

# PASSENGER TERMINALWORLD

## PROJECT UPDATE

The new airport facilities  
taking passenger  
experience to the  
next level

Train Station  
Juna-asema | Tågstation  
Bus Station  
Bussit-asema | Busstation

# 2020 SHOWCASE

THE INTERNATIONAL REVIEW  
OF AIRPORT TERMINAL DESIGN,  
TECHNOLOGY, SECURITY,  
OPERATIONS AND MANAGEMENT



TAV | TECHNOLOGIES  
THE FUTURE IS UNDER OUR WINGS

# WE CODE THE FUTURE

```
CV_HOUGH_GRADIENT, 2, gray->width,100,200); if(circles->tot
float* p = (float*)cvGetSeqElem( circles, 1 );
uchar* ptr = cvPtr2D(img, cvRound(p[1]), cvRound(p[0]), NU
double region_size = 7;
double red_avg = 0;
double green_avg = 0;
double blue_avg = 0;
for(int y=-floor(region_size/2); y<ceil(region_size/2); y++)
{
uchar* ptr1 = (uchar*) (ptr + y * img->widthStep);
for( int x=-floor(region_size/2); x<ceil(region_size/2);
{
blue_avg += ptr[3*x];
green_avg += ptr[3*x+1];
red_avg += ptr[3*x+2];
}
}
red_avg = red_avg/(region_size*region_size);
green_avg = green_avg/(region_size*region_size);
blue_avg = blue_avg/(region_size*region_size);
bool color = (green_avg-150)*(green_avg-150)<900 && (blue_avg
if(color)
```





GROWING PASSENGER NUMBERS ARE PUTTING AIRPORTS UNDER GREATER PRESSURE THAN EVER, BUT STUDIES HAVE FOUND THAT COLLABORATION HAS THE POTENTIAL TO IMPROVE THE DECISION-MAKING PROCESS AT EVERY LEVEL

# COLLABORATION TIME

■ IATA statistics show that 4.4 billion people  
 ■ flew in 2018, and the increase in global passenger numbers shows no sign of slowing down. According to the same statistics, 22,000 city pairs are connected to each other by direct flights. This level of traffic means that airport operators and airlines must work in harmony with each other to transport passengers in a timely and safe manner. This requires good communication, team spirit and effective coordination.

In an ecosystem where competition is fierce and service quality must be maintained while transporting large numbers of people quickly and safely, sharing information in real time with all operational personnel enables stakeholders to respond quickly to any failures that may occur, as well as highlighting potential problems that may occur later.

Any problem has the potential to disrupt a range of processes, including airport operations, airline operations and ground services. It is therefore key that all stakeholders in the airport ecosystem have the same information at the same time. The coordination between stakeholders and the ability to make rapid decisions are of great importance at airports, and increasingly so. This is where Airport Collaborative Decision Making (A-CDM) comes in.

ABOVE: A-CDM helps make the passenger experience smoother and more predictable

## Optimizing airport operations

A-CDM is a system that optimizes airport operations. It ensures that the airports are transparent and that all personnel within the airport have the same, accurate information simultaneously. In this way, it prevents inefficiencies that may occur in airports and ensures that the operations are performed in due time, with precision. A-CDM facilitates optimized operation and real-time sharing of information. It also enables stakeholders to take action as quickly as possible, preventing later delays.

Studies have clearly shown that A-CDM provides substantial advantages for minimal investment for all stakeholders, including airlines, airport operators, air traffic control, ground handlers and the entire air transport network. Airports realize significant local operational benefits through the adoption of A-CDM processes, not to mention a dramatic improvement in levels of take-off predictability. This improved predictability also results in a safer and more efficient air traffic network.

Research conducted in 17 European airports by Eurocontrol, the European Organisation for the Safety of Air Navigation, found that the benefits of using A-CDM include:

- Average taxi-out time savings of between 0.25 and 3 minutes per departure;
- Average schedule adherence improvements of between 0.5 and 2 minutes per flight;
- Dramatically improved take-off time predictability – typically by as much as 85% during adverse conditions;
- Reduction in push-back delays after startup approval;
- Improved ground-handling resource utilization;
- Reduction in the number of late stand and gate changes.

