IVU NEWS

IVU TRAFFIC TECHNOLOGIES

# NEXT STOP: THE FUTURE

IT solutions for the public transport of tomorrow

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**Growing cities, traffic congestion, stricter environmental regulations – more and more people are getting out of their cars and using new forms of mobility such as ride-hailing or car and bike-sharing instead. Yet nothing transports so many people from A to B more efficiently than bus and rail. Innovative IT solutions ensure connection.**

The mobility of the past few years is characterised by fundamental change. As more and more changes keep coming ever more quickly, the traditional understanding of transport is being eroded: digitalisation, smart mobility, the sharing economy, e-mobility, connected cars, autonomous driving – an atmosphere of innovation is constantly giving rise to new ideas for the transport of the future.

With more than 60% percent of the world's population likely to be living in urban centres in 2030, mobility will have changed beyond recognition long before then. Faced with growing levels of air pollution, more and more cities are already restricting the use of private cars, promoting alternative forms of mobility and investing in the expansion of public transport.

Indeed, public transport is by no means immune to the rapid pace of change. Many companies are being pro-active themselves, offering bike-sharing, buying e-buses and experimenting with driverless vehicles. "In future, public-transport operators will play a key role as providers of continuous mobility chains," said Prof. Müller-Hellmann, transport expert and Advisory Board member of IVU. "At the same time, bus and rail will become increasingly important as reliable and proven means of mass transportation, especially in densely populated metropolitan areas." Yet bus, tram and metro systems all require optimum planning for efficient deployment of vehicles and personnel.

### Putting innovation into practice

Public transport has long had a reputation for being slow to embrace innovations and technical advances. "This impression definitely stems from the long vehicle lifespans of 10 to 30 years. Also, the basic structure – buses and trains that run to timetables – has not changed in the last hundred years," explained Prof. Müller-Hellmann. "But on closer inspection, it is clear that public transport is a hotbed of innovation."

A look back in time illustrates the close links between public transport and digitalisation. Even 40 years ago, when computers were still an alien concept to most people, the first transport operators were using the technical possibilities of the mainframe computers of the day to create

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Martin Müller-Elschner, CEO

**Dear readers and IVU customers,**

The future of mobility is again the main focus of interest at this year's InnoTrans. Tens of thousands of industry professionals will attend the world's biggest transport trade fair to find out where public transport is headed.

Whatever technologies will shape our industry in the years ahead, one thing is clear: we have the opportunity today to fundamentally shape the mobility of tomorrow. More than any other form of transport, public transport is suitable for integrating different services and delivering lasting improvements to quality of life in overstretched cities.

Read how this can be done through constant innovation and intelligent IT solutions in our cover story. In the interview on page 3, the newest member of our Advisory Board, Alain Flausch, until recently Secretary General of the UITP, describes how he sees the future of public transport. On the following pages, as always, you can keep up to speed with our development news and current projects.

You are also welcome to visit us at InnoTrans and see our products and innovations for yourself. Our experts will be happy to show you how you can make your company fit for the transport of tomorrow with IVU.suite and IVU.rail. As always, you will find us in Hall 2.1, at Stand 404. I look forward to seeing you there!

Best regards,

Martin Müller-Elschner

timetables and plan vehicle deployment. From IT-based planning and dispatch through the digital control centre to dynamic passenger information and the modern mobility apps – public transport has always kept up with the times.

As a pioneer of the digital transport operator of today, IVU has been instrumental in shaping the development of mobility since 1976. From the outset, the company has used an open system structure with standardised processes, and rigorously enhanced its IT solutions to integrate all tasks of a transport operator. This is now paying off.

**Moving transport forwards**

"The public transport of today will evolve in much the same way as the usage patterns of customers are already: there will no longer be just one kind of bus, and they will not necessarily be timetable-based either," explained Prof. Müller-Hellmann. "For example, less densely populated districts and suburbs will have autonomous shuttle services that can be ordered via app and take customers to the next railway station or bike-sharing station."

