Cover Story
DYNAMO – Dynamic, Seamless Mobility Information
Dear Reader,

In this issue of the magazine we are presenting the company with a new look and with the name MENTZ GmbH for the first time. By doing so, we intend to emphasize the direction of the company as a family-run business. This step is accompanied by a new and original appearance which make our publications and marketing activities visually more recognizable for you.

The cover story reviews the DYNAMO research project. We invested three years of intensive research and development and would like to present the results. In principle we only take part in research projects when we expect results that will help our customers and our products. Ultimately, we assume more than half of the costs ourselves. This time we can truly be proud of our work: we achieved a great deal.

As in every autumn issue, we report on the user groups, which took place in Basel, on the PTSI Conference in London and on the WhereCamp in Berlin.

A very exciting project is the implementation of our control system for Supertram in Sheffield. At the end of the specification phase we have a further research project. It involves the integration of demand responsive transport and booking such journeys using EPA. This project is now entering practical testing. In other words, a topic that will keep us busy next year. Finally in this issue, we also present DriverWeb, our mobile driver information terminal for operators.

I wish you a pleasant holiday season and a happy new year.

Dr. Hans-Joachim Mentz
Cover Story
Research project to ensure seamless routing and navigation from door-to-door with special consideration to high accessibility.

Germany, Munich City and Region Authority
Federal Ministry for Economic Affairs and Energy
Partner
Project partners of DYNAMO and specifically the MVV in Munich
Project Scope
Capturing of indoor and outdoor route data in OpenStreetMap, routing, navigation, trip guidance
MVV-App Downloads
more than 500,000
Munich
City Area: 310.69 km²
Region Area: 5,530 km²
City Population: approx. 1.5 million
Region Population: approx. 1.4 million
Passengers: 679.53 million/year

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In mvv news II/2015 we reported on the project for the first time. At the time of that report we were still in the beginning phases of the project. In the meantime, we are in the final stages of the project and would like to present the results to date. In this article we will focus on our work and the southern testing area, where we worked in collaboration with the MVV on the following topics:
- Indoor- and outdoor routing, including the capturing of the required geographic information
- Navigation and trip guidance in real-time
- Routing with high accessibility
- Multimodal trips

The project is part of the group “from door-to-door” which was sponsored within the scope of the “mobility initiative for public transport of the future” by the Federal Ministry for Economic Affairs and Energy.

Goals
In the conception phase, the project was called “reliable from door-to-door”. The general aim was to be able to fully plan and display the users’ route even outside the vehicles – and also to actively guide them. The latter is the most difficult part of a public transport journey because users have to make a number of decisions and find the right path. A daunting part of the task is to find fully or highly accessible routes. In Munich there are many stations, a few of which seem like a labyrinth. Indoor-routing and navigation was an important goal, but in many locations the indoor world and its complexity transitions to the outdoor world. This required integrated routing and navigation in detailed geography. Finding reliable and safe routes in a cityscape means pedestrians need to cross streets at official crossings and use traffic lights, underpasses and bridges where possible. In addition to the stations for U-Bahn (subway) and S-Bahn (commuter trains) there are also many tram platforms and facilities in the middle of the roads that must be fully accessible. Pedestrians are not the only ones that want to safely and reliably arrive at stopping points. Bike and car are means of transport that, along with public transport, also build the various legs of a journey. The cycle route network and the footpath network have many commonalities. In this way an integrated network is a solid base for integrated planning. Even the transition points – like storage facilities for bicycles and other vehicles – require detailed modelling. This can be used for both classic “Park & Ride” or “Bike & Ride” journeys, but also include car-sharing and bike-sharing of all kinds.

