The Next Level of Mobility

Transport planners all over the world discover the ropeway to provide mobility solutions for cities. As cities grow, their transport systems have to grow as well to provide the mobility needed for the city’s success as a place to work, live and spend leisure time. Mobility is also an important factor for the economic competitiveness of a city.

The last decade saw ropeways appear as a mode of public transport. Their characteristics made them a valuable addition to transport systems. They are fully integrated reliable and comfortable components of transport networks and allow for seamless modal interchange.

The small footprint makes them ideal to retrofit existing settlements and provide vital transport infrastructure. Areas difficult to access by conventional modes of transport can be reached by ropeways.

The future of modern mobility are integrated multi-modal transport networks. Ropeways are a vital part of it.

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SWISS PRECISION
Dear Readers,

You are holding in your hands this year’s second issue of SI Urban (2/18) providing you with comprehensive information on the current situation regarding urban cableways worldwide. We have included not only information about the recently implemented projects in Sarajevo (Bosnia-Herzegovina), Santo Domingo (Dominican Republic) and Moscow (Russia) but also a broad overview of the plans to implement cableways in North America (Boston, Los Angeles, Florida), Africa (La Réunion, Kampala), South America (Santiago de Chile, Medellín, Guayaquil), Europe (Amsterdam, Munich), Asia (Jerusalem, Yokohama) and Australia (Perth).

As we also see our magazine as an educational magazine imparting knowledge and know-how about urban cableways, you can also find in this issue reports on the safety, functions and systems of urban cableways, as well as exclusive interviews with mobility experts, architects and authorities’ representatives. And along with all that, preliminary reports about important industry trade fairs (InnoTrans, UITP) and movement in the manufacturing market (DOPPELMAYR in Russia, POMA in Latin America, LEITNER ropeways in Berlin and Mexico). Finally, the issue is rounded off with articles about the trends relating to urban cableway systems in the political and financial world (UN Habitat, EIP) and the latest developments in the growth markets of Africa and India.

The future of mobility is hanging on a rope, don’t miss reading about it!

Yours, Gerald Pichlmair
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**CABLEWAY PLANS**

**BOSTON – A CABLE CAR RUNNING IN THE MIDDLE OF THE CITY SOON?**

The New York developer Millenium Partners is planning to build a cable car in Boston to run through the booming South Boston Waterfront.

**LA RÉUNION – THE ISLAND IS READY FOR TWO CABLEWAYS!**

Saint-Denis, the capital of the French island La Réunion, plans to build two cable cars to relieve its traffic problems.

**SANTIAGO DE CHILE – SOARING ABOVE THE TRAFFIC CHAOS**

An urban cableway will connect both parts of Santiago de Chile – Providencia and Huechuraba from 2022.

**AMSTERDAM – A PROJECT THAT ALREADY NOW PLANS FOR THE FUTURE**

For three years now, the plan has been carefully examined and reviewed, but now it finally seems that concrete plans have been made for the proposed cableway project.

**CABLEWAY KNOW-HOW**

**EMERGENCY RESCUE – EVACUATION OF URBAN CABLEWAYS**

The operation of urban cableways is connected with a number of difficulties if a rescue action becomes necessary. IMMOOS has a suitable solution ready for every situation.

**SAFETY ON CABLE – ABOUT IRRATIONAL FEAR OF CABLEWAYS**

In terms of the total number of passengers transported, the cableway is the world’s safest means of transport. About a transport system that guarantees safety on the cable.

**FREEDOM OF MOVEMENT – THE FUNCTIONS OF A CABLEWAY**

As a supplement to public transport a cableway can resolve many problems related to city traffic.

**CIRCULATING OF JIG-BACK? – THE OPERATION OF URBAN CABLEWAYS**

Whenever a cableway becomes an issue in a city, the question of whether it should be implemented as circulating or reversible needs to be answered, too.
The New York developer Millennium Partners is planning to build a cable car in Boston to run through the booming South Boston Waterfront. Given the area’s dense development, thick traffic, insufficient bus network and heavy commuter flows, a cable car would make the most efficient and financially effective means of high capacity urban mass transit.

As the city planners from Handel Architects concluded on the basis of a one-year study, neither new buses, nor ferries, nor revival of the old railway route would have the required effect. “The Marine Industrial park within the South Boston Waterfront as a former Army and Navy harbor, has always had poor public transport in form of overloaded buslines. The high-density development makes the parking situation tight, too” explains Seth Riseman, Associate Principal with Handel Architects, in an interview with SI. And the situation will get even worse as large companies, such as Amazon or Reebok, want to settle here, too. “In a situation like this, only a cable
car can ensure fast, continuous, traffic-jam-free and punctual transport because it soars above all the chaos," says Riseman. Indeed, it was the traffic and development situation that drove the idea of building a cableway – in terms of topography, it would not be necessary. The Handel Architects planners have prepared designs for the cable car's construction, operation and budget in cooperation with VHB Engineers (Vanasse Hangen Brustlin, Inc) and cableway manufacturers. The client – the development firm Millennium Partners – is keen to build a large commercial property in this part of the city and invest 100 million dollars in the cable car. The company spokesperson, Michael Vaughan, told the "Boston Globe":

The cable car will start at the railway station South Station (top picture), the height of the cable car will vary depending on structural conditions (bottom picture).
"A cable car is an utterly new, but fully feasible, transport solution that will benefit not only our project but also the industrial park and South Boston residents." According to Vaughan, the cable car could transport 15,000 people per day – and correspondingly relieve the roads.

**Two project phases planned**
In the first phase, the cable car will start at the South Station, a train station for long-distance, local and underground railway traffic, and lead along the main traffic artery of this part of the city to the center of the Marine Industrial Park. It will stretch over 13 support pillars and a distance of 1.6 kilometers. "The middle station will be situated at the BCEC, the Boston Convention and Exhibition Center, which can now be accessed only by bus," describes Riseman.

The installation is designed as a mono-cable circulating gondola with 70 cabins, each for 10 passengers. "This corresponds to a transport capacity of 4,000 persons per hour and direction. Every 8.5 seconds, a cabin arrives in the station – this is a huge advantage especially during the rush hour," says Riseman. Extension of the route with three additional stations to provide access to most parts of the area south of the Reserved Channel is planned in the second project phase. Also, this area lacks sufficient public transport.

