

September 2014

IVU.PROJECTS



STANDARD SOLUTION p. 4
Planning and dispatching for Swiss PostBus

IVU.PROJECTS



INCREASING EFFICIENCY p. 5
SBB Cargo uses IVU.rail in freight transport

IVU.PANORAMA



EXCELLENT p. 9
IVU receives London Transport Award

IVU.INSIGHT



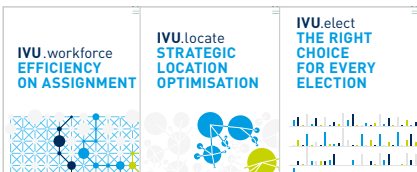
ELECTED p. 10
New IVU Supervisory Board

IVU.DEVELOPMENT



NEW SCOPES p. 11
Webclient for improved personnel dispatch

IVU.LOGISTICS



LOGISTICS SOLUTIONS p. 12
New brochures for IVU logistics products

NEXT STOP: THE FUTURE

Budapest ups the tempo – Implementing software with IVU.xpress



Budapest never stands still. More than 1.7 million residents and 2.3 million tourists every year mean that the Hungarian capital city is constantly on the move. But with dense traffic and an ageing fleet and infrastructure, public transport in Budapest faces considerable challenges. Now the city has received a new operational control system – with the support of IVU.

Every day, BKK (Centre for Budapest Transport – Budapesti Közlekedési Központ) caters for more than 3.8 million passengers. The transport services encounter typical difficulties such as construction work, demonstrations or street festivals that call for flexible planning changes. In addition, there are the traffic jams which are a part of life in a city whose two halves are joined by the bridges across the River Danube. But Budapest also has another specific problem – many of the vehicles in BKK's fleet are near the end of their operating lives, so that breakdowns frequently interrupt services and render timetables meaningless.

The juxtaposition of old and new is more striking in Budapest than in almost any other European city. In the inner city, derelict old tenements stand next to modern high-rise buildings, and vacant lots are a characteristic feature. Flagship retail outlets attract their wealthy customers into the richly-decorated old buildings. Everywhere

there are architectural reminders of the communist era. And in amongst all this are the unmistakable buses and trams of BKK.

Keeping an overview

Budapest has one of the most comprehensive public transport networks in Europe. Some 2,000 vehicles of all ages operate on 220 routes across the city – controlled by modules of the IVU.suite. The system not only covers the buses, trams and trolleybuses, but also integrates the public transport boat services on the river which are also part of the municipal transport services.

The state-of-the-art operational control centre of BKK is located right in the centre of the city on the sixth storey of an office block. High above the busy streets, there is an atmosphere of quiet concentration. At 32 workplaces, each fitted with four monitors, the control personnel supervise the operations of individual services. In addition, there are a row of flat screen monitors on the wall which can display live CCTV images from key traffic intersections in Budapest as required. Nothing can escape the watchful eyes of the dispatchers.

The personnel respond promptly to any unexpected events. Services are diverted, dynamic passenger information displays are updated, announcements are made at the stops, and drivers

→ continued from page 1



Dr Helmut Bergstein, Member of the Executive Board

**Dear reader,
Dear customers of IVU,**

It is hard to overestimate how important advanced IT systems have become for public transport operations. But many companies are worried about the difficulties involved in their installation. We have developed a special process which offers our customers security. IVU.xpress defines the individual project steps with which our standard systems are implemented and configured. Within only a brief period these are then fully operable. In Budapest, it took IVU only two years to completely modernise the passenger information service and the operational control of the entire fleet.

In Switzerland, SBB Cargo AG has also benefited from this process. In only a few months, the dispatching and planning modules of IVU.rail were integrated into the heterogeneous system environment of SBB Cargo. Since May, the system has been helping to increase the efficiency of the Swiss company's operations. You can read more about this on page 5.

InnoTrans offers you the opportunity to see what our systems are capable of at Stand 409 in Hall 2.1. Among other things we will be presenting the new multi-day vehicle workings optimisation in IVU.rail and IVU.fleet.app, a mobile fleet control option for Android devices. We look forward to your visit.

I hope you enjoy reading this issue!

Best wishes

Dr. Helmut Bergstein

are informed. If one of the buses breaks down, the control personnel can use IVU.fleet to send out repair vehicles which are also integrated in the overall system.

Into the future with FUTÁR

The fact that Budapest now has a modern, integrated operational control system is the result of the FUTÁR Project and the stimulus provided by Dávid Vitézy, the visionary CEO of BKK. Within only a few years he has completely transformed the city's public transport operations. "We have to provide our passengers with better services, better ticketing systems, and better information – in short: better customer experience", says Dávid Vitézy. "We need a really good timetable system with a really good vehicle location and management system to cope with the traffic jams and the breakdowns and technical problems caused by the age of the fleet."

The necessary systems were supplied by IVU. The infrastructure for BKK's operational control was set up in less than two years. This was made possible by IVU.xpress which provides a reliable IT process with predefined project steps for rapidly installing IVU's standard software in heterogeneous IT environments, with configuration for real-time operations. Open interfaces ensure the smooth integration of associated systems. At the request of BKK, IVU also rapidly implemented additional functions. For example, a route plan editor makes it possible for dispatchers not only to track the progress of a single bus, but also to observe the movement of all vehicles on a certain route, and to intervene where necessary.