Database
Munich has many complex public transport stations, some with up to five underground floors. A number of stores already have underground entrances. In fact, the stations have developed into real shopping worlds. The route through this underworld is therefore part of public transport. A particular challenge are routes that account for full accessibility. In three large stations in Munich, at “Hauptbahnhof”, “Karlsplatz” and “Marienplatz” interchanges are done using the “Spanish method”. This means: on-board passengers exit the vehicle to the right, while boarding passengers enter from the left. If, however, a passenger requires an elevator, they have to exit the vehicle to the left. This must be accounted for when routing for full accessibility. Also required for routing and navigation are geographically exact modelled link elements. The data required for this, like walkable areas, steps, escalators and elevators, was duly captured. In the process it became apparent that indoor data often transition seamlessly to outdoor data. Due to the excellent quality and richness in the detail of footpaths, we selected OpenStreetMap (OSM) as a database. All railways had already been captured in the data. In long discussions, we were able to convince the OSM community of our intentions. We then went about capturing the data of all Munich stations (rail, S-Bahn, U-Bahn and tram) in the OSM database. Both route elements and sign postings were used to guide users. Street names constituted a meaningful supplement to the outdoor footpath network. By capturing the pedestrian lights, we were able to find safe, reliable, and accessible paths to the tram platforms. Collaboration with the OSM community in Munich developed into a trusting relationship. It showed how important it is to thoroughly communicate with various partners and to inform everyone involved of one’s own intentions. Even the legal foundations had to be observed. OSM enables the data to be used for free in accordance with OSM license terms (open database license (ODbL)). Whoever wants to include their own data has to follow the “contributor terms” and own the rights to the data. For our project it made most sense to collect data on-site.

Routing
The OSM data do not yet constitute a routing-capable node-edge-model. In order to achieve this construct, an import procedure must be created that also makes the conversion of the model. Complicating matters is that there are frequently many methods to represent facts in OSM. Obviously the import has to cope with everything. We were successful in calculating integrated routes from front door-to-platform, even through several levels/floors and accounting for full-accessibility.

Presentation of Routes
Initially maps need to be generated with the OSM data. There are OSM standard layouts, but these maps are intended to display as much content as possible. A map for public transport only needs to show content relevant to the topic.

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The underlying map uses tiles with raster technology, calculated from OSM data.

Interchange at “Ostbahnhof” (Munich East) The passenger has to change trains, which is displayed in detail below. The scale has been selected to be able to easily recognize the footpath with each street crossing and steps. The map provides several levels. One can follow the footpath both on the surface and underground. The underground maps display the most important points of orientation or landmarks. Examples of these are walkable areas, tracks, steps, escalators, elevators and stores with names. Steps that lead upward are marked with an increasingly lighter color gradient. Downward steps are darker, but only the part is displayed that is visible in a gap. The direction the steps move is indicated for escalators. Escalators and elevators that are out of service are marked red. Maps in these scales (1:2000 to 1:5000) would require a lot of memory as bitmap tiles (raster graphics). The computing power required to generate them would be enormous. For this reason, vector tiles are used for maps of large scales. The actual map image is generated by the client, in other words the browser or mobile phone software. Vector technology also enables frequent updates to the maps of these scales, which means that with each import of OSM data, new tiles are available. In addition to the map view, there is a route description with turn instructions. These texts can also be read to passengers using text-to-speech. The individual instructions not only show the direction, but also reveal where a passenger has to change levels and which connecting elements (steps, escalators, elevators or ramps) they can expect. Because underground routes often use walkable areas and the direction cannot be exactly specified, sign postings are indicated when relevant to the route.

Routes with High Accessibility (p. 5, fig. 11 When building the Munich “U-Bahn” (subway) and “S-Bahn” (commuter trains) a considerable amount of money was invested into making the stations highly accessible. That said, there are still relatively few routes that are suitable for baby carriages or wheelchairs. For example, the subway station for “Marienplatz” in Munich has eleven entrances with steps and escalators – but only two with elevators. Even the previously mentioned “Spanish method” requires special routes. In what follows, two routes are shown with interchanges from the S-Bahn to the U-Bahn.

Guidance to Destination The data basis and map technology are not only the basis for a web- or mobile journey planner. They also provide the basis for guidance to a destination that will be described in the next article.

Outlook The DYNAMO Project has helped advance the development of the electronic journey planner (EFA). The use of OSM data has prevailed in German-speaking countries because the database is unrivalled due to its richness in detail. EFA map technology has taken a step forward because time- and memory-consuming computations can be avoided at higher zoom levels. Finally, the products, the accessibility journey planning and the trip guidance service will be launched to the public.