**The height of the route varies**
In light of the stringent rules of the American private law, the cable car will only run above public land, especially along the center stripe of a four-lane main traffic artery. In addition, its height will vary between 9 and 15 m-

A cross-section of the station and route shows that the cable car can rise above the traffic chaos.
ters above the ground. “In order to minimize visual disruption, we are planning the route to run above the roofs in the historic district while keeping below the level of the hotel rooms, at the level of the restaurant and shops, passing the D2 Hotel, which is currently under construction,” explains Riseman.

The city considers the proposal
The cable car plans are ready, now it is up to Boston and Massachusetts authorities to make the project a reality. The officials have until 2020 to examine various traffic solutions for the South Boston Waterfront, including separate bus lanes and a dynamic traffic light system.

But in principle, many local officials openly support an urban cableway. “Such a system with its transport capacity could replace 50 city buses, reduce car traffic and CO2 emissions. I am determined to cooperate with Mayor Walsh to carry this option forward,” said Stephen Lynch, a House of Representative for Massachusetts, to the Boston Globe.

Boston’s Mayor Marty Walsh, too, confirmed to the TV broadcaster WCVB-TV that “as far as the cable car proposal, everything is on the table.”

The stations will be carefully incorporated into the existing traffic situation.
With the upcoming Olympic and Paralympic Games in Tokyo in 2020, private investors are planning to build a cableway in the neighboring port city of Yokohama to bring in foreign tourists.

As the Japan Times report, the Yokohama’s city administration supports the plans to build a 600-meter-long cableway between the JR Sakuragicho Station and the city district of Minato Mirai 21. Minato Mirai 21 is Yokohama’s central business district. In addition to a theme park, Cosmo World, it also houses other tourist attractions, such as the Red Brick Warehouse, the Cup Noodles Museum and the Yokohama Landmark Tower.

Senyo Kogyo Co., an Osaka-based manufacturer of amusement rides and operator of, among other projects, the Yokohama Cosmo World theme park, would like a cableway to open up its parks and tourist attractions. Although decisions on some details, including the exact completion date, remain to be made, Senyo Kogyo promises that its gondolas will offer visitors a nice view of the waterside promenade and Yokohama’s skyline.

“The cable car will not only serve as a means of transport but will also promote tourism – an important part of prospering city development,” says Shogo Takashima, company manager for Senyo Kogyo’s Tokyo branch. After all, this would not be the first cableway Yokohama has seen. A temporary installation was built here in 1989 for the city exhibition Yokohama Exotic Showcase (YES’89) which operated in the same city district, Minato Mirai 21.

Plans for another cableway

Senyo Kogyo’s current plan is one of nine transport proposals from the private sector received by the municipal building authority after it had invited enterprises to submit ideas for a masterplan Transport to Boost Tourism in December 2017.

The other projects include ferries, open-roof buses, and one even more extensive cableway network to connect the JR Yokohama Station with the Yamashita Pier. Keita Matsui, Project Department Director, believes that these proposals, along with ongoing projects, such as a bike-sharing service and the renovation of the Shinko Pier, will make traveling through Yokohama a more pleasant experience.

Olympic Games as the driving force

In addition, the city expects that the Olympic and Paralympic Games to be held in 2020 in Tokyo will represent a great opportunity to improve the city’s international standing and attract more tourists, both domestic and foreign. According to the recently published city statistics, 36.3 million tourists visited Yokohama in 2017. By 2020, the port city will succeed in bringing in even more as it will host the Olympic baseball, softball and soccer games.
Promotion of new jobs and development requires sustainable investments and a strong partner with a comprehensive concept.

Achieving inclusive and sustainable growth and creating new jobs remains one of the greatest challenges for developing countries. However, private-sector investments are not always available. Many of the affected countries are afflicted by conflict and violence and require some form of external support. This is where the External Investment Plan or, shortly, the EIP, comes in. It goes beyond traditional development assistance and seeks an increase in sustainable investment in an integrated manner. The purpose of this innovative and holistic approach is to open new possibilities of development cooperation and to attract private investors. This new form of European investment partnership was introduced to stakeholders in more detail during an informational meeting organized by the Austrian Chamber of Commerce (WKÖ) on 12 July 2018.

**Benefits for all parties involved**

The new European Fund for Sustainable Development (EFSD) is a part of the European investment offensive aimed at third countries, also called the External Investment Plan. Its purpose is to encourage private investors to invest in Africa and countries to the east and south of the EU territory (“the European Neighbourhood”), regions where investment involves high commercial risk. As a result, major investments are only seldom considered for these regions. To rectify the situation, various guarantee mechanisms will be created to provide security for all parties involved. The EIP already has access to some 3.3 billion euros, in the form of existing investment facilities and the newly established EFSD. The monies will be invested upon the mobilization of an expected 44 billion euros from other investors. This estimate has been made on the basis of the many years of experience of the responsible parties in this field. The purpose of the enlarged investments under the EIP is to improve the business environment and investment climate in the partner countries. Special attention shall be paid to private-sector engagement in the fields of sustainable agriculture and agroindustry, sustainable energy, infrastructure and the social sector. EIP outcomes

The EU is a unique development and foreign policy actor with more than 50 delegations present on site in Africa and the European Neighbourhood. This is why it can offer, in addition to financial guarantees, on-site, technical assistance. Thanks to its strong network in these regions, it can also systematically address obstacles to investments in sustainable development. For a project to be eligible under the EIP, it must be implemented in Africa or the European Neighbourhood, specify a clear goal in the area of sustainable development and contribute to the economic and social development of the relevant country. Investment proposals must also allow for appropriate risk sharing, be economically and must not distort competition on the market. Investments mobilized through the EIP should foster employment, growth and stability.
The Koblenz cable car nowadays ranks as a reference project for a clean, environment-friendly means of transport. Local residents love their cable car but a number of obstacles had to be overcome at beginning of the project. The city’s former mayor Joachim Hofmann-Göttig talks about it in an interview with SI editor Tamara Mair.

**SI Urban:** How was the idea of building a cable car for the Federal Horticultural Show 2011 actually conceived?

**Joachim Hofmann-Göttig:** With an expected two million visitors, we feared the city could experience traffic gridlock, especially in the bottleneck of the Ehrenbreitstein area and on the Pfaffendorfer Bridge. A cable car connecting Deutsches Eck and the Ehrenbreitstein Fortress seemed a pragmatic solution which was crucial for the creation of an integrated concept of the Federal Horticultural Show on both banks of the Rhine.