The necessary real-time data is made available by the IVU.box units installed on board the vehicles. These devices are so flexible that they can easily be adapted to meet the various requirements for the heterogeneous BKK fleet. Meanwhile, vehicles of all ages have been fitted out with the system.

The most obvious signs of the modernisation of Budapest's public transport system are the digital passenger information displays which have been set up at almost 300 stops all over Budapest. In accordance with the wishes of Dávid Vitézy, these provide BKK customers with better and more precise information than in the past. The displays, which are also controlled by IVU software, are directly connected to the operational control centre and give live departure times to the nearest minute for all modes of surface transport from the stops or connection nodes.

Equipped for future growth

With the measures implemented so far in the FUTÁR Project, Budapest has made an important step forward. IVU.xpress made it possible for BKK to fully modernise its services within a very short period. Rather than excluding old vehicles which are still being operated until replacements are available, these have been integrated into the new system.

With a flexible solution which can be rapidly implemented and easily adapted to every environment, the future mobility of Budapest is ensured – thanks to the products of the IVU.suite. ■



IVU systems control BKK's heterogeneous vehicle fleet – regardless of their type and age.

“WE NOW HAVE A HUNDRED TIMES MORE TOOLS TO MANAGE TRAFFIC.”

Interview with Dávid Vitézy, CEO of Budapesti Közlekedési Központ (BKK)

Mr Vitézy, BKK is currently implementing a major modernisation program. Please tell us about your ideas behind that.

Here at BKK we want to provide better services for everyone. We have to provide better ticketing systems, where people can buy a ticket at a modern ticket vending machine 24/7 and – in the future – pay on their mobile phones or via the Internet. We also need to provide better information to answer the questions: “When will my bus arrive? How can I buy my ticket?” A better understanding of the system as a whole makes it more accessible for people who are not using it now. This is what led me to the new passenger information system that we are introducing in the city.

To implement this you needed a completely new traffic control system. Were there any specific requirements it had to fulfil in order to work in Budapest?

In Budapest we introduced this completely new IT background system in one step, and in one project. I know of many cities where they accomplished the same thing as us in a step-by-step process over six or seven years. We did this in two years. Because of that, it was a lot more complex. There were also a few special requirements and a few routines in Budapest which we wanted the IVU system to reflect: how we see a timetable, how we manage the buses. For the most part, the IVU.suite provided everything we needed. IVU could use the standard solution that they have for many cities, but there were a lot of other integration issues and for it to really work, it had to be integrated into various other systems.

We started the implementation of the IVU system less than two years ago and now it is working. At the moment we have more than 2,000 vehicles on the streets – buses, trams and trolleybuses, and even riverboats. They are now all controlled by the IVU on-board unit. The passenger displays on these vehicles and all of the ticket controlling equipment are also controlled by this IT system.

Which, would you say, are the biggest benefits of the new system?

I think the biggest change was in traffic management. Until we implemented the IVU system, and in parallel the new radio system, we had a very

poor communication system. Now our dispatchers can do a completely different type of work. Our services can be completely different and a lot more punctual. I think this was the first result we have seen from the IVU solution.

Passenger information, more knowledge about our system, more statistical data to plan the timetables in the future – these are the extras. For us, the ability to control the traffic in real time from any stop and on all parts of the line in order to provide our best service is one of the biggest advantages we have with the system.

Have you received any feedback from your customers?

In the beginning, the public was really sceptical about the project and we knew we had to change this. This is a system you can try to explain, but until it is working no one will believe that it will work. So we did not put too much effort in convincing the public that it will work. We tried to make it work as fast as possible.

For the passengers the most visible parts of the project are the digital stop countdown displays. Since we turned them on and now that they show the exact calculated departure time of the next bus from all lines, we are receiving a lot of positive feedback.

How did the BKK staff react to the new system?

At first everyone said this won't work, this can not work: “The touchscreen on-board units on buses will go wrong in two weeks because we are touching them with our dirty hands,” they said, and “there are a lot of vibrations in the bus and in the old buses it can be very hot in the summer and very cold in the winter, so it won't work.” “They won't last three months,” they said. We had to believe in the project and we did. After more than a year now, they see that the system is reliable, the on-board units are working and the system is helpful.

Was it a big change from before?

The dispatchers had to get used to a completely different way of working. They now have a hundred times more tools to manage and to regulate traffic than they had before. If you are a dispatcher who is responsible for a line and you



Dávid Vitézy, CEO of Budapesti Közlekedési Központ (BKK)

don't know what is happening on the street, you can only rely on the drivers, what they say, what they tell you. Then you are in the dark.

Now we are not in the dark anymore since we have punctual GPS data from all vehicles. This means we can cope with a lot of situations which we maybe didn't know about before. That is why we implemented the system.

Tell us about your future plans for public transport in Budapest.