In the first example (fig. 4, a passenger exits to the right and uses the escalator down to the U-Bahn. In the second example, which shows the highly accessible route (fig. 6), a passenger has to exit to the left and take the elevator to level -4. In addition to a highly accessible route, entrance into the vehicle itself must be guaranteed. This is why the route search accounts for the indication of entrance height. Even narrowness is indicated – a small, but significant detail for wheelchair users. Consideration is also taken for accessibility above ground. Indications are provided whether a small platform can be reached over a lowered curb. If the tram stops without a platform in the middle of the street, this type of boarding can be excluded for the route.

Multimodal Routing (fig. 4) In addition to the footpath router, the system also has an integrated cycle- and car-router. The following figure 6 shows a cycle route with turn-by-turn directions followed by a footpath and the public transport journey. Using this technology even the latest means of transport like car- and bike-sharing routes can be planned and displayed. Multimodal routing was described in detail in mvn news 1/2015.
Dynamic Trip Guidance

User Experience
These days, car drivers no longer use maps. Car atlases have disappeared. A driver just has to simply enter their destination into a navigation device and select the route. The device itself gives simple directions, receives information about the traffic situation and adjusts the route when necessary. And what does a public transport user experience? They first have to search for a public transport stop, find the right entrance and then locate the departure platform. If they manage to sit in the correct vehicle, they then have to get off at the right stop and make any connections. When changing vehicles they have to find the right departure platform again, which can be rather complex at large stations with different levels. Nevertheless, there is a solution: dynamic trip guidance.

Goals
Users should be guided on their trip with references to the relevant signs. Users can click through the directions that are displayed on the map in the levels. The planned, required time is always visible. With each direction followed, the remaining time until the next goal is displayed. The footpath phase ends when a passenger reaches the boarding location or their final destination. This is confirmed on the mobile phone. During the wait phase passengers are shown the next arriving vehicles at their stop in real-time. They can even observe the approaching vehicle on the map. The wait phase ends when the user confirms that they have boarded the vehicle.

The App
For journey planning in Munich there is already the EFA Companion, an app. This app was expanded to provide users with planned journeys a form of guidance to their destination. Because important parts of the journey occur in stations, the app had to master “planning and guidance” for both in- and outdoor.

Route Display
To display routes, the turn-by-turn directions are required which are calculated from the routed data. Inside the stations the individual route directions are summarized according to level. Because only very approximate directions can be indicated for pedestrian areas, we supplemented the routes with the most important signs to help passengers orient themselves better. The routes can be displayed in two ways. First, they are depicted on maps separated by level. Second, they are displayed as a sequence of directions in a list or are read out. For route display in stations we developed maps that show the routes separated by levels. Figure 1 shows a route at “Marienplatz” from the “U-Bahn” (subway) on the platform on level -4 to the “S-Bahn” (commuter train) platform on level -2.

Trip Guidance
The MVV app was supplemented with a trip guidance mode. Users plan trips on their mobile and then select a trip to use for the guidance. During planning and trip guidance requirements for accessibility can also be taken into account for routing.

During the footpath phase passengers can be guided using the map as long as GPS-localization is available. In the indoor area, especially in deeper levels, localization may not be available. A trip is therefore only possible using orientation help like landmarks, platforms, steps, escalators or

Fig. 1 Overview of trip options
Fig. 2 Footpath over the intersection of Haidenplatz
Fig. 3 The map only contains the most important display elements, which are the walkable areas and platforms, the tracks, the fire protection dividers, the stairs, escalators and elevators.

Example of Trip Guidance
We want to go from an address in “Haidhausen” to the new “Pinakothek”, preferably with the tram and “U-Bahn” (subway). At first, we receive an overview and select the first trip option. Figure 2 and 3 show an overview of the trip options and a detailed view of the first trip. We start trip guidance mode. It begins with a footpath to “Haidenplatz”. We have good GPS reception. The white arrow on the mobile phone shows us our position and guides us to the tram stop. We board the tram, ride to the “Ostbahnhof” (Munich East) and take an “S-Bahn” (commuter train) to “Karlplatz”. We have to get out to the right on level -3, which is also indicated on the mobile phone. The map points us toward the escalator that takes us to level -2, the connecting passage. From here we are told to go up. The signs are indicated as well. From there we enter the mezzanine at “Karlplatz” (Fig. 4), which we cross to get to platform 2 of the tram. The map oriented in walking direction helps us to find the right exit. On the map we also see the shops that we are passing. We now reach platform 2 (Fig. 5). This is where we have to wait for the tram. A departure board for this tram platform shows the sequence of arriving trams (Fig. 6).
After boarding a red arrow indicates our location to us. After exiting the tram, the mobile phone guides us to our destination (Fig. 7).