Each new form of mobility has its own requirements in terms of planning and deployment management. This is particularly a challenge when it comes to mapping the kind of holistic mobility chains that will be on the agenda in the future.

Planners can only make the right decisions regarding run schedules if they can see the details of all vehicles, be they diesel vehicles or e-buses. Dispatch managers must know the recharge statuses in order to send the right vehicle onto the line. And the control centre can only act if it knows when the next driverless bus will arrive at the stop.

To map all this, data of the various modes of transport must be combined in an integrated overall system and processed further. Only full integration and central management of all resources enable optimum use of the respective vehicles and the creation of joined-up mobility services that meet customers' needs and preferences.

**Protecting the environment**

Ultimately, people and the environment both derive equal benefit from this. Integrated public transport is becoming more attractive for customers, and boosts the move from individual transport that is already under way. As well as easing congestion on the roads, this presents an excellent opportunity for growing cities to reduce emissions and decrease the amount of pollutants in the air. In their efforts to improve quality of life for their citizens, major cities will therefore expand their public-transport networks further in future.

IVU's integrated IT solutions ensure efficient deployment of all resources. As a result, transport operators always deploy personnel and vehicles exactly where they are needed and can also be flexible in meeting growing requirements. From e-buses and driverless vehicles to trams and suburban railways – with IVU's solutions, the mobility providers of today are ready for the public transport of tomorrow.

MOBILITY WILL BE **DIGITAL AND INTEGRATED**. IT SOLUTIONS ENSURE **EFFICIENCY**

# „TECHNOLOGY IS AN ENABLER“

**Mr Flausch, speaking from your experience as former Secretary General of UITP, where does public transport stand today?**

Compared to 20 years ago, public transport has become much better and we have made great progress. In the last couple of years, all modes of public transport have constantly been gaining ridership, especially in the cities. This goes together with the sustainability movement. Many people now realise that private cars, which have been privileged for many years, are causing collateral damage.

**There has also been a rise in new and alternative modes of transport such as ride hailing, car sharing and other forms of mobility. How can public transport adapt to this changing market environment?**

When it comes to mass transportation, public transport will always be better than any other mode of transportation. If you want to transport high volumes of people in dense areas, nothing comes close in terms of sustainability, climate friendliness and even cost-effectiveness. In less densely populated areas though, public transport is too expensive. It is just economic nonsense to transport one passenger with one driver. Public transport operators need to accept the change and review the way they are working. They have to take advantage of digitalised tools, such as those from IVU, to reduce the costs of providing public transport and – particularly in less densely populated areas – move towards an on-demand system, which is more efficient and more customer-oriented.

**Many transport operators in Germany and Europe are now planning to or have already started to deploy electric buses. Is e-mobility the future of public transport?**

I think e-buses and railways will have a great future because we really need to reduce our carbon emissions. The commitment from major cities such as London, Paris and others, which are pushing for alternative fuel in buses, will spark further development from manufacturers as well as software suppliers to increase the mileage and efficiency of electric buses as much as possible.

**It will be a challenge to integrate all the different transport modes. Do you think public transport operators will become general mobility providers in the future?**

Public transport operators will play an important role by making it easier for passengers to use all the different modes. Take for example the “mobility as a system” concept, which Vienna is currently pursuing within the “Smarter Together” initiative. It integrates all the mobility modes in the city, which makes it very interesting as a blueprint for the urban transport of tomorrow. I think this will be the future of our sector.

**Where do you see the necessary innovation coming from?**

It is not only about innovation. There first has to be a change in the mind-set of people working in public transport to adapt services to the needs of the customers. Then of course, IT solutions will play a significant role in service innovation and management processes. Technology is an enabler. With the right solution, public transport can become much more agile than it is today. With digitalisation, public transport has a fantastic opportunity to become more creative regarding the services we are delivering. This applies not only to customer platforms but also to the back office. Because of course, the money has to be shared and split among the different partners. This is where IVU comes in. Its solutions enable intelligent distribution channels and thus provide the basis for the urban mobility of tomorrow.