Passenger volumes in Budapest have increased by more than 10% in the last four years. We expect this to continue and are planning to improve our infrastructure and to build new tram lines. Also, we have started and want to continue the replacement of all the old buses. In 2015 and 2016 we will receive 47 new, completely modern low-floor trams. And the longest tram in the world, which will be 56 metres long, will arrive in Budapest, too.

Our aim is to constantly improve our system and make public transport more attractive. We want to maintain the already very high share of public transport and mobility in Budapest, and maybe increase it. Our aim is by 2030 to have a modal share of 80% environmentally-friendly transport modes in Budapest, which would be a very high figure compared to any other European city.

Mr Vitézy, thank you very much! ■

INTEGRATED PLANNING AND DISPATCHING FOR POSTBUS SWITZERLAND

Standard solution for all regions

For more than a century, PostBus Switzerland has been the leading provider of bus transport in Switzerland, and since 2001 also in Liechtenstein. There is scarcely anywhere between Geneva and St. Gallen that cannot be reached conveniently on its yellow buses, and every year some 130 million passengers are transported to their destinations on 814 routes. In order to make its services even more attractive, the Swiss company has decided to introduce the systems of the IVU.suite. In future, planning and dispatching for more than 2,000 vehicles and 3,000 drivers in the nine regions of Switzerland and in Liechtenstein will be carried out using the integrated standard systems of IVU Traffic Technologies.

To further raise the quality of the transport it provides, PostBus Switzerland intends to offer more comprehensive networks, including better off-peak services. IVU.plan will be used for the efficient planning of these operations, with IVU.vehicle and IVU.crew taking care of the deployment of vehicles and drivers. The optimisation components of the IVU.suite will be used at all stages of the planning process. In addition, aspect-based planning will offer an easy and flexible way to

adapt timetables where necessary, for example during the skiing season, school holidays, or while construction work is going on. Alterations can be introduced months in advance or only shortly before the journey is due to begin. The validity of the aspects assigned to the journey can be defined for a specific region, or for all areas. The integrated planning system automatically takes these into account when planning vehicle workings and duty rosters, and for dispatching.

Standardised operational processes

When it comes to overall quality enhancement, PostBus Switzerland attaches particular importance to the standardisation of the operational processes across the various regions. They

multi-lingual capability of the system. Software, documentation, and training courses are provided in German, French and Italian. The old system will be replaced step by step, and processes which in the past were carried out manually will be automated for all the regions.

Major public transport companies trust IVU

“With the IVU.suite we have found a real standard solution which enables us to plan uniformly throughout our entire operational area”, comments Daniel Schlatter, member of the management board of PostBus Switzerland on the decision in favour of IVU. “The standard processes of the software provide us with a foundation for future modes of operation, so that we will

be able to further optimise our internal procedures. And that means that we can offer our passengers an even better service.” After DB Regio Germany and the Austrian ÖBB Postbus, PostBus Switzerland is another major public transport

company to place its confidence in the IVU.suite, confirming the strong expertise of IVU in the field of planning and optimisation. ■

“The IVU.suite enables us to plan uniformly throughout our entire operational area.”

Daniel Schlatter, PostBus Switzerland

aim to achieve this by introducing the standard processes of the IVU software solution for their daily operations, in combination with new procedures and occupational profiles. Potential language barriers can be avoided thanks to the



SBB CARGO INCREASES PLANNING EFFICIENCY WITH IVU.RAIL

IVU.rail solution plans and dispatches Swiss rail freight transport



Every year SBB Cargo AG transports freight in excess of 5,000 million net tonne-kilometres throughout Switzerland. Day for day, there are 700 rail services involving 2,500 personnel and some 350 engines. The scheduling and dispatching of rolling stock and personnel are organised with IVU.rail.

In June 2013, the subsidiary of the Swiss Federal Railways SBB decided to introduce the integrated rail solution IVU.rail for personnel and resource planning. They were convinced in particular by the high degree of standardisation of the IVU system. It combines all planning and dispatching functions for rail vehicles and personnel in one system which is also able to integrate existing components such as SBB Cargo's run position and load planning tools. The aim is to considerably reduce the diversity of the company's systems and to lower the maintenance requirements and operating costs over the long term.

Hardly any adaptations needed

IVU.rail is the only solution which from the start is equally well suited both for passenger transport with its short headways and also for freight transport, which often involves very short-term planning. For the operations of SBB Cargo it was possible to utilise the standard versions of most software components. The IVU engineers only needed to create new interfaces to connect up with some systems that had been produced specifically for the Swiss company.

SBB Cargo benefits directly from the considerable experience IVU has gathered in numerous projects for passenger and freight transport all over the world. When configuring systems it is frequently necessary to take the specific requirements of a particular railway company into account and to develop new solutions. But apart from benefitting the company in question, the knowledge accumulated in this way is also fed regularly into the further development of IVU.rail so that it can then be made available to all users of the system.

Rapid system introduction

At the start of the project, IVU engineers first installed the planning module at SBB Cargo. Within only a few months, the software had been integrated in the existing IT infrastructure, configured and prepared for use. Since May of this year the company has been planning vehicle workings with IVU.rail and the holiday planning for the 2015 timetable. A standardised online interface based on the railML format allows the integration of SBB Cargo's run position planning tool into the vehicle and personnel planning in IVU.rail. This makes it possible to present transport processes flexibly and reliably across all systems. The optimisation function integrated in IVU.rail also ensures that any changes requested at short notice by SBB Cargo's customers will not require any extensive new planning of the deployment of resources.