**Outlook**

The dynamic trip guidance mode is currently undergoing intensive testing. The MVV plans to go live with the app at the end of the project. Trip guidance mode is an add-on module for the EFA Companion app. We look forward to receiving your feedback.

“Using public transport is often more difficult than driving a car.”
Since 1994, the Supertram has been operating in the city of Sheffield in South Yorkshire and connects the suburbs to the city center using three lines. The tram itself is a huge success and has been able to steadily attract an increasing number of passengers. The next goal is to achieve this same “super” level of success for passenger information. To this end, the South Yorkshire Passenger Transport Executive (SYTPE) created the Project Tram Information System and, within the scope of an international tender, Mentz was commissioned to implement the system. We installed an integrated operational control center and an incident management system for the tram in Sheffield.

The goal is to keep passengers informed in real-time of the current service quality of the trams. To achieve this aim, precise prognoses of arrival- and departure times are to be identified from the position messages of the trams. These prognoses are then made available to passengers over multiple channels which include display systems at stops, the website and app by Travel South Yorkshire and the National Rail Enquiries (NRE) portal. Additionally, other information regarding service disruptions and incidents is to be collected using an Incident Management System (EMS). This system keeps passengers informed e.g. about how long an incident may last and how they may be able to avoid it.

**AVM Light and EMS Become One**

As reported in these pages, Mentz has offered an AVM Light and EMS for quite some time as stand-alone systems. In Sheffield, a fully-integrated version of both programs was installed for the first time. This is the logical consequence of the fact that, in control centers, both system are usually operated by the same person and deviations from regular operation and results stand in a directly causal relation to one another.

In the Tram Information System (TIS), users in the control center have direct access to AVM and EMS functions over a single web application. Vehicle and incidents are displayed together on a map on the dashboard. The key performance indicators are similarly displayed, which are assembled from the information from operation and incidents. The layout contains all operating functions of the AVM and EMS so that they are available to the user in the control center. It is essential that the functions from AVM and EMS are part of an integrated work flow.

**Three Clicks Between Incident and Twitter**

For example a user recognizes over a radio they also learn about the cause of the incident. The user can then directly create an incident message from the context of the route- or trip. In doing so, they can often use previously created message templates for frequently occurring incidents. In addition to general attributes like affected routes, stop and type of incident, other items entered into the system include a text message, a passenger recommendation, an activity (e.g. train failure on a specific section of the route) and the output channel. This information does not have to be input each time, but is part of the templates and can be adjusted, if necessary. If the incident matches a template directly, the corresponding message can be activated with three clicks.

**The Same Information On All Channels**

Real-time prognoses are made available to receiving systems in SIRI-SM format. In case of a service interruption, the departures will be marked as canceled on the affected displays. Incident information is distributed as a SIRI-SX and a Twitter feed. Because it is a backup system, information is guaranteed to be identical in all output channels. Regardless of whether a portal/display integrates the Twitter feed or the SIRI-SX feed, it receives the same information at the same time.

**SuperTram with SuperInfo**

Exact prognoses of real departure times with up-to-the-minute incident information is a huge benefit, especially for passengers that are only familiar with planned timetables or those that waited to see if the tram actually appeared. In Sheffield we’ve been able to achieve one of the most advanced RTPI (real-time passenger information) systems on the British Isles.

**Customer Project – Super Technology for Supertram**

![Image of Supertram in Sheffield]
The Federal Ministry of Transport and Digital Infrastructure supports the research project “Comprehensive Journey Planning for Rural Areas with Integrated Demand Response Services”. Within the framework of this project, the concept requirements must be made to comprehensively integrate flexible usage modes into journey planning systems. The project scope does not only involve information in the journey planner, but also the integration of booking options. The project started in July of 2014 and is a collaborative effort of Menta GmbH, the Trapeze Group Deutschland GmbH and BBS Reisen Schapfl KG.

