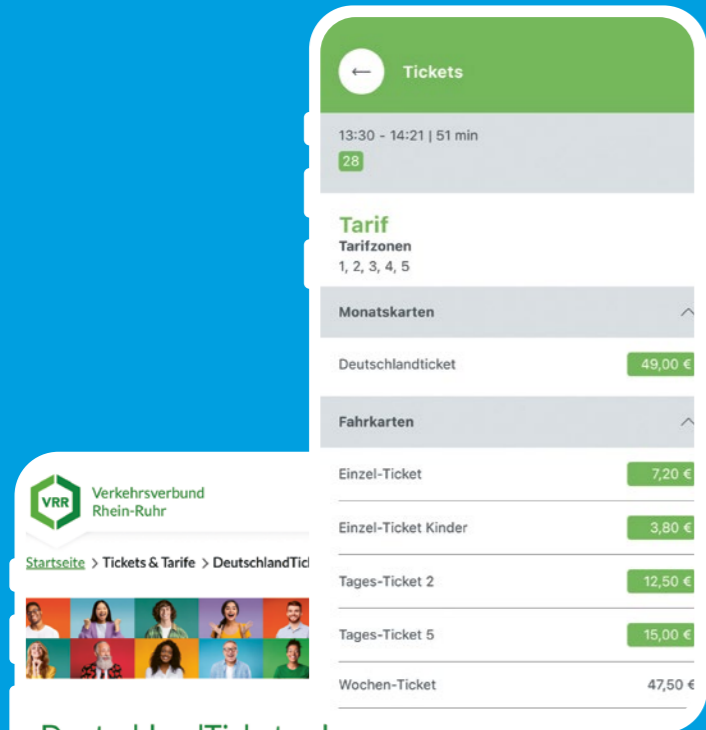
Deutschland Tickets must contain a signed barcode. Encryption is performed with a private key and decryption is done with a public key.

For the VDV CA (core application) process, the private key is supplied with so-called SAMs (secure access modules) by the VDV. The SAMs are used in smart-cards, which is hardware that has to be installed in a data center. MENTZ has built its own ticket generator modules, which consist of a single-board computer with ports for 4 SAMs. The computing speed of the SAMs basically determines the time needed to generate a barcode. A SAM can sign 2 barcodes per second, which translates to a MENTZ ticket generator module having the ability to sign almost 30,000 barcodes in a single hour. Multiple modules are always utilized in parallel.

**Topic**  
Deutschlandticket

**Products**  
MENTZ - Client shop  
CiBO - Shop  
Gullivr

**Contact**  
Dr. Hans-J. Mentz,  
Frank Merkel  
merkel@mentz.net



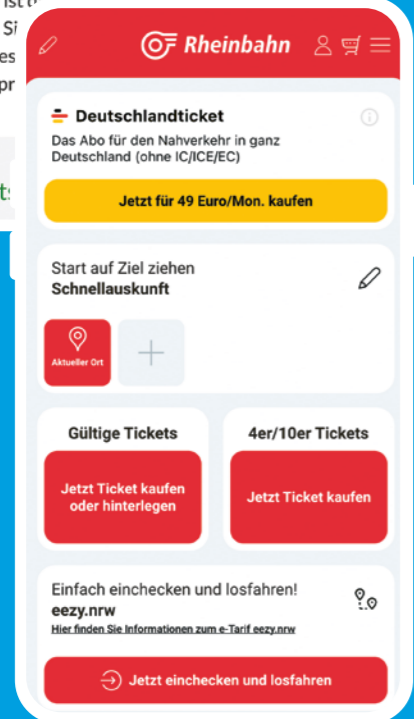
### DeutschlandTicket – das bundesweit gültige Ticket für den ÖPNV

Das DeutschlandTicket ist da! Das digitale, bundesweit gültige Ticket für den Öffentlichen Personennahverkehr (ÖPNV) ist d-...  
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kündbares...  
Einführungspr...