Currently, the dispatching module of IVU.rail is being configured at SBB Cargo and this is due to go into operation in December. It links up directly with the vehicle workings and duty roster planning, making it possible to calculate the optimum deployment of both on-board staff and stationary personnel. The software automatically produces duty rosters and shift plans, taking long-term holiday plans and schedules into account, as well as the preferences registered by individual employees. Even in the event of disturbances, optimum rail vehicle dispatching is ensured, and rail vehicles are presented for maintenance with the shortest possible non-revenue trips. All the data of the dispatching module are passed on via standardised interfaces to other systems for further processing, for example payroll accounting in SAP.

Already at the present stage of installation, IVU.rail has made it possible for SBB Cargo to reduce its operational management costs. The company also anticipates that once the complete system has been introduced there will be an appreciable increase in efficiency, and it is confident that the workload for its employees will be reduced and processes will be optimised, together with long-term improvements in the deployment of personnel and rolling stock resources. ■



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UPGRADING BUDAPEST

Nearly 2,000 vehicles travel daily on the lines of the Budapest transport company BKK – partly for almost 40 years. All of them are controlled by modern technology. The IVU.box provides the real-time data with which the control centre operates transport.

→ Title

LIVE WORLD CUP SCORES AT MÜNSTER BUS STOPS



During the world cup passengers of Stadtwerke Münster were always informed about what happened – on the street and on the pitch.

The public transport operator Stadtwerke Münster already know that providing live passenger information with IVU.realtime makes waiting for buses a more pleasant experience and keeps passengers happy. But the company didn't expect that by providing real-time reports of the latest scores in football's World Cup it would become a Facebook hit.

People in Münster who were unable to watch this summer's World Cup football in the comfort of their home or at one of the public screenings were still able to keep informed about the latest scores of Germany's national team. In addition to showing the up-dated departure times of the next buses, the bus stop displays of Stadtwerke Münster also showed the live scores of Germany's matches. When a passenger posted a picture of such a display on Facebook it became a social media hit. "These are the nice little things that come together to make Münster the best city to live in", was one of the comments.

Bonus for 90 minute e-ticket holders

In addition, Stadtwerke Münster also used the flexibility of its e-ticketing solution to offer a special bonus to celebrate the victories of the German team. All holders of a 90 minute e-ticket were not charged for their journeys on days when the national team won a match. Passengers with an electronic bus ticket are normally charged EUR 1.90 when they travel on public transport in Münster for 90 minutes. But even if the passenger makes three or more such trips during the day, the charge never exceeds the EUR 4.30

charged for a day ticket. The background system IVU.fare registers all the journeys of the e-ticket holder and at the end of the day the best price is calculated automatically. The charges for the journeys are booked from the holder's bank account the next month by direct debit.

Stadtwerke Münster utilises IVU solutions for more than e-ticketing and passenger information. Other systems also control the cost settlements and the fleet management. IVU.fleet knows all the relevant information at all times and presents this clearly in the control centre, e.g. the current traffic situation, the locations of all the vehicles, and any disturbances as soon as these are registered. With its wide range of functions, IVU.fleet provides dispatching solutions for control centre personnel, guarantees connections, and logs the movement profiles of all vehicles.

IVU.realtime prepares the relevant information and makes it available to the passengers across a wide range of media such as dynamic bus stop displays, online, and smartphones. This ensures passenger satisfaction and the smooth operations of the public transport company. In addition, the control centre can also transmit extra text messages or acoustic information to the passengers – from live departure times to World Cup scores. With its amusing and creative idea, Stadtwerke Münster has demonstrated the possibilities offered by the system to keep passengers informed at all times. ■

GERMAN-TURKISH SUMMER SCHOOL

IVU is always keen to offer students an insight into the IT systems that keep public transport operations running smoothly. A recent example of this was the "IVU-Sakarya University 1st Summer School" from 18 to 22 August.

As part of cooperation with Sakarya University, one of Turkey's leading universities, 16 students from its Chair of Transport Engineering were the guests of IVU at its Aachen branch. They were accompanied by Prof Hakan Güler, who holds the chair at Sakarya University and also lectures at the Karlsruhe University of Applied Sciences.

Under the guidance of Oytun Arslan, IVU Sales Manager Turkey, future transportation engineers learned to use the IVU.suite set of integrated tools. The week-long training course focused in particular on the IVU.plan module, which is used for planning timetables, vehicle workings and duty rosters. In a virtual control centre, the students gained hands-on experience with the IVU system. Confronted with typical every-day challenges faced by a public transport operator their task was to draw up a network plan for two lines, each with its own specific requirements, and then to plan and optimise vehicle workings and finally to produce a timetable.

During a visit to the ASEAG Aachen transport company, the students were able to see for themselves how the individual components of the IVU.suite work together in the control of operational processes. In addition to practical use cases, the students also visited the RWTH Aachen University, where they listened to two lectures on current German research projects about public transport and urban planning.