**User Requirements**

From a passenger’s perspective it is not only preferable to have the entire journey (incl. demand response transport) in a journey planner. They also want to book all parts of the trip in the same step. Currently booking links are integrated in journey planners, but these are so-called “deep links” to the booking systems. If the link is followed, the work of the journey planner is finished. The system does not know if the route was successfully booked. Other services, like an integrated display of a trip or trip guidance, are not possible or are only possibly with limitations. For most demand response transport prior notifications have usually been defined. Required extensions or changes exist even after the prior notification time limit has expired. Also, aspects of trip guidance (delay, missing a connection, etc.) are interesting for passengers if parts of the journey need to be made with demand response transport. Technically this means that demand response transport is accounted for in the normal guaranteed connections of the AVM/ITCS systems. In sum, the requirement of a portal is that it does not only inform passengers about connections and wait times at the stops. For rural transport the routes are often set shortly before the trip begins, instead of a timetable, only time corridors are used.

**System Concept**

The various services of public transport are performed by many different systems:

- Planning systems: Planning and optimization of transport services
- Journey planning systems: Calculating comprehensive journeys for a passenger’s mobility requests
- Automated Vehicle Monitoring (AVM)/Intermodal Transport Control System (ITCS): Implementation of public transport services for a transport authority, Guarantee connections and preparing data for passenger information
- Booking- and deployment systems for demand response transport: Booking of a demand response trip and the commissioning of a transport provider to operate the service
- Fare server: Fare information of a transport authority region for a start and destination relation
- Ticket server: Ticket sale, Ticker control

In order to fulfill the requirements for journey planning and booking, interfaces between the systems are required. Some already exist and others have to be redefined. Required extensions or changes to interfaces are specified by the project team.

The transport services offered are planned by transport authorities, transport associations and/or transport companies and calculated using a planning system. The data are exported and relayed via standardized interfaces, i.e., VDV 452, to downstream systems (journey planners, AVM/ITCS, booking- and deployment systems). Today’s planning systems base their work on “routes”, meaning a sequence of stops. A vehicle operates this route with set departure- and wait times at the stops. For rural transport the routes are often set shortly before the trip begins, their departure

**Approach**

At the beginning of the project, the project goals were defined and the various requirements analyzed. The project team then created a planning manual. The planning manual describes different user requirements, the system concept and the data structures and interfaces. During the developmental phase of the manual representatives of various interest groups were involved in expert workshops. This included associations, transport authorities, operators, commissioning authorities, consulting companies, industry and science and research. In what follows, the most important results will be described.

**Flexibus District of Günzburg**

Service hours: 6,293 annually
Demand response stops: 2,271
Passengers: 142,565 annually
Stops: 48

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**Demand Response Transport**

**Authority**

Federal Ministry of Transport and Digital Infrastructure

**Partner**

Trapeze Group Deutschland GmbH, BBS Reisen Schapfl KG

**Project Scope**

Demand Response Transport
Call-A-Bus Passenger information
Booking
Deployment

**Mobil-Info 08282/9902100**
times are defined in time corridors. For this reason they could only be rudimenta-
rially captured in the planning systems. This situation is not ideal and requires new data
structures. It must be possible to combine multiple stops geographically to a service
area. Front door service, if allowed, must be defined. For each service area, service
times and intervals must be determined.

Even the connections between the individ-
ual service areas should be defined. These
data of rural transport are not currently
part of interfaces like the VDV 452. The Eu-
ropean Standard NeTEx which is currently
in development may be able to fill in this
gap (see figure to the left).

**Journey Planning Systems –
Booking-/Deployment Systems**

Journey planning systems are tasked with
informing passengers about the routes
between an origin and destination. In figure 1 the journey planner is designated
in accordance with VDV standard as an
EKAP (Real-time Communications-
and Journey Planning Platform). The portal is
the system on which the actual layout of
the journey planner runs. Booking- and
deployment systems manage the bookings
and requests. The various trip requests are
packaged to tours. The current research
project attempts to demonstrate how booking- and deployment systems can be
linked to journey planners. The concrete
requirement is to define booking inter-
faces that can be integrated into journey planning systems. However, before that
can be achieved the timetable data need to
be identical in both systems and have the
ability to be exchanged.