**But not everybody was initially keen on the idea, were they?**

**Prof. Dr. Joachim Hofmann-Göttig:** From May 1991 until April 2010, the State Secretary for Culture and Regional Representative for the UNESCO World Heritage in the Rhineland-Palatinate. During this period, he was responsible, among other projects, for the recognition procedure in relation to the “UNESCO World Heritage Upper Middle Rhine Valley” and issuance of permits for the Koblenz cable car by the state cultural heritage authority and the UNESCO. From 1st May 2010 until 30th April 2018, Lord Mayor of the city of Koblenz. As the Chairman of the Supervisory Board of the BuGa 2011 Koblenz GmbH at that time, he was also responsible for the success of the Federal Horticultural Show and a successful outcome of the debate with UNESCO over continued operation of the cable car – for now until 2026. Since 1st May 2018, independent business consultant in the European area, a. o. in the fields of culture and tourism, also in connection with cableway projects, with offices in Koblenz (GER) and Domburg (NL).
As the secretary for culture at that time, I heard the opinions of both sides of the table: the Federal Horticultural Show planners and the cultural heritage authorities. I submitted a proposal to accept the cable car temporarily for the Show and for a period of 3 years. Both sides could live with that.

*Was it difficult to find the ideal locations for the stations?*
Of course, it was one of the main issues, though less so with the upper station – the cable car was to run across Fortress Park to the Fortress – but more so with the lower station which was planned right in front of our precious Basilica of St. Castor near Deutsches Eck. Both the state and the church cultural heritage authorities were concerned about this location. Other locations, such as Lützel to the north of Deutsches Eck, were examined, especially because they lay outside the world heritage district. But then these other proposals were dismissed as there were serious doubts as to whether these locations would be acceptable for the Federal Horticultural Show visitors. From today’s perspective, it is clear: only the location that was chosen could guarantee attractiveness of both the Show and the cable car.

*Today, the cable car is a symbol of the city but were there any doubts about the project before it was completed?*
Certainly. At first, both the residents and the city council were quite skeptical about it. Many doubted whether the Show or the cable car could be economically profitable. That’s why it was crucial that DOPPELMAYR was ready to assume the risk associated with the investment and the operation; no public subsidies were granted for either of them. And it is still the case today. That’s also one reason why the residents’ current acceptance of the project is so high.

*But the cable car project was not implemented only as part of the Show, was it?*
It was clear to all those involved that having a cable car would be a vital prerequisite for the success of the Show. Then later, especially during the test operation phase in the summer of 2010 and already during the Show’s construction phase, many visitors realized how attractive the cable car was also as an environment-friendly ultra-modern mode of transportation. Since then, there has been an on-going discussion in Koblenz on how the cable car could be better integrated into the city’s public transport network. Introducing a round ticket (including a visit to the Fortress and the use of the cable car, the inclined elevator and the ferry) was the first step towards this goal. With the opening of a new large housing area just outside the Fortress grounds (Fritsch Kaserne), the discussion about the cable car – not only as a tourist attraction but also as a means of transport of the future – has gained a new dimension.

*How did the cooperation with the cable car manufacturer turn out?*
DOPPELMAYR assumed all risks associated with the investment and the operation against a contractually secured share of the income from visitors. With the higher-than-anticipated demand, DOPPELMAYR’s share of the income grew too, of course. As the demand continued to be high also in the years after the Show, DOPPELMAYR was ready to continue operating the cable car at its own risk. The same will apply also to the Federal Horticultural Show 2031 (or possibly 2029) project. The cooperation has been fair and reliable so far. DOPPELMAYR has earned great recognition in Koblenz and in the whole region.

*Despite the great support, there were also obstacles that had to be overcome before the completion...*
After the difficult battle with the cultural heritage authorities, there was considerable opposition also from the residents because trees had to be cut to build the lower station and support pillars. One thing we were lucky about here in Koblenz was that the cable car route was planned exclusively above public land although in terms of getting permits, the crossing of the Rhine and of a railway route turned out to be quite difficult. But we were able to manage those too, together with the municipality of Koblenz. I know from other projects how lucky we were not to have the cable car route planned above private gardens as that would have triggered even greater resistance, as experience from elsewhere shows.

*How was the cable car opening ceremony?*
The cable car was launched with a great celebration attended by the Federal President and the Prime Minister. The success of the opening celebration and of the first days of the Show was decisive for the change in the attitude of the residents.

*The cables are checked and serviced yearly to ensure the cable car’s safety and longer operating life.*
The Israeli government has given the green light to the controversial construction of a cableway between the Old City in East Jerusalem and the western part of the city. Starting from 2021, the cableway should run from a station located in the west of Jerusalem over a distance of 1.4 kilometers to close proximity of the Wailing Wall in the Old City and transport 3,000 passengers per hour.

The government approved the first stage of the 43-million-euro construction project last year. The Israeli Minister of Tourism, Jariv Levin, now welcomed the second decision in favor of the cableway with these words: “The cableway will change the face of Jerusalem and offer tourists and visitors easy and comfortable access to the Wailing Wall.”

The foreseen 40 gondola cars, each for 10 persons, would be able to transport 3,000 passengers per hour. According to Levin, the transport would be disabled-accessible to also allow physically handicapped people to reach Jerusalem’s Old City without difficulty. Four stations are planned: the Bahnhof, HaMefaked Street, Mount Zion and the Western Wall stations. One ride with the cable car should cost the same as taking a regular bus. Those responsible for the project expect that this “environment-friendly” means of transport will transfer 130,000 passengers every week.

Controversial construction

Despite this, the cableway project – as numerous other infrastructure projects in East Jerusalem – has met with harsh criticism from Palestinians, as well as the international community. Some critics from the Palestinian camp fear that the project could further increase Israeli influence in Jerusalem. Others expect that the construction will lead to a wave of illegal dispossession. "It will only make Jerusalem a kind of biblical Walt-Disney theme park," argues Daniel Seidman, the project’s opponent of many years. The Israeli authorities, on the other hand, claim that given the number of visitors, the cable car will facilitate access to the Wailing Wall – the holiest site in Judaism – for Jews, Arabs and tourists alike.