As a break from the strenuous classes, the students were invited to a joint barbeque evening and an excursion to Maastricht – a first visit to the Netherlands for most of the participants. The week ended with an official closing ceremony which was attended by Dr Helmut Bergstein, Executive Board member of IVU.

"The Summer School was a complete success", concludes Oytun Arslan. "We have been able to reach precisely those who will later be using these systems in public transport companies." Four of the participants are already working for Turkish municipal authorities in the field of public transport. The students and Prof Hakan Güler were also very satisfied with the outcome of the week's events. It is already planned to repeat the summer school in the coming year. ■

IVU AWARDED FOR “EXCELLENCE IN TECHNOLOGY”

After receiving the UITP award in May of last year, IVU Traffic Technologies AG has been honoured once again. Together with Transport for London and Aardvark, it was awarded a prize for „Excellence in Technology“ on 5 March at the London Transport Awards Ceremony 2014.

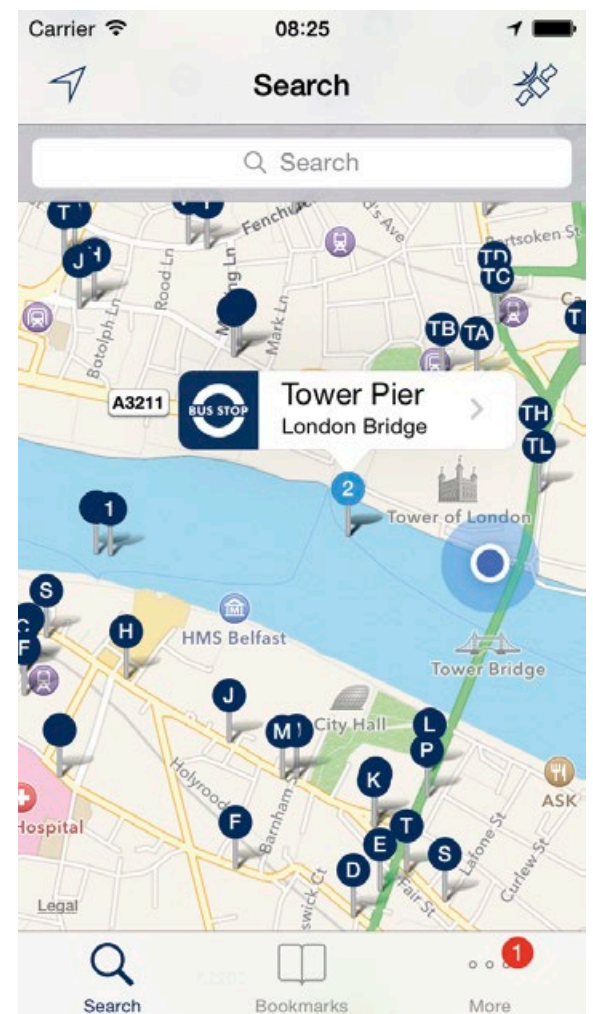
IVU received the honour for its passenger information system IVU.realtime, which is used daily by Transport for London to inform the metropolis' over six million passengers of current departure times. The software automatically adopts all of the real-time information entering the traffic control centre, prepares it and then makes it available to passengers via various types of media, such as dynamic stop displays, online or via smartphones. In London the system processes up to 5,000 departure times per second from the over 8,500 buses that are on the move each day throughout the city.

Integrating modern cloud technology

In particular, the jury applauded the integration of modern cloud technology in IVU.realtime.cloud,

which makes the current data accessible via an open programming interface („Unified Realtime API“), even for external applications. In London, this data can be used for the electronic display boards from various manufacturers, as well as for the web application, the smartphone app or information via SMS. Thus, passengers can find out about current departure times even at stops without displays and can plan their journey during the trip or from the comfort of their own homes. Thanks to its open real-time data, the IVU system can also serve as a basis for developing additional services, such as websites or third-party apps.

The London Transport Awards are granted annually by the magazine Transport Times and distinguish exceptional services and innovative developments in the transport sector. In the category „Excellence in Technology“ IVU Traffic Technologies AG came out on top against systems from reputable competitors. ■



REAL-TIME INFORMATION FOR LONDON'S RIVER BUSES



Thanks to the dynamic passenger information system IVU.realtime, the customers of Transport for London (TfL) are always well-informed. IVU.realtime consolidates the real-time bus information in London and distributes it directly to the electronic displays, the internet, smartphone apps and text messages, to enable passengers to check the latest departure times for all 8,500 buses from 19,000 stops. But if their journey

involved travelling on the River Thames, passengers have had to rely on the separate timetables displayed at the piers. That is now a thing of the past. For all the TfL boats in the British capital city, real-time data will now be provided via TfL's electronic media. In order to make this possible, all 13 London river buses operating on 11 lines on the River Thames have been integrated in the existing automatic vehicle location (AVL) system.

This forwards the information directly to IVU.realtime, which is the consolidating processing engine in the background of all real-time passenger information in the British capital city.

In order to integrate the river buses in the passenger information system for the London bus services, TfL's engineers simply modelled the Thames as a broad road and included it in the transport network. The positional data for the boats is also collected via the AVL system and then processed by IVU.realtime, so that it can be made available through the various media only two seconds later. IVU.realtime functions as the central realtime data hub.