**New Interface Journey Planning System,**
Booking- and Deployment System

The following functions are planned for the
new interface between journey planning-
and booking-/deployment systems:
• Availability requests for individual trips
• Booking of trips
• Cancellation bookings

The interface will be implemented based
on VDV 431-2 "Real-time communications-
and journey planning platform EKAP",
version 1.1, June 2015. The TRIAS-interface
family specified there will be extended by
these services that model each one of the
functions described above.

**Checking Availability of Trips,**
Booking and Cancellation

The availability of demand response trips
in the booking and deployment systems has
to be requested from the journey
planner. This should not happen by default,
but via a "check availability" button in the
layout of the journey planner. In order to
enable bookings for demand response
services, even after the prior notification
time has expired, it should also be possible
to check the availability for these trips. But
to avoid angering passengers, the journey
planner should display a warning for trips
whose prior notification time has expired.
The parameters to be transferred for a trip
booking are the same as when checking
its availability. So that users do not have
to register with all systems, booking- and
deployment systems should recognize
registrations of journey planners. When
booking, the system ID of the journey
planner, user ID and name, mobile phone
number and email address are passed
along. Using this name a user can identify
themselves to the driver of the demand
response service. In case of unplanned
incidents users can be alerted via mobile
phone number and email. In the personal-
ized area of the journey planner, both the
system ID and the booking-ID are saved per
booking to enable cancellations. The call
"cancel booking" only has the booking-ID
as a parameter.

**AVM/ITCS Systems**

AVM systems are used to calculate re-
atime data. The actual departure times
are relayed to the journey planners (EKAP)
as "on time" or "delayed". The AVM/ITCS
is the system that communicates with the
vehicle. The information regarding the
booked trips can be exchanged over the
VDV499 interface. This interface should
also be used to relay the data that exists
in the booking- and deployment systems
onto the AVM. In this way the integration
of short-term data of demand response
transport into the AVM systems is made
possible.

**Further Actions**

Within the scope of the development of a
demonstrator the results of the previous
concept work will be implemented in the
near future. The considered transport area
concerns demand response services in the
Krumbach District.
The DriverWeb module, mobile driver information, was presented at the user group in Basel. This module is used to exchange information between DIVA Dispo and the employee. The driver receives access to their duties, accounts and time sheets and can read and respond to messages from dispatchers.

Using DriverWeb, dispatchers can quickly communicate duty schedule changes on short-notice, and with the assurance that the disclosed information is read and confirmed. Drivers have the option to view the yearly and monthly duty schedule on the smartphone or on-board computer. Information is always released by the dispatcher, who also determines the time period and personnel grouping. The home screen informs the user of the up-to-dated-ness of the data. DriverWeb, the name of the module for mobile driver information, can be accessed via browser, tablets and smartphone depending on the installed layout. After logging in, the activities for the current day appear on the home screen. Drivers are informed of new and unread messages. There are different views of the duties available to the driver, which can be conveniently accessed via the side menu bar.

**Monthly View**

In the duty view the assigned duties are displayed in a monthly overview by default (figs. 1 and 2). Tapping the bottom menu bar, users can switch quickly to the additional daily, weekly and yearly views. Depending on the selected view additional information is displayed regarding the current deployment.

2 different layouts options are available:

**Application**

**Product**

DIVA Dispo

**Features**

Mobile driver terminal
Duty assignment
Duty exchange
Personal duty schedule
Account balances
Messages

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Drivers are simply informed over their smartphone.

Weekly View
In the weekly view (Fig. 3) the duties are listed as a bar chart. Using this display one can gain a quick overview of the duty’s time-slot. When a duty has been selected the view changes to the daily view in which the details are presented at the duty element level.

Accounts
In the account view drivers have the option to look at their current accounts. The status of the data corresponds to the latest data release for DriverWeb. The accounts available for viewing in DriverWeb are defined in DIVA Dispo. Typical accounts are normally working hours, overtime, flex days, days off and public holidays. The accounts are structured in the view as follows:
- Account balance at the end of the previous month
- Changes in the current month
- Account balance at month’s end
- Account balance at year’s end (preview)

Based on this information the driver receives a quick and organized overview of their current accounts. The number of questions directed at the dispatcher about account balances is therefore drastically reduced. The monthly verification of working hours can be prepared by the system for DriverWeb and automatically released. As a consequence, drivers have access to the monthly accounts at any and all times.