The existing access roads to the holy sites are narrow, steep and overcrowded due to the Old City’s topography which makes their widening or the building of additional roads practically impossible. This is also the reason why the Ministry of Tourism has been fighting for a cableway for over ten years now.
10 million passengers per year

Santo Domingo

Much More Aerial

Connected to the underground, the urban gondola sails over the traffic; it takes only 17' to travel from the city centre to the North-East area of the city! At last, a much welcomed quick and easy means of transport!
The cable car to the Trebević mountain in Sarajevo was a symbol of the Olympics held in 1984 in Bosnia-Herzegovina. Destroyed during the Yugoslav wars, the installation celebrated its comeback last April thanks to LEITNER ropeways.

Last April, the capital of Bosnia-Herzegovina celebrated the return of a true monument. With the launching of a new cable car to the Trebević, the city closed one of the darkest chapters in its history and revived its local mountain with the help of the latest technology from LEITNER ropeways.

The new 10-seater gondola provides fast and comfortable transport from the center of the Bosnian capital to the 1,160-meter-high peak of Trebević. Running at a speed of five meters per second, its 33 cabins can transport as many as 1,200 passengers per hour. Travel time from the lower station of Hrvatin to the Vidikovac station on top of the mountain is 7 minutes and 15 seconds. Inspired by the cable car’s heyday, five of its cabins will ascend the mountain flashing the Olympic colors: red, black, green, blue and yellow. Plus, the technical “inner workings” of the cableway, equipped with the LEITNER DirectDrive system, are the latest state-of-the-art.

Symbolic heritage
To Sarajevo’s residents, the new installation is very important especially since it renews one of the city’s symbols destroyed in the Bosnian war. The old Trebević cable car, built in 1959, transported passengers to the mountain, their popular day trip destination, within 12 minutes. The 1984 Winter Olympics made the cable car world-famous: situated in the immediate vicinity of the bobsled run, it provided a great view of the action underneath. The installation was seriously damaged between 1992 and 1995 and the surrounding area was mined. Only in 2010, after lengthy clearance works, was the area declared mine-free and the first plans for a new construction, or reconstruction of the old cable car, were made.

Large private cable-car donor
One person that significantly contributed to these efforts was Edmond

![LEITNER ROPEWAYS:]

A CABLEWAY AS A SYMBOL OF PEACE

The 10-seater gondola cable car provides fast & comfortable passenger transport from the center to the 1,160-meter-high Trebević.
“Eddy” Offerman, a Dutch nuclear physicist, businessman and globetrotter residing in the USA. In Sarajevo, he found not only the woman of his life, Maja Serdarević, a nuclear physicist born in the city, but – thanks to the cable car – also a place that captured his heart, Trebević. “I remember my first visit there in 1991. It feels as if that care-free trip with Maja happened only yesterday. I was fascinated by the mountain, by the magnificent view of the city,” recounts Offermann. The war years placed a heavy burden on the entire Serdarević family. Afterwards, Offermann, who made his money on Wall Street, set himself a goal: to help with the reconstruction of the destroyed cable car. While the first attempts to implement the new project failed due to bureaucracy in 2011, things started to move forward under the new mayor, Abdullah Skaka. Offermann’s offer to contribute 3.5 million dollars for the construction led to the opening of a new tender out of which LEITNER ropeways emerged the winner. The value of the project which, apart from the cable car, includes also construction works and a new hotel at the upper station, is nine million euros. The new cable car has become an affair of the heart for Sarajevo residents. A recent project shows how important it is for people from the region: several artists have teamed up to greet the new cable car with music, introducing the song “Trebević opet silazi u grad” (“Trebević is coming back to town”).

Mountain railways are all facing the same challenge: they can only fulfil passengers’ high expectations if the entire alpine infrastructure functions flawlessly all the time. That’s why MOTOREX ensures that your machinery and equipment never lets you down. With innovative lubricants, a comprehensive product range and expert technical advising. Put your trust in a partner who is fully committed to helping you give your very best. www.motorex.com
Exciting adventures await not only younger guests in Disney World Florida, but adults can also fulfill their childhood dreams here. Whether adrenaline junkies, sweet tooths or nostalgists, every visitor will find here just the right thing for his taste. Unfortunately, such diversity needs space! This means that the paths between the various areas of the park can sometimes be longer than visitors with for - but Disney already has a solution to this problem. 

Covering an area of approximately 15,000 hectares, Disney World Florida is not only about the size of San Francisco, but also secures the title of the largest amusement park in the world. With an annual number of visitors that even exceeds that of the Eiffel Tower about seven times, it is no wonder that the park can become very crowded. Especially during the parades you should therefore plan a little more time to get from one point to another. But at Disney World, the first steps to shorten the ways for visitors while still obtain the “Disneymoment” are already being taken. For this purpose, a special Disney cable car is plant to be built in Florida. The system will not only expand the existing transport system, but also allow a connection from certain Disney Hotels to the entrances of the Epcot theme park and the Disney Hollywood Studios.

In June, the first CWA cabins for the three planned gondolas have been delivered to the amusement park. To match the corporate design of the park, Disney characters are featured on each cabin. The air-conditioned cabins are designed to accommodate ten people and simplify the transport in the park for the guests.

The opening date for the Disney Skyliner has not yet been fixed but it is planed to open before 2019. This would mean that the construction time is set to be about two years. Since the experience of the guests always comes first for the park operators, one has decided to go for the most modern version of the gondola lifts. The new plant is designed with the powerful MDG system of the D-Line. As a result, the cable car industry in North America is soon to be equipped with a state-of-the-art showcase system Available.
A 195-carrier cableway now flies through the sky of Santo Domingo, the oldest city in the New World. Thanks to the manufacturer POMA, it will provide an easy and rapid connection between the centre and the north-east of the city by flying over the meandering Ozama River twice.

This cableway comes at the right time as Santo Domingo is seeing unrivalled growth and in turn, more and more traffic. Yet, it was impossible to create blockages in already dense and congested areas, particularly at the entrances to the main bridges. By commissioning POMA and its cableway solutions, the URBE offers users a new means of efficient transport guaranteeing a capacity of 3,000 people per hour and per direction through four stations, representing around 10 million passengers per year. The cableway connects more than 23 neighborhoods directly to the subway system and runs over five kilometres through 36 towers and requires very little ground space. With reduced CO2 emissions, it even meets the demands of soft and sustainable mobility. The cableway reduces the travel time from previously one hour to 20 minutes now and guarantees a fast, reliable, silent, comfortable and pollution-free transport for 287,000 people. Once again, POMA has placed cableway transportation at the heart of intermodality for tomorrow’s city.