Thanks to the cloud technologies used, the newly generated real-time data for the river buses can also be integrated in smartphone apps and websites. For example, the latest departure times from the 19 piers are accessible by the free iOS and Android app 'London Bus Live Departures' developed by IVU engineers. Passengers can now receive up to date information for the entire travel chain. ■

ULI MAYER-JOHANSSSEN JOINS IVU'S SUPERVISORY BOARD



On 3 June the general meeting of IVU Traffic Technologies AG voted in a new Supervisory Board. After many years as its chairman, Klaus-Gerd Kleversaat did not stand for re-

election. He has been succeeded as Chair of the Supervisory Board by Prof Herbert Sonntag, who has had links with IVU since it was founded in 1976. A prominent new board member is Uli Mayer-Johanssen, co-founder and executive of MetaDesign AG in Berlin.

After graduating in visual communications from the University of Arts (UdK) in Berlin, Uli Mayer-Johanssen first worked in a design agency before founding MetaDesign in 1990 together with two partners. Within only a few years she and her partners were able to establish MetaDesign as one of Germany's leading corporate identity agencies. Since then numerous national and international clients have placed their trust in her approach, including brands such as Audi, Volkswagen, Siemens, DHL, and South Tyrol.

Uli Mayer-Johanssen is characterised by the dedication with which she promotes brand strategies so that brands reflect the needs of the target groups and are emotionally appealing. She has transmitted her expertise among other

things as a visiting professor at the UdK and as lecturer at the Free University Berlin, as well as in numerous talks and seminars for audiences of experts and management personnel. In 2010, the specialist media magazine HORIZONT voted her 'HORIZONT Woman of the Year'.

Uli Mayer-Johanssen is looking forward to her new role as a member of IVU's Supervisory Board: "I am very happy to be able to accompany such an innovative and forward-looking company as IVU Traffic Technologies AG in the planning and implementation of their corporate strategy. This is a fascinating task", she commented.

And IVU is also highly satisfied: "Uli Mayer-Johanssen is a gain for the Supervisory Board and for IVU as a whole. Her combination of creativity and entrepreneurship is an excellent fit and an enrichment for us", explained Martin Müller-Elschner, CEO of IVU. "Together with her we are well set up to face the future." ■



MORE KNOWLEDGE FOR DEVELOPERS

The leading software architect and consultant Dr Gernot Starke was guest lecturer at a three-day IVU Developer School this summer. He led a number of seminar sessions on the evolution and maintenance of existing systems and on architecture documentation. More than 50 IVU developers made the most of this opportunity to expand their knowledge in these special fields.

Computer scientists spend a large part of their working life continually adapting installations. Gernot Starke therefore began by giving an overview of the most common reasons why such regular changes are necessary and followed this up by presenting methodological modules for systematic improvements. In a subsequent session he gave specific examples in order to explain how software architectures can be documented. This is important because one of the key demands faced by quality management, in particular with complex systems, is to maintain the transparent structure of the components at all times.

Essential for high-quality software

IVU systems offer excellent performance and reliability, and they are adapted to suit the customer's needs. In order to ensure this quality in the future it is essential to have highly trained developers. For this reason, IVU organises regular internal developer schools on current topics relating to software development. The engineers are shown practical examples and given tips that they can use in their daily work, for example how they can optimise their program code or how they can improve work processes.

This year's school took place on 17 to 19 June in Berlin. In addition to the seminars with Dr Gernot Starke, there were also lectures and workshops on topics ranging from how to reduce the memory demands of programs, through an introduction to Qt as the language for user interface development, to an overview of basic concepts of the development frameworks OSGi and RCP.

By means of training events such as the Developer School, IVU aims to ensure that its developers are always fully informed about the latest technological developments. They are the guarantee for high-quality software that customers can rely on. ■

MOBILE INFORMATION FOR CREWS

The IVU.crew webclient opens up new opportunities

The working day begins in Stockholm. The train driver checks in to the online system using his smartphone. Moments later, he swaps duties with a colleague and enters a holiday request. In the control centre the dispatcher is able to immediately process all this information in the duty scheduling. This is made possible by the IVU.crew.mobile webclient.

The IVU system, which is being used by the Swedish public transport operator Stockholmståg among others, simplifies communications between personnel dispatchers and drivers. Thanks to its mobile data registration, personnel dispatchers are aware at all times of the status and the wishes of the staff. Shortly before his shift begins a driver calls in ill via the online portal. A message appears on the personnel dispatcher's display and on short notice a replacement has been found, so that the train can leave the station on time. The background system IVU.crew stores all the data about personnel. If a driver is unavailable then the dispatchers are automatically notified about a colleague on stand-by duty who is able to take over.

Registering data directly in the system

IVU.crew.mobile provides additional functionality by allowing personnel to enter information directly in the system – anywhere, anytime. This begins with the registration of working hours via the webclient, which is already optimised for mobile devices. As soon as they arrive at work, the employees report in via smartphone. Even if the train crew is at a remote location, the control centre is always aware about what is going on.