Messages
During daily operation short- and medium-term changes to deployment are frequently made by telephone agreement with drivers and via additional leaflets or info sheets. With the introduction of DriverWeb dispatchers can exchange messages with a driver (Fig. 4). A conversation is always started by a dispatcher. Messages can be sent to all employees, a group of drivers, or to specific individuals. The dispatcher specifies if the messages should be confirmed by the driver by a certain time. In DIVA Dispo all text messages are managed and their statuses – if and when the messages were read and confirmed – are displayed. In DriverWeb the messages are symbolized by a letter icon and the status “read” or “unread” is presented in different colors. The labelling of messages as “to be confirmed by driver” is independent of the message being labelled as read or unread. In other words, a message labelled “read” also needs to be “confirmed”. Drivers can respond to every message sent by a dispatcher. The progression of information between dispatcher and driver is displayed as a conversation (Fig. 5). In this way, the responses are always seen in context with the message.

Conclusion
With our solution DriverWeb we have developed an advanced tool to support daily operation. It supports and simplifies communication between the dispatcher and driver. If you are interested in this product, please contact your MENTZ project manager.
57th User Group in Basel with Kinetics Theme

70 participants met in the third largest city of Switzerland in Basel for the 57th user group with a focus on operators. The large conference room, which once served the Saffron Guild, provided a uniquely historic setting for the user group. In the center of Basel, situated in the “Gerbbergasse”, the guild house is the centerpiece of the Saffron Guild, one of four Basel Herrenzünfte or special city guilds open to all professions. The conference room, with its triple-arched wooden ceiling, has an impressive height of approx. eight meters. It is adorned with large murals with scenes from the Saffron War of 1374 as well as stained glass with the crests of the Basel guilds and honorable societies adorn. Despite its historic nature, the room is also equipped with modern presentation technology, which make for ideal conditions to listen to presentations covering the various aspects of mobility in public transport.

At the beginning of the conference, Mr. Michael Bont spoke on behalf of the hosting Basel Transport Services, tracing the history and plotting out a possible future of public transport in Basel. The BVB is a successful brand in the city, operating the tram across the border triangle between Switzerland, France and Germany. An important current project of the BVB is to expand the tram infrastructure by 2020 to create an attractive, effective and efficient network. The expansion of the network contributes to the development of future city- and environment-friendly employment centers and new residential areas while providing commuters with an attractive alternative to car use.

Talks and Presentations

As per the norm at user groups, Mr. Mentz started the first day by presenting the latest in operational planning. Points of emphasis were the current DIVA 4 releases as well as a glimpse of the vehicle and duty schedules for transport companies. The working methods of the once separate worlds of transport authority and operation continue to approximate one another. For example, the authorities that operate their own EPA with real-time journey planning require detailed information regarding day-specific target timetables and, ideally, vehicle schedule data for a corresponding forecast calculation. Beyond that, data from duty scheduling continue to play an increasing role for evaluations of profitability and tender planning. Using an example, Mr. Mentz showed how an authority can efficiently use the optimization algorithms of operational planning. An important role is provided for automatic identification of empty trip options and personnel trips. Assisted by the geography in DIVA, these trips can be identified and integrated into planning. Another salient topic is the optimization of connection relations in the network. MENTZ presented some new features of the existing “basic interval timetable” tool. Previously it was used a tool for strategic planning that was somewhat independent from daily business. In the future, it will be fully integrated into the DIVA world. Based on the existing timetable – and vehicle schedule data, it can help both users with very frequent trips and ones that have a more “regional” timetable character create optimal routes. With the asset management module and its further development, MENTZ has created a tool to manage and maintain public transport stops. Using this tool, stops and their assets can be managed to great precision far beyond the scale required for planning (lifecycle management). Maintenance- and repair contracts and their fulfillment are directly generated and monitored from the system. MENTZ AVM Light 2.0 is a synthesis of AVM-light and the incident management system. The fusion of the two provided even smaller operators the ability to have advanced operational control and real-time passenger information. Since the beginning of this year the system has been in operation in Sheffield. In addition to operational monitoring it also enables comprehensive management of incidents and customer communication. The latter works using classic media like PISs, but also over social media like Twitter. At the end of the operational part, MENTZ presented extensive new features in deployment. The highlight was a live demonstration of DriverWeb, an HTML5-based smartphone- or tablet application for drivers. Using the app they always have full access to their duties and accounts. In addition, they can edit their preferences for the duty roster and swap duties with other colleagues. Duty logins even work via smartphone and communication with the control center is solved clearly and easily.