On May 22, 2018, President Danilo Medina tested the Santo Domingo aerial ropeway, the first public cableway system in the Caribbean.

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**THE ARRIVAL OF THE FIRST URBAN CABLEWAY IN THE CARIBBEAN**

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*The URBE (Unidad Ejecutora Para La Reeducacion De la Barquita Y Entornos) has the task of managing the “Santo Domingo-East” development and mobility program.*

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**AERIAL TRAM SANTO DOMINGO**

- **Owner**: URBE
- **Supplier**: POMA
- **Location**: Santo Domingo, Dom. Republic
- **Length**: 5,160 m
- **Attitude Rise**: 20 m
- **System Capacity**: 3,000 p/h/ direction
- **Stations**: 4
- **Towers**: 36
- **Speed Time**: 5 m/s

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Photo: POMA
Since it opened to the public, the Santo Domingo gondola has already transported one million passengers in two and a half months. An exception in the sector, POMA, the manufacturer, is also in charge of operating and maintaining the machine, as the interview with Michael Fauché, Service Director POMA, shows.

Why is the “Teleférico Santo Domingo” the first urban gondola to be manufactured, operated and maintained by POMA?

Michael Fauché: During the construction, the customer - URBE - shared their requirements and expectations as regards the safety and availability of the operation, as well as concerning the maintenance of the future system. POMA offered its training, operation and maintenance expertise, based on the experience it gained in the area.

As regards the implementation, we called upon the experts of our different Operation and Maintenance sites. Coming from Peru, Colombia, France and Egypt, the team was in charge of the skills transfer, from the local recruitment up to the technical training.

The gondola opened to the public on the day following its inauguration. Was this a true challenge for the teams?

Indeed, from the day following the inauguration, the Dominican team was able to operate the machine properly. These operations usually require several weeks of training on the machine before any commercial operation. Yet, this time frame was optimised with the support of POMA’s team of experts present onsite and the help of its operation and maintenance digital tools, such as UPilot®.

Moreover, this challenge was also met due to the close relation and constant dialogue with our customer Patricia Cuevas – director of URBE – and Jhael Isa, project manager, and the OPRET teams.

What does operating and maintenance support mean to the customers?

This support means a lot to our customers as it makes their lives easier: no need to create structures, train personnel, manage spare part stocks, etc. Meaning they can concentrate on providing a high-quality public service. This service is all the more vital in urban or tourism contexts, where the cable transportation culture remains little developed, and where the customers may lack confidence, as for any non-mastered technology. Until the opening of the Santo Domingo machine, no manufacturer in the world had operated an urban gondola. We are the first.

However, we rely on close to ten years of experience in operating and maintaining highly-demanding urban transportation systems such as the New York gondola, as well as Cairo and Miami’s APMs. (ed. APM: Automated People Mover). As it happens, in Santo Domingo, POMA manages the machine’s technical conduct and maintenance –based on the Roosevelt Island gondola (New York) model or the Cairo APM, whereas the public operator is in charge of commercial management and conducting the proper integration of the machine within the city’s transportation network.

What challenges does the operation and maintenance of a cable transportation system pose?

The transportation system, opening hours, number of passengers per hour and geographic spread render the operations more or less complex. The “Teleférico” extends over five kilometers long, includes 36 pylons, four stations, and has a large transportation capacity. As a consequence, its maintenance is a lot more demanding. Therefore, the key factor is having well prepared teams to conduct the operations.

With the process implemented, POMA is able to set up local teams anywhere in the world, that will work up to 24/7 to conduct operating and maintenance tasks on most demanding systems. In addition to the 60 Dominicans working for the “Teleférico Santo Domingo”, we have already recruited and trained several hundred people throughout the world. This customer support not only meet the customers needs but also creates value locally. And this is very important to us.

After the first few months of operation in Santo Domingo, what assessment can be made from the users’ point of view?

The gondola is connected both to the different public transport systems (metro, bus, etc.) and the road network. In one of the “Teleférico” stations, users can access the metro directly simply by going down one level. By reducing correspondences between the different services, users save precious time.

Comfort yes, along with financial incentive, especially as the city now offers a single ticket for its whole transportation network since the gondola opened. Not to mention the pleasure of travelling through the air in a comfortable and cosy vehicle. Incidentally, the city made it clear that it would develop other gondola line projects if this one works well. In which case, we would be very happy to help them once again.
In South America, aerial tramways are an integral part of the landscape and have been fully adopted. POMA has installed no less than twelve cableways in six cities in this part of the world. Now that urban mobility is a major challenge for cities, ropeways offer a solution that adapts to any terrain, crossing over any obstacle in the urban and rural landscape, without causing major urban blockages. It is also an energy efficient, environmentally friendly and efficient means of transport, guaranteeing optimized passenger flows.

**The 6th cableway line in Medellin**

In Latin America, it has also enabled cities to strengthen the social cohesion of territories by linking historically marginalized sectors, as witnessed in particular by Medellin. The city has once again commissioned the French company to install a 6th metrocable line, for which construction has just begun. It will have two intermodal stations, one of which will connect the first underground El Picacho line – also designed by POMA – to the metrocable. The cabins and stations are built in France, in the new Gilly-sur-Isère industrial site. The towers are manufactured on site and assembly are performed in Medellin.

**First urban cableway in Guayaquil**

Moreover POMA, associated with the SOFRATESA group, signed a 30-year concession contract for an investment of 134 million US-Dollar with the municipality of Guayaquil in the Republic of Ecuador to build the future urban gondola lift which will link downtown Guayaquil to downtown Duran, on the other bank of the Guayas River, along the Pacific coast. Work has already begun for a scheduled commissioning during 2020. Located in the Republic of Ecuador, Guayaquil is the country’s economic capital and the most important port on the western coast of Latin America. Its population has reached 2.3 million inhabitants, with a metropolitan population of four million. The new cabin will connect downtown Guayaquil and Duran in just 17 minutes compared to about 45 minutes today by crossing the bridge, without pollution and in complete safety. This aerial tramway line is 4.1 kilometers long with a capacity of 2,600 people per hour in each direction thanks to its 155 ten-passenger cabins. It will include three intermediate stations and 27 towers, eight of which will be located in the Guayas River, for 1.8 kilometers.