**You recently joined the Advisory Board of IVU. What made this position attractive to you?**

Digitalisation is on the move, it is a fantastic enabler and I think if I can provide advice and contacts, I can help public transport become even better and more efficient in the future. In addition, with my many years of experience in public transport I can help IVU to develop the right products and make the right moves. It is an interesting role and I am not there for the money. I like to share my views with IVU’s Management Board and the other members of the Advisory Board and help IVU in a difficult market. If I can make my small contribution, I will be happy.

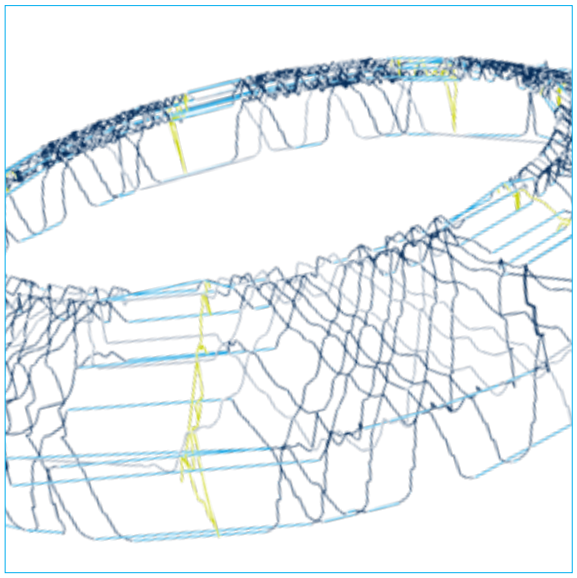
**ALAIN FLAUSCH** WAS SECRETARY GENERAL OF UITP FROM 2011 TO 2017. BEFORE THAT, HE WAS CEO OF STIB, THE PUBLIC TRANSPORT OPERATOR OF BRUSSELS FOR 10 YEARS, WHICH HE SUCCESSFULLY MODERNISED. THIS YEAR, HE BECAME A MEMBER OF THE ADVISORY BOARD OF IVU.

Alain Flausch, Member of the IVU Advisory Board

# IVU.RAIL
# EFFICIENT PLANNING

## ORDER **TRAIN PATHS**

TRAINS CANNOT RUN WITHOUT A PATH. IVU.RAIL MANAGES **TRAIN PATHS DIRECTLY IN RESOURCE PLANNING**. THIS ALLOWS DEVIATIONS TO BE IDENTIFIED QUICKLY AND TARGETED CHANGES TO BE MADE



## **OPTIMISE** RESOURCES

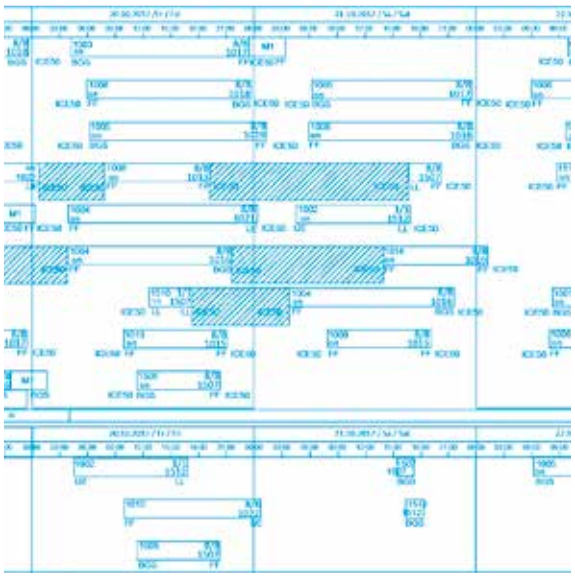
FROM VEHICLE WORKINGS TO DUTY SCHEDULES: IVU.RAIL'S **POWERFUL OPTIMISATION** DEPLOYS EVERY RESOURCE WITH **MAXIMUM EFFICIENCY** AND IN ACCORDANCE WITH THE RULES