The evening meal was held in the restaurant of the museum, a venue that provided a great atmosphere for participants to engage in lively discussions whilst enjoying autumn delights and local Basel specialities. The second day of the user group focused on passenger information and IT. A trip with the presentation route “UG” made a stop at all stations of publication and introduced a number of new features in this area. MENTZ also reported on the first large DIVA / EFA system in the cloud. Transport for London took this step and has been successfully operating a fully cloudbased system for almost a year. The research project Dynamo shows the future possibilities of EFA. Indoor-routing and dynamic map tiles will help users move in public space and provides continuous guardian angel services during the trip. On Thursday at midday, the user group ended with a presentation about DIVA 4 / EFA 10 hard- and software news. A very special thank you goes to our colleague, Gabriele Schobert, who kept the user group running smoothly over many years. Her timely organization and “can do” attitude always provided a very positive atmosphere at the conferences. Her successor, Daniela Sacha is already looking forward to future user groups, which will take place in 2016 in Linz (Spring) and Dusseldorf (Fall).

At the end of the conference, Mr. Mentz also reported on the Saffron Guild, provided a uniquely historic setting for the user group. In the center of Basel, situated in the “Gerbbergasse”, the guild house is the centerpiece of the Saffron Guild, one of four Basel Herrenzünfte or special city guilds open to all professions. The conference room, with its triple-arched wooden ceiling, has an impressive height of approx. eight meters. It is adorned with large murals with scenes from the Saffron War of 1374 as well as stained glass with the crests of the Basel guilds and honorable societies adorn. Despite its historic nature, the room is also equipped with modern presentation technology, which make for ideal conditions to listen to presentations covering the various aspects of mobility in public transport.

Talks and Presentations

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RTPI Conference, London
MENTZ Presents the New AVM Light 2.0
This year’s Real-time Passenger Information Conference took place in the London Financial District around Liverpool Street and dealt with the newest political and technical developments in the field of dynamic data. High-level representatives of industry discussed the local, regional and trans-regional use of data in systems for passenger information and optimization of operational processes. During the conference, MENTZ aptly presented the new AVM Light 2.0 (see. Super Technic for SuperTram). The talk was well-received due to the system’s ability to connect the worlds of real-time and incidents. Interested parties could then examine the system in live operation at the MENTZ stand directly following the presentation.

Events

MENTZ @ WhereCamp
The WhereCamp is an increasingly popular forum for businesses, organizations and enthusiasts interested in location-based services (LBS). Since 2012, WhereCamp has served as a meeting point for technical exchange for cartographers, environmentalists, media artists, augmented-reality (AR) developers and geo-fans from all over the world. The growing number of participants and submitted articles confirm that there is a large community of people that want to learn more about the subject and pass that knowledge along to others. This growth is the result of how seriously an increasing number of companies like MENTZ push the development of journey planning systems. Similar to last year, MENTZ was prominently represented at WhereCamp both by taking part in the commission and by giving a formal talk. This year’s theme was the development of vector-based indoor maps as a part of the DYNAMO project. Now at a rather advanced stage, the project was presented using a routing example through different levels at “Karlsplatz” station in Munich. Indoor journey planning also provides the ability to account for accessibility. Using the software, passengers with limited mobility can plan routes past obstacles like steps or out-of-service elevators and escalators. The mobile applications (apps) made by MENTZ also have this technology. On their smartphone users are graphically shown where they are inside the station and also provided detailed step-by-step directions as to which direction they should head.

Next year MENTZ GmbH will again take part in the RTPI Conference in London, both to be informed of the newest strategic orientations of the industry as well as to be able to present our newest products.

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