Dispatching is also simplified by other functions such as a 'holiday time account,' or a 'duty exchange' through which personnel can swap duties with one another. If a driver plans his vacation, he enters this duty request in his personal account via the webclient. The dispatcher immediately

sees in the dispatching graphic whether the request can be met. If it can, an appropriate change is made in the duty schedule. Every change is automatically processed in the integrated system and passed on to all the relevant places, such as the wage accounts department.

Informing personnel

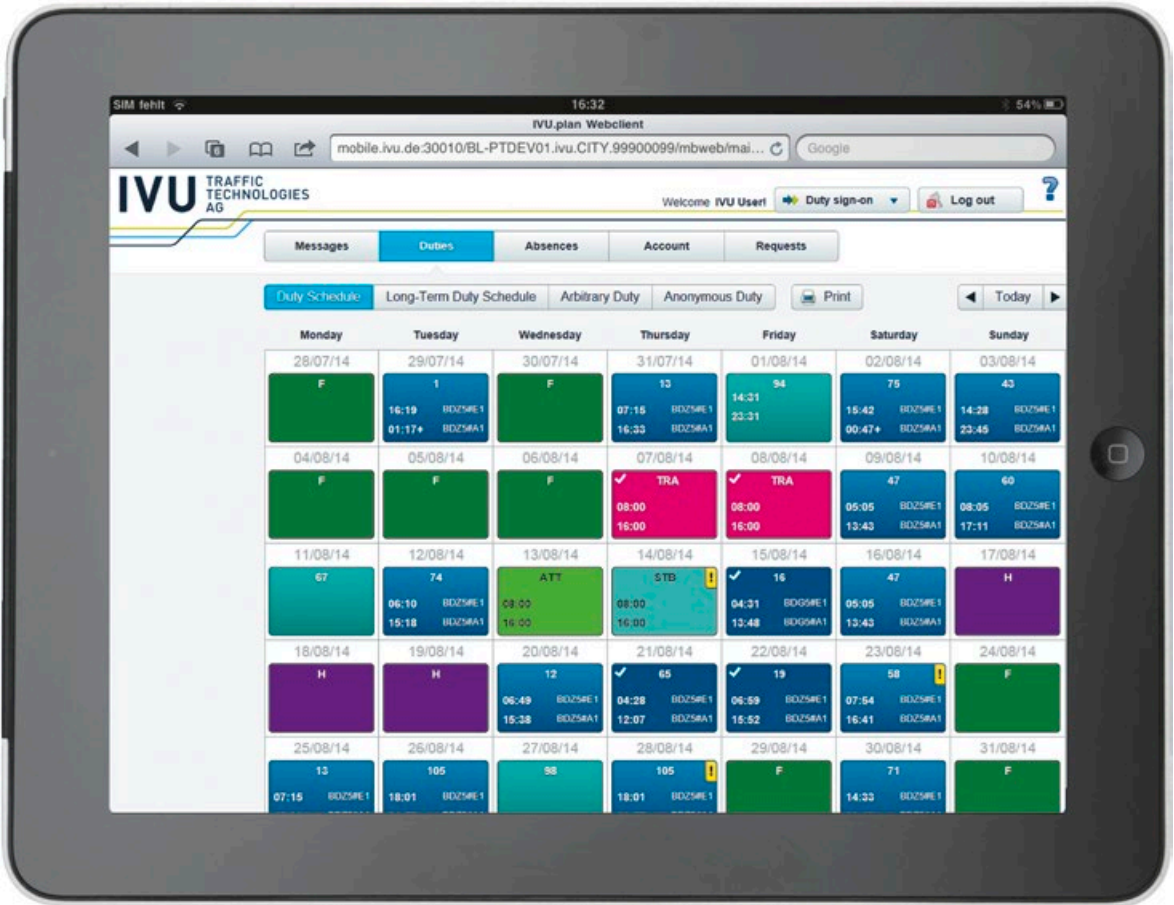
This solution's key benefit: it works in both directions. Before, dispatchers were already able to receive some information from personnel electronically, but they still had to produce traditional print-outs of duty schedules to be displayed on pin boards or handed out. This method was error-prone – for example a driver might forget his schedule or mix up days. The print-outs were also very inflexible, so that short-term changes could not be included. The situation was the same with holiday time accounts, which had to be maintained and updated manually.

All this information was normally only available at a driver's duty location. With the webclient, personnel are now able to check the current duty schedule, days off work, or holiday entitlements from anywhere. The system issues a warning of any changes to the duty schedule. In addition, the dispatchers can send special messages to individual employees or to specific groups.

Efficient organisation and satisfied employees

When the driver in Stockholm reports the end of his shift via the webclient, the payroll accounting is updated and the change is stored in the system automatically without involving a dispatcher. Thanks to the webclient, information flows much smoother between the dispatchers and the personnel. It accelerates organisational processes making dispatching more efficient and important information easily accessible resulting in more satisfied employees. ■

Always informed about duty rosters, absences and vacations – anytime and anywhere.



The IVU.crew.mobile webclient allows employees to check their duty rosters also on mobile devices.