Patricia Cuevas, La Barquita Program Coordinator

“Urban ropeways enable communities to connect historically marginalized sectors, in turn transforming, integrating and creating social cohesion for these territories.”

Colombia, Bolivia, Ecuador, Peru, Brazil or Chile – since the first urban gondola lift installed by POMA in Medellin in 2004, rope-way transportation has inspired many cities. The latest projects from POMA: The 6th metrocable line in Medellin (Colombia) in 2019 and the 1st Aerovia line in Guayaquil (Republic of Ecuador) in 2020.
A CABLEWAY FOR BOSTON
SPECIFIC PLANS FOR THE US METROPOLIS

MOBILITY - ISSUE OF THE FUTURE
INTERVIEW WITH THE EXPERT MICHAEL HANITA

SAFETY ON CABLE
ABOUT IRRATIONAL FEAR OF CABLEWAYS

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A unique ropeway from BARTHOLET Seilbahnen was launched in the Russian capital this summer. With the Mixte installation, passengers can travel comfortably and quickly from the Olympic stadium Luzhniki situated in the center of Moscow to the city’s highest point.

During this year’s FIFA World Cup, the fan zone was located precisely here. The middle station is Novaya Liga and the end station Luzhniki, the Olympic stadium. As the final station, in particular, is expected to see an increased numbers of passengers, special attention has been paid to ensuring convenient travel also for passengers with impaired mobility. Thanks to an elevator built directly at the stop, they can get to the stadium quite easily.

In its transport plans for the future, the government of the city of Moscow is betting on ropeways as a comprehensive means of public transport. The first, already implemented project, is the Téléporté Mixte from BARTHOLET Seilbahnen. The project combines gondolas and chairs and consists of two sections and three stations. Kosygina station, located on the hill “Vorobyovy Gory” - or “Sparrow Hills” in English – is the highest point in the city, offering a magnificent view of the metropolis from its look-out platform.

The gondolas were developed by the Porsche Design studio in cooperation with BARTHOLET.
Highly polished stainless steel panels offer a special visual highlight for arriving fans. Quality of life and urbanity has much improved over the last few years in this giant city of 12.5 million and the ropeway project should improve it even more. During the impressive ride from Kosygina Station down to the Olympic stadium, the guests can enjoy a splendid view of the Olympic stadium, the Moskva River and, of course, the skyscrapers of Moscow City. Then they pass the middle station where one can get on or off. Their next view is of an impressive, oblique Y-shaped waterfront support tower before they cross the Moskva River at a height of 30 meters.

But it is not just the views that are spectacular but the installation itself, too. Once again, the Swiss ropeway manufacturer BARTHOLET Seilbahnen has convinced with Swiss quality, top precision, refined technology and market-shaping innovation in Russia. From production to assembly, metrology and quality control to the finished cabins, everything to the thousandth of a millimeter must be perfect. The design of the 35 ultra-modern 8-seater gondolas was developed by the design studio “Porsche Design” in cooperation with BARTHOLET Seilbahnen. Their equipment includes, among other features, interior and exterior lighting, monitors and a video-surveillance system. In addition, the gondola seat benches have MP3 outlets so that the guests can be entertained not only visually by the nice views but also acoustically. If needed, two VIP gondolas can be integrated in the installation as well.

The cable car running to Sparrow Hills provides access to an inner-city ski area. This is why in winter, skiers can be transported in the second section of the ropeway on 4-seater chairs. To be able to move the chairs in the middle station for operation only in the second section, BARTHOLET Seilbahnen has developed the so-called “fast switch” – an innovative solution combining urban transport with ski tourism in one facility. Even before this installation was built, there used to be a 2-seater chairlift from 1953 which ran from the middle station to Sparrow Hills and was mainly used by skiers and ski jumpers. Since the ski jump no longer complies with international standards, now, after the ropeway has been launched, it will also be newly built. A school for winter sports should be established here, too. Although the linear distance between Vorobyovy Gory and Luzhniki is only 700 meters, one has to count with a detour of 6.5 kilometers and at least 15 minutes when driving a car. The ropeway will be used not only as a means of public transport but also as a tourist attraction and passenger transport for winter sports. To make sure everyone enjoys the ride, the developers had to accommodate the needs of both target groups in terms of the construction and design of the installation.
The Junghans Terrassenbau is a cultural heritage monument found in the Black Forest. Not long ago, it was also converted into a clock and watch museum. The individual levels of the renovated old clock and watch production site have been made accessible with an inclined elevator from INAUFEN-SCHÄTTI – but not without structural challenges.

The history of the town of Schramberg in the Black Forest is inseparably connected with the name of the clock manufacturer Junghans. His impressive factory, a terraced building, has been restored over two years at a great expense and converted into a new heritage-listed clock and watch museum.

The inclined elevator runs along the façade of the terraced building and provides access to seven of its levels.

INAUFEN-SCHÄTTI: A NEW ELEVATOR FOR A UNIQUE BUILDING

The levels of the old clock factory have been newly made accessible with the help of a modern inclined elevator from INAUFEN-SCHÄTTI – despite the challenges connected with its status as a heritage-listed monument and problematic soil. “Traditional means of ascent, such as vertical elevators, escalators or conveyors, were not an option inside nor outside the building due to lack of space and technical unfeasibility. Moreover, the cultural heritage authorities did not allow any major conversion measures,” explains Jürgen Bihlmaier, architectural firm Rapp & Bihlmaier.

“The Junghans Terrassenbau is a first-class cultural heritage monument and it was constructed in a very special way. For this reason, implementation of internal means of ascent was impossible both from the technical and legal points of view. Disabled-access to all levels could only be secured through an external inclined elevator. INAUFEN-SCHÄTTI submitted the most convincing bid and prevailed over its competitors with the best price-performance ratio.”
Bihlmaier, architect and construction manager responsible for the Junghans project. Moreover, escalators and conveyors would not have been accessible for disabled visitors and entry to a public museum must have disabled access. “Therefore, the only alternative left was an inclined elevator,” adds Bihlmaier. He further reports that the Swiss cableway manufacturer INAUNESCHÄTTI prevailed over several competitors in a tender for an inclined elevator. “The bid from Tschachen was most convincing for the builder. In terms of the price-performance ratio, INAUNESCHÄTTI was unbeatable,” explains the architect. Consequently, a construction contract was concluded in December 2016.