## PRECISE PARKING ON **TRACKS**

ON THE RIGHT TRACK: IVU.RAIL AUTOMATICALLY PLANS STOPS AND TRACK OCCUPANCIES AND THUS HELPS YOU TO MAKE **OPTIMUM USE OF VALUABLE INFRASTRUCTURE**


## INFORM **EMPLOYEES**

ALL INFORMATION DIGITALLY AT HAND. THE IVU.PAD DIRECTLY INCORPORATES MOBILE EMPLOYEES IN DISPATCH, **WITH PREFERRED HOURS AND SWAP EXCHANGE** INCLUDED



## PLAN **MAINTENANCE**

FOR EFFICIENT RUN SCHEDULES, IVU.RAIL USES **CONDITION-BASED MAINTENANCE**. THE SYSTEM EVALUATES INCOMING DATA AND AUTOMATICALLY SETS OPTIMUM MAINTENANCE WINDOWS

## OVERCOME **DISRUPTIONS**

IDENTIFY DEVIATIONS IN THE DISPATCH STAGE AND TAKE THE RIGHT MEASURES: IVU.RAIL HELPS WITH **DISRUPTION MANAGEMENT**

## INTELLIGENT **ACCOUNT SETTLEMENT**

AFTER THE TRIP COMES THE **EVALUATION** – IVU.CONTROL RECORDS ALL YOUR TRANSPORT DATA, CONSOLIDATES IT, AND PREPARES IT FOR FURTHER PROCESSING

## FROM THE **CLOUD**

WITH THE IVU.CLOUD, ALL-ROUND **SOFTWARE AS A SERVICE** IS PROVIDED. NO MORE LOCAL INSTALLATIONS, ALWAYS UP TO DATE, AND FLEXIBLE SCALABILITY

# ADVANCING **INNOVATION**

**Innovations require standards. Whatever the task – creating timetables, deploying employees and vehicles or informing passengers – without a common language, the various systems cannot communicate with each other, data cannot be exchanged and new ideas cannot be implemented. That is why IVU has long been supporting the devising of uniform protocols, from RailML and IBIS-IP to ITxPT, the forthcoming international standard for on-board communication in buses and railways. As a result, we are advancing the integration of systems and data streams, from the vehicle to the background software – so that transport operators and manufacturers can continue to provide innovative products and services in future.**

## STANDARDISED PLANNING AND DISPATCH FOR TORGHATTEN

As one of Norway's largest transport operators, Torghatten ASA operates several bus and ferry services and regional airlines in the country. The subsidiary Norgesbuss has been planning and dispatching around 700 buses and 1,000 employees using the IVU.suite since as far back as 2001. Torghatten has now also commissioned the migration of the other three bus companies with around 640 buses and 780 drivers to the standard IVU software.

"Thanks to the excellent optimisation core of the IVU.suite, we have achieved high savings," said Atle Rønning, CEO of Norgesbuss. "It was an easy decision to standardise the scheduling and dispatch across the Group as a whole using the IVU system to use synergies and make the best possible use of our resources."

As part of the IVU.cloud, IVU will take care of the hosting and the overall technical operation of the software. The standardised introduction process IVU.xpress also ensures a rapid start of operation of the planning and dispatch products of the IVU.suite. With integrated optimisation, Torghatten will be able to calculate resource-saving run schedules and fair duty schedules in the future. In addition, the mobile, web-based IVU.pad.employee employee portal allows drivers to view their work time accounts, retrieve payroll accounting and submit duty or day-off requests at any time.

"Good and cooperative customer relationships are of great importance to us," explained Leon Struijk, Chief Customer Officer of IVU Traffic Technologies. "Thus, we are all the more pleased that Torghatten is now expanding the use of the IVU.suite to other areas of the company. In particular, together with the IVU.cloud, the company is receiving a modern and forward-looking solution that can be flexibly extended."