IVU LOGISTICS SOLUTIONS

Logistics involves the organisation, control and optimisation of all sorts of processes. When everything on the surface seems to be running easily and smoothly then this is usually because complex systems are operating in the background. IVU provides the tools that are needed for this. IVU software supports retail chains as well as gas and power utilities, or electoral authorities. The new logistics brochures of IVU give an overview of this wide range of applications.

Various systems have been developed to meet specific logistical challenges: IVU.elect helps to prepare and conduct political elections; IVU.locate makes it possible to optimise strategic location decisions; IVU.workforce ensures the efficient deployment of fieldwork personnel.

Organising elections with IVU.elect

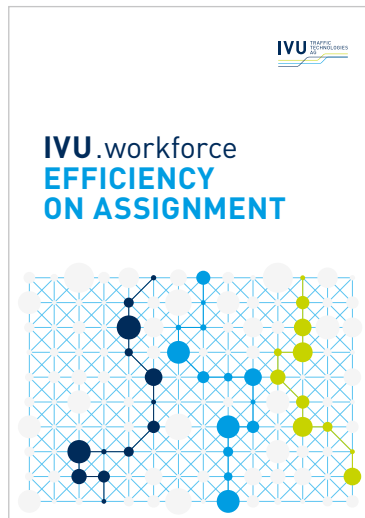
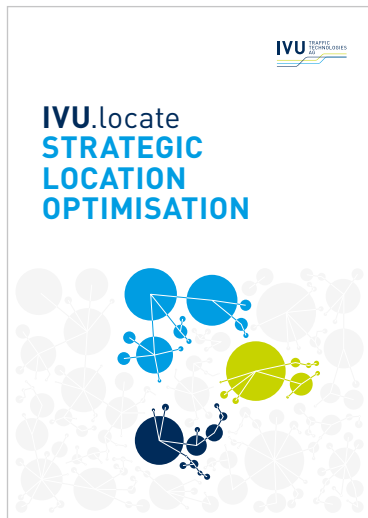
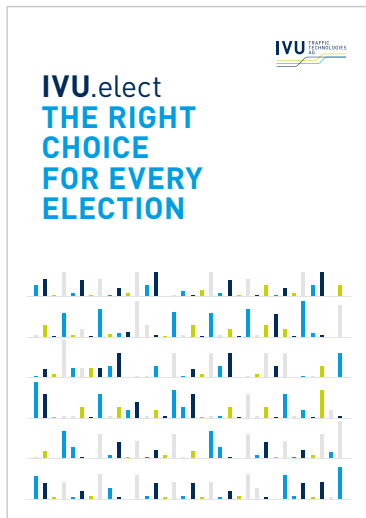
IVU.elect supports electoral authorities with preparing and conducting elections and ballots, and also with calculating results. It can be adapted flexibly to different electoral systems and legal requirements so that the entire election process can be carried out electronically at all levels of administration. Open interfaces make it possible to integrate IVU.elect smoothly into existing infrastructures. Data can be checked directly against the electoral roll or relevant registration lists. Browser-based interfaces offer independence and ease of maintenance. Development of IVU.elect began in 2002 in close cooperation with Germany's Federal Returning Officer. Since then the system has been used successfully in more than 1,000 elections – for general elections in Germany and the Netherlands, as well as for regional and local elections.

Location planning with IVU.locate

IVU.locate is the IVU system for location intelligence. For example, it supports retail trading companies with all location planning decisions, from location analysis and expansion planning, through marketing, to delivery logistics. In order to provide dependable results, the geo-information system analyses large quantities of external market data combining it with data about population and purchasing potential. On the basis of the findings it is then possible to develop targeted measures. IVU.locate is technology-independent and can operate in a wide range of system environments. Users are therefore free to decide what hardware they want to use.

Administering assignments with IVU.workforce

With IVU.workforce the focus is also on planning and optimisation. The software solution helps electricity utilities and network operators to significantly reduce the efforts involved in the administration of fieldwork assignments, from preparation through to completion. Standardised procedures simplify the transfer of knowledge between dispatchers and field personnel. Thanks to its SAP interface, IVU.workforce has an optimum connection with the widely available database. An offline capable mobile application with integrated outing makes it easier for fieldworkers to register assignment data and compare this with the central system. IVU.workforce ensures more efficient planning and deployment for the successful completion of assignments. ■



The logistics brochures give an overview of the features of IVU.elect, IVU.locate and IVU.workforce.

SAVE THE DATE

Geomática Andina

22.9. - 23.9.2014, Bogotá

InnoTrans

23.9. - 26.9.2014, Berlin

Intergeo

7.10. - 9.10.2014, Berlin

APTA EXPO & Annual Meeting

12.10. - 15.10.2014, Houston

Deutsches Eigenkapitalforum 2014

24.11. - 26.11.2014, Frankfurt/Main

Smartrail Asia

26.11. - 28.11.2014, Bangkok

Bonding Job Fair

1.12. - 3.12.2014, Aachen

IVU User Forum 2015

19. - 20.2.2015, Berlin

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IVU Traffic Technologies AG
Bundesallee 88
12161 Berlin

T +49.30.859 06 - 0
publictransport@ivu.de
www.ivu.de

Editorial

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