Doors instead of windows
“We subsequently planned an installation that deviated from a standard inclined elevator solution in a number of aspects,” explains Pascal Voegtlin, project manager and vendor for Inauen-Schätti. In the routing, for example, the team had to rely on supports. “We assembled the tracks onto four pillars in the upper section to balance out the problematic soil underneath,” reports Voegtlin. To accommodate the cultural heritage authorities, our staff also had to place the technical room at the foot of the installation instead of the usual position on top under the track construction. “The extension of the track construction accordingly called for a number of bypasses”, continues the project manager. Altogether, the 40-meter-long inclined elevator makes seven of the new levels accessible, only levels 4 and 6 could not be included for technical reasons.

“To minimize interference with the building structure, we placed the station doors where windows used to be,” adds Voegtlin. And Bihlmaier nods with a smile: “We managed to replace 90 percent of the old openings in the façade with doors.” As the line of the doors on the façade had to be as slim as possible, INAUNESCHÄTTI implemented a tailor-made solution of station doors with a double-winged telescopic opening. “Even so, the doors remain wide enough for a wheelchair,” emphasizes Voegtlin. A total of 16 persons or 1,200 kilograms of load can be transported in the XL-cabin of the inclined elevator. The elevator, operating at a travelling speed of 1.4 meters per second, conquers an incline of 32.69 degrees and a height difference of 21.6 meters. The installation is operated as a regular vertical elevator. As Bihlmaier put it, its use is “free and easy” for the museum guests.

INAUNESCHÄTTI has proved with this installation once again that it is able to implement modern transport solutions even at historical sites.
Saint-Denis, the capital of the French island La Réunion, plans to build two cable cars to relieve its traffic problems. One cable car to take passengers traditionally up a hill and another, with five stations, to run directly through the city.

The intercommunal agency CINOR has prepared two proposals for cableways entitled “Bellepierre – La Montagne” and “Chaudron – Bois-de-Néfles” respectively.

**Bellepierre <> La Montagne**

The first cableway should run through the west of Saint-Denis and provide access to the city hill of La Montagne. The population in this part of the city has grown by 9 percent over the last few years and now stands at 13,300. With an additional 2,250 housing units on the way, local traffic will grow by 15 percent by 2021, to 14,000 vehicles per day – yet another reason to build the cable car, according to the planners. Running in intervals under 5 minutes, the 1.3-kilometer-long cable car should connect the hill with the lower station, Bertin-Hopital, where passengers can easily transfer to the regional bus network. As the view of the plateau is quite spectacular, the project developers expect the cable car to also play an important role as a tourist attraction. Thanks to the local residents’ aerial photos and on-line commentaries, they managed to design a system that not only minimizes privacy intrusions and avoids private land, but also reduces the numbers of supports pillars to just four. The installation is designed as a triple-cable circulating gondola and involves an investment of 30 to 35 million US dollars. If everything goes as planned, CINOR will be able to launch it between 2020 and 2022.
The plans for the second cable car, Chaudron – Bois-de-Nèfles, are much more advanced: they were introduced already back in 2016. At 2.5 kilometers in length, this circulating gondola should connect five stations inside the city. To accommodate the estimated 6,000 to 7,000 users per day, 46 cabins are planned, each with ten seats. The installation will be warmly welcomed not only by the approx. 15,000 students of the University of La Réunion, but also by the 53,000 residents living in the affected neighborhoods of Moufia (15,000 inhabitants), Bois-de-Nèfles (9,000 inhabitants) and Chaudron (29,000 inhabitants). This project is especially important for the rapidly-developing city neighborhood of Bois-de-Nèfles with its planned new high school and several new business parks. Although the project does not rank among the world’s largest urban cableway networks, with its five stations it compares to the large systems operating in La Paz (such as the Blue Line or the White Line). From the planners’ point of view, the cable car has become indispensable as the population is suffocated by traffic and faces serious traffic jams due to the steep and narrow mountain roads. With a 13-minute aerial gondola ride, the proponents hope that the traffic situation will significantly improve and the gondola will attract an average of 6,100 passengers per day. In addition, the cable car will be integrated into the regional transport plans and interconnected with other means of public transport. To secure support from local residents, CINOR spent four months in 2017 soliciting feedback from interest groups, gathering over 1,000 responses and engaging in discussions with more than 350 local residents. The survey results showed that 85 percent of the respondents favored the cable car. Consequently, a construction contract in a total value of 53 million US dollars was officially awarded to the French manufacturer POMA at the end of 2017. By the end of 2019 the company will have paved the way towards the launching of the system and will also operate the cable car as a member of a consortium.
Cooperation between the Austrian cable-way manufacturer DOPPELMAYR and Kurorty Severnogo Kavkaza is a clear statement of the ongoing cooperation with Russian enterprises.

Beautiful cities, diverse nature, and 24 UNESCO world heritage sites – this is all on offer in the largest country on Earth. And with it, Russia also belongs to the world’s most important tourist holiday destinations. Although many Austrians would not choose the country at the Urals as holiday destination No. 1, various cooperation projects aimed at development of the local tourism industry are already underway. Much of the Russian North Caucasus remains unknown; yet, it already offers many opportunities for getting to know it better. One company that has been present on the Russian market for over 20 years is DOPPELMAYR. The long-standing connection between this Wolfurt-based company and the world’s largest country also ensures DOPPELMAYR’s strong brand presence which should
be further strengthened through its cooperation with Kurorty Severnogo Kavkaza. Winter tourism, in particular, should profit from the agreement concluded between the parties. It is also expected that these good business relations will further intensify with the agreed future support of further tourism development in the federal district of North Caucasus. Planned cableway projects will lay building blocks for such development and, with DOPPELMAYR, Russia can be sure to have a reliable partner for these projects. The successful company from Vorarlberg has already established its presence at two different locations to be close to its customers and maintain good business relations with local representatives.

**Ensuring higher travel comfort**

For tourists, cableways represent a major plus in both summer and in winter. Comprehensive strategic planning, in particular, can help ensure that cableways are integrated into the existing transport network. This will significantly help expand the infrastructure and improve the efficiency of the entire network. With that, more visitors can be transported through cities or to popular look-out locations without great difficulty. As many as 90 cableways have already been implemented by the Wolfurt-based manufacturer in Russia. Geographically they range from St. Petersburg via Krasnaya Polyana all the way to Juzhno-Sakhalinsk. The cableways from DOPPELMAYR have significantly influenced tourism in Russia and will set standards also for the future.