USING IVU.SUITE, TORGHATTEN ASA **STANDARDISES THE PLANNING AND DISPATCH** ACROSS THE GROUP – COMPLETELY FROM THE IVU.CLOUD

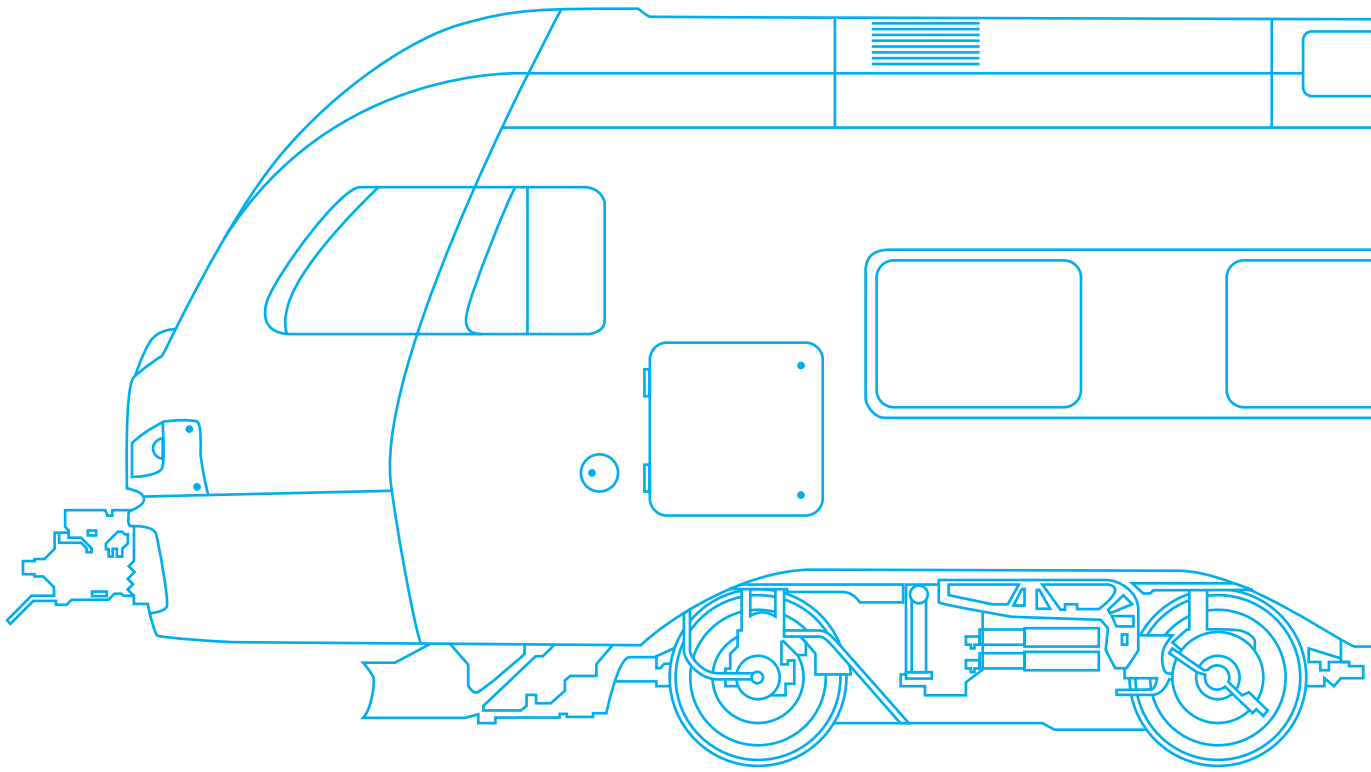
# LATEST TECHNOLOGY FOR STADLER

Based on the latest most advanced standard for passenger information, IVU will equip 69 Stadler trains with new on-board technology in the next few years. As the general contractor, we are responsible for the entire system integration on board the vehicles.