After implementing A-CDM, a large European airport enjoyed a 10% reduction in airport taxi time, which is equivalent to a fuel saving of US\$3.6m per year. If 50 major airports in Europe could save one minute of taxi time per flight, A-CDM could help airlines save 150,000 tons of fuel annually, which would result in a 480,000-ton reduction in CO<sub>2</sub> emissions. It is also worth emphasizing that the implementation of A-CDM not only positively impacts local air quality, but also reduces noise levels.

#### Small and mid-sized airports

The realization of benefits depends on the characteristics of the airport and the extent to which A-CDM procedures are adopted. However,

Airport stakeholders expect to see **maximum performance from their assets** despite increasing constraints



RIGHT: Use of A-CDM helps airports ready themselves for growth

BELOW: Even smaller airports can benefit from A-CDM



this study has shown that even smaller airports stand to benefit significantly from A-CDM, particularly during periods of adverse conditions. Riga International Airport in Latvia, for example, has implemented A-CDM. Co-financed by the European Union and in partnership with TAV Technologies, it will increase the capacity of the airport and improve processes of coordinated action among all parties involved in handling flights. The introduction of CDM procedures will ensure a more efficient decision-making process based on more precise and timely exchange of information and a common understanding of the situation among all parties.

The implementation of the project will substantially improve the quality and safety of services for airspace users, as well as passengers. Improvements will include greater precision in planning take-off schedules, reduced wait time at the terminal, as well as on the runway, especially during rush hour, and the reduction of resource and fuel consumption costs for airlines in terms of wait time before take-off and preparing aircraft for flights. There will also be a reduction in environmental pollution.

A-CDM will improve air traffic flow management at the airport by reducing flight delays, improving punctuality and optimizing the use of resources. The number of flights at Riga Airport continues to grow from year to year; therefore, by introducing A-CDM the airport will have readied itself for future traffic growth. A-CDM enables the airport to make the correct decisions in collaboration with airlines, ground-handling service operators, air navigation service providers and other airport service providers, thus reducing costs and making Riga Airport ever more attractive for airlines, and raising its competitiveness not only in the Baltics, but across the region as a whole.

#### Conclusion

The aviation industry is under enormous pressure, with many airports dealing with more passengers than they were designed to handle. With soaring air traffic levels, heightened security issues and disruptive technologies, it is becoming increasingly difficult to simply maintain levels of operational activities.

All airport stakeholders expect to see maximum performance and service from their assets despite increasing financial and environmental constraints. European studies on the adoption of appropriate A-CDM tools and components at smaller airports show that airports of all sizes, not only large ones, can see real benefits in reducing operating costs, boosting asset efficiency, minimizing surface congestion, and improving airport safety with a better real-time situational awareness.

This awareness can be enabled by using a platform such as TAV Technologies' A-CDM to link disconnected systems and provide all stakeholders with operational information in real time, along with the added benefits of enhanced mobility on portable devices. ■

## staxi Everyone forward

### Staxi

Staxi is in the business of moving everyone forward: the company's transport chairs offer no-compromise performance. For 20 years, Staxi has answered the call to help people experiencing mobility or distance challenges to move forward. Staxi Airport and Aisle chairs offer any-situation versatility. The company's failsafe braking system provides a safe and secure platform for passenger entry and exit. When the operator is not guiding the chair, the brake will always be engaged. From the curbside and throughout the terminal, from the jetway door to the aircraft seat – Staxi enables onward movement toward a destination. Everyone forward!

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### Strulik

Strulik is a supplier of engineered solutions for air-diffusion systems in public environments. The company has more than 25 years' experience and one major field of Strulik's work is airport terminals. Being involved at a very early stage of a project, Strulik assists design engineers, architects and contractors in all phases, from pre-design to handover. This includes building simulation studies, as well as the design and manufacture of air-diffusers. With its purpose-built and bespoke solutions, Strulik is committed to the highest quality in function and design and offers a full warranty for the supplied systems.