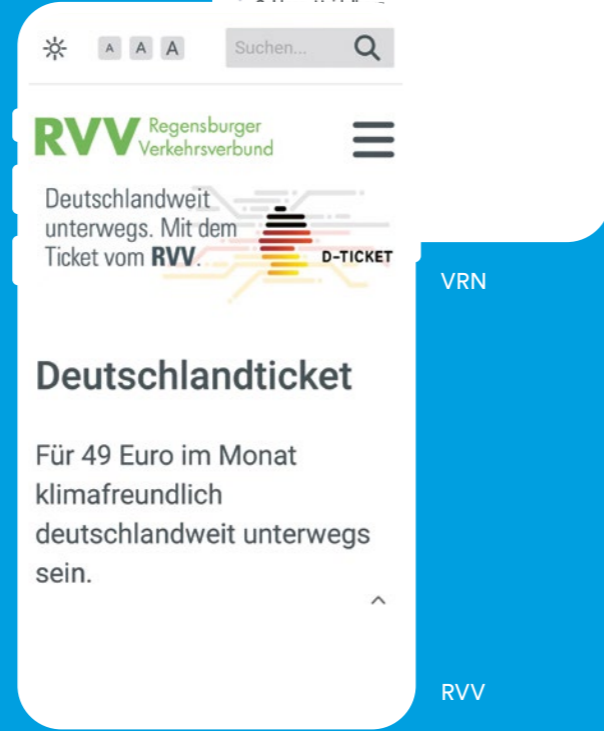
MENTZ Clientshop

Das Deut...

VRR



Rheinbahn



VRN

RVV

The UIC process does not require any hardware, but does use asymmetric cryptography. MENTZ can, however, create the key pairs on its own. The private key is safeguarded and the public key is made available to controllers, the Deutsche Bahn, and the Deutschlandtarifverbund GmbH. The process can be scaled as required.

#### Deutschland Ticket in the VRR Ticket Shop

The VRR offers the Deutschland Ticket with a  
– 1st class subscription ticket (VRR) and a  
– Bike subscription ticket (VRR)  
– Semester ticket upgrade.

The tickets can be used together and purchased in the same shopping cart. The VRR ticket shop is used by 20 VRR transport companies and by the state-wide system mobil.nrw, which provides all NRW fares. The eesy-fare was adjusted. A passenger's trips are capped at the monthly price of a Deutschland Ticket.

#### Deutschland Ticket at Rheinbahn

Rheinbahn, the largest transport company in the VRR, operates its own MENTZ ticket shop. The Rheinbahn app was custom designed by MENTZ according to Rheinbahn's layout specifications. Calculation of trips and fares occurs in the VRR system.

#### Deutschland Ticket in the MENTZ Client Shop (MCS)

The MENTZ client shop is open to any transport company. The client shop is an affordable option for transport companies to sell tickets because the costs for the Cloud system can be divided.

Currently, the following clients work in the MCS

- Padersprinter, Westphalia fare, CA
  - OWL (Eastern Westphalia Lippe), Westphalia fare, CA
  - KVG Lippe, Westphalia fare, CA
  - VPH Paderborn, Höxter, Westfalentarif CA
  - RVV Regensburg Transport Authority, RVV fare, UIC
  - AVV Augsburg Transport Authority, AVV fare, UIC
  - BEG Bavarian Railways Company, all Bavarian fares, CA
- All clients, except for the Padersprinter, provide the Deutschland Ticket.

#### Deutschland Ticket at the VRN

The VRN (Rhein Neckar Transport Authority) operates its own MENTZ ticket store. Utilizing MENTZ's Gullivr app, it offers the full range of VRN tickets, a CiBo system with best price guarantee, and now the Deutschland Ticket as well. It operates its own journey planning system. The tickets are issued with UIC codes.

#### Deutschland Ticket at Trier Public Utilities

Trier Public Utilities sells the Deutschland Ticket with the MENTZ Companion 5 app. It uses the VRN EFA journey planner and generates UIC barcodes.

#### Outlook

We can expect existing subscriptions for monthly tickets to be replaced by subscriptions with the Deutschland Ticket. In the VRR, there are currently around 1.2 million subscriptions, which could later grow to an estimated 2 million.

Deutschland Tickets will be available for school-aged children and university students. There will also be a so-called job ticket, which is paid for by employers and receives an additional discount.

Considering that tickets will need to be produced on a monthly basis, it is easy to recognize the amount of processing that the stores will have to manage. MENTZ is well equipped to do the job.