In the next few years, Stadler will renew 51 Stadler GTW vehicles and supply 18 new WINK multiple units for a customer in the Netherlands. All vehicles are to be equipped with a modern passenger information system. IVU is supplying the on-board software and is integrating the entire third-party hardware for this.

In addition to driver terminals, on-board computers and passenger information displays, this includes camera systems for passenger compartment surveillance, devices for counting the number of passengers, and routers and other communication technology. The IVU.cockpit on-board system connects the data from the various sources, formats it and ensures a continuous flow of data within the train and to the control centre. Thanks to the integration of passenger counters, the IVU solution can also display the passenger load of coaches on exterior displays, for example.

"The basis for passenger information on trains is the future ITxPT standard for a standardised IT architecture on board public transport vehicles," explained Matthias Rust, CTO of IVU. "With our extensive experience from similar projects, including the Rotterdam Metro RET and the Vietnamese state railway company VNR, we are ideally positioned for this. In 2014, we were the world's first manufacturer to implement the IBIS-IP protocol for our customers."



# IVU JOINS ITXPT

Open interfaces and innovative transport projects – IVU has been a dedicated player for years, which is why we now joined the ITxPT Association.

The Association established at UITP pursues the aim of standardising IT solutions for public passenger transportation at the European level. IVU was previously involved in developing the IT-based standard IBIS-IP for a digital, integrated on-board information system starting in 2010 under the auspices of the VDV, with the aim of phasing out the existing, mostly proprietary IP solutions of different manufacturers. In view of the considerable similarity between IBIS-IP and ITxPT, IVU now intends to push for a merging of the two standards.

"We are delighted to welcome such a highly experienced company as IVU to our network, a company that for years has been at the cutting edge of the implementation of industry-wide standards for digital data transfer in public transport vehicles," remarks Anders Selling, Secretary General at ITxPT. "Our entire network stands to benefit from the expertise and knowledge IVU has previously accrued across numerous major international projects."

By codifying communication protocols and hardware interfaces in depth, the ITxPT standard makes differing IT systems fully compatible, thereby significantly reducing the degree of risk encountered in the tendering, project planning and implementation of IT solutions for public transport.

ITxPT
Information Technology for Public Transport

SAVE THE DATE

**InnoTrans**
18–21 Sep 2018, Berlin

**Hypermotion**
20–22 Nov 2018, Frankfurt

**ElekBu**
5–6 Feb 2019, Berlin

**IVU User Forum**
18–19 Mar 2019, Berlin

**UITP Global Summit**
9–12 Jun 2019, Stockholm

# ISTANBUL USES IVU.SUITE FOR OPTIMISATION

One of the liveliest major cities in the world will be using the IVU.suite soon. The Istanbul transport company IETT ordered our standard solution for public transport in order to plan run schedules and duties of vehicles and drivers. The leading optimisation tools of the IVU.suite are part of the package, ensuring maximum efficiency.

One of the largest bus operators in the world, IETT provides reliable public transport services in this city of 15 million inhabitants on the border between Europe and Asia. IETT's extensive transport network also includes the Istanbul BRT system Metrobüs, which carries around a million passengers a day between the two continents on its seven routes. Across all its services, IETT deploys more than 6,000 vehicles and 5,000 dedicated drivers. All of them will be assigned effectively with the IVU.suite in future.

With its sophisticated mathematical algorithms, the IVU.suite can process substantial data volumes such as those in Istanbul without effort.

"The combination of large vehicle fleets of various modes of transport coupled with full coverage of functions in an integrated IT system leads to huge complexity," said Martin Müller-Elschner, CEO of IVU. "IETT's order again underlines the fact that our IVU.suite is the international benchmark for tasks of this size." IVU is working closely on implementation with its Turkish partner ZET Group.


OVER **1 MILLION PASSENGERS** EVERYDAY: ISTANBUL'S BRT SYSTEM METROBÜS

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