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### TAV Technologies

TAV Technologies has more than 15 years of experience in the field of airport management systems and is well equipped in developing turnkey integrated solutions for airport infrastructure systems, increasing efficiency by redefining processes. The company is a systems integrator and software vendor, offering turnkey IT solutions, serving primarily the aviation industry. Its mission is to create innovative, reliable and flexible technology products and services that are continuously evolving to challenge the market and guarantee seamless stakeholder satisfaction. TAV is present on three continents, in nine countries, at 31 airports and 21 companies, with 43 in-house-developed commercial off-the-shelf products.

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### Transoft Solutions

Transoft Solutions offers innovative, state-of-the-art software and services for the airport and airspace industries. Whether a project involves improving departure check-in processes, optimizing aircraft parking stands or operations, designing new ground markings, analyzing runway capacity, preparing obstacle limitation reports, refining terminal airspace procedures, modeling en route traffic, or evaluating air traffic complexity in real time, Transoft Solutions has a solution to successfully complete the task with confidence.

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### USM Airportsystems

USM Airportsystems manufactures furnishings for all passenger handling processes in airports using the Swiss-made USM Modular Furniture system. The system, patented in 1963, uses basic construction allowing limitless possibilities to extend or rebuild individual elements, to integrate technology, change the color or convert units from stationary to mobile and vice versa. USM allows airports to establish a uniform corporate design from check-in to boarding. The use of extremely robust, high-quality materials, timeless design and modular construction, combined with damage and fire-resistant surfaces, creates a truly cost-effective yet design-conscious solution for architects and airport planners.

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## VANDERLANDE

### Vanderlande Airports

Vanderlande is a global market leader in value-added logistic process automation at airports. Vanderlande's baggage handling systems move 4.2 billion pieces of luggage around the world per year, or 11.5 million per day. Its systems are active in 600 airports, including 14 of the world's top 20. Established in 1949, Vanderlande has more than 6,500 employees, all committed to moving its customers' businesses forward at diverse locations on every continent. With a consistently increasing turnover of €1.5bn (US\$1.65bn), it has established a global reputation over the past seven decades as a highly reliable partner for value-added logistic process automation.

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## vitra.

### Vitra

For decades, Vitra has dedicated itself to the topic of seating. This naturally includes time spent in public spaces – illustrated quite clearly by the fact that Vitra has had the Eames Tandem Seating waiting area seating system in its product portfolio since 1962. Thanks to the broad spectrum of products, visitors to waiting zones, as well as users of other areas, can benefit from the ergonomics and design quality of Vitra's products: from the airport gate to customs, security clearance and luggage check-in, and from restaurants, lounges and shopping areas, to back-office and control-center areas.

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### Walter P Moore

Walter P Moore is an international company of engineers, designers, innovators and creative people who solve some of the world's most complex structural and infrastructure challenges. Providing structural, diagnostics, civil, traffic, parking, transportation, enclosure and construction engineering services, the company designs solutions that are cost- and resource-efficient, forward-thinking, and help support and shape communities worldwide. Walter P Moore's airport experience includes designs for new and renovated terminal buildings, parking garages, rental car facilities, air traffic control towers, automated people mover infrastructure, hangars and other types of facilities. Founded in 1931 and headquartered in Houston, Texas, Walter P Moore's 600+ professionals work across 20 US offices and five international locations.

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## XOVIS

### Xovis

Switzerland-based Xovis is a specialist in airport projects. On-site planning, professional implementation, initial operation, reliable support and maintenance are part of the company's full-service approach. With Xovis, airports not only get a reliable futureproof product, but also gain a long-standing partner. The Xovis Passenger Tracking System (Xovis PTS) is the airport industry's leading technology for passenger flow measurement. This system combines 3D sensors with a software solution, both exclusively developed by Xovis. People counts, queue length, waiting times, overflow, throughput and capacity are measured by the sensors and can then be monitored on a real-time dashboard.

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