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**The new Cable Liner for Moscow airport**

The most recent project resulting from this successful cooperation is a Cable Liner in Moscow. As of late, it connects the northern and southern terminal complexes at the Sheremetyevo Airport in Moscow. The fully automated, cable-propelled Cable Liner from DOPPELMAYR CABLE CAR GmbH & Co KG is the first of its kind in Russia. In addition, its approx. two-kilometer-long route runs fully underground in a tunnel.

To implement the installation in this form, the domestic and international project partners’ cooperation had to be perfect. The ultra-modern means of transport has been in operation since June 2018 and has contributed also to comfortable transport of fans arriving during the FIFA World Cup in Russia. Operating 24 hours a day, seven days a week and 365 days a year, the Cable Liner has already proved to be an innovative and reliable means of transport. Travelling at the speed of some 50.4 kilometers per hour, it offers flight passengers uncomplicated transfer to the Moscow airport.
In many places, one can hardly picture a city without one: urban cableways have been in fashion for a number of years and are now more sought-after than ever as a sustainable means of local transport. LEITNER ropeways regards itself an important partner in this field and a promoter of this development.

The cableway system convinces not only with its well-known advantages compared to other modes of transportation but, at the same time, also with its enormous variability which makes it the right answer to various mobility needs. LEITNER ropeways, a pioneer in the field of cableway technology that has already been around for 130 years, is one of those who have contributed to this development most.

Among the greatest advantages of a cableway is its low requirement for space. As the support towers and stations need little space, cableways can be ideally integrated into the city landscape. In addition, unlike buses and trams, they use their own separate “lane” and their operation is therefore not affected by the existing traffic situation. The result: regular travel times and continual transport.

Cableways’ low cost compared to other systems also speaks in their favor. Short construction times enabled by the cableways’ modular structure are the main reason for this. Building a cableway costs a maximum of one half of the price of a tramway and one tenth of the price of a subway. Also in terms of the route, cableways are among the means of transport with the most diverse application.

Cableways can overcome greater route inclines than any ground transport vehicle and can be flexibly tailored to any terrain. In combination with their positive energy profile – lower ecological footprint and lower CO2 emissions – they represent a unique, comprehensive solution that meets the needs of any city.

Berlin cable car to become a part of the public transport network

One example of a perfect cableway application can be found in the German capital of Berlin. LEITNER ropeways built a cable car here in the framework of the International Horticultural Show 2017 (IGA Berlin 2017) which, given its route, quickly became a very popular means of transport not only with the IGA visitors. It has been implemented as a detachable
10-seater mono-cable circulating gondola with 65 cabins of which six have a glass floor offering a spectacular view of the exhibition grounds from a bird’s eye view. The total length of the route is 1.5 kilometers with an east-west orientation.

Besides its three station buildings – the “Kienbergpark station” at the Kienberg – Gärten der Welt subway station, the “Wolkenhain” middle station on top of the Kienberg hill, and the “Gardens of the World” station at the IGA main entrance at the Blumberger Damm – there are only six support towers. The cable car’s visual appearance is not its only impressive feature; so, too, is its “interim balance” after the first six months of operation: three million rides have been logged, numerical confirmation of the cable car’s importance as an IGA highlight.

But this was not, by far, the end of the Berlin success story. A political debate is currently being held in the metropolis about integrating the cableway into the Berliner Verkehrsbetriebe (BVG)’s public transport system. The debate started especially thanks to positive feedback from Marzahn-Hellersdorf’s residents who became enthusiastic cable car riders very soon after the cableway had been launched. Including the installation into BVG’s tariff system would further increase the cable car’s attractiveness and contribute to an optimal utilization of its capacity. However, whether or not a positive decision is made in this respect, LEITNER ropeways is going to continue operating the cable car until 2020 with a ten-year extension option.

**Mexico City with its 9.6 million passengers as an example**

In deciding whether to build a cableway, LEITNER ropeways’ Mexico City project serves as an example for the governments of many other cities. Mexico’s first urban cableway operating as part of the public transport system was launched in Mexico City in 2016.

The installation is almost five kilometers long, consisting of two gondola lifts. For two years, it has been playing an important role in relieving the traffic situation in Ecatepec de Morelos, a densely populated part of Mexico City. The lifts’ sections are approx. 2,900 and 1,800 meters long with seven stations where passengers can get on and off. 10-seater cabins overcome a height difference of 55 and 62 meters. LEITNER ropeways and the city’s administration paid special attention also to the installation’s attractive design. The stations, decorated by regional, as well as international, artists enliven the city’s landscape to this day and, in doing so, enhance it with art.

The installation operates 17 hours every day, transporting 3,000 persons per hour. As a clean, environmental and modern mobility solution, this connection simplifies and improves the lives of residents and visitors of Ecatepec de Morelos. Instead of standing 50 minutes in a traffic jam, the passengers can get to their main transport link for the inner-city area of Mexico City in less than 19 minutes. The figures speak clearly: the cableway is used by an average of 18,000 people a day, making the total number of passengers since October 2016 already 9.6 million.
An urban cableway will connect both parts of Santiago de Chile – Providencia and Huechuraba from 2022. A thirteen-minute cable car ride will provide an alternative to an approximately 40-minute drive by car or public transport, giving passengers an opportunity to soar above the traffic chaos.

The main purpose of the cableway is to connect two important business centers: Ciudad Empresarial with the center called “Sanhatten”. The 3.4-kilometer-long cableway should have three stations. The first is projected at the crossing of Thayer Ojeda with Nueva Providencia, the middle station at Cerro San Cristóbal (east of the Antilén swimming pool) and the third at Ciudad Empresarial’s trade fair center. The first station in Sanhatten will be connected to the metro station Tobalaba. The contract for this $80-millio-
on project was awarded to Teleférico Bicentenario Consortium made up of the cableway manufacturer DOPPELMAYR and the companies Teleférico Bicentenario SpA, Icafal Inversiones S.A. and Ciudad Empresarial S.A. The consortium itself first initiated the project and will be responsible not only for the cableway’s construction but also for its maintenance and operation. The concession will be issued for 35 years. Construction should start in 2020; launch is foreseen for 2022.

6,000 persons per hour
With its 148 gondola cars, the cableway will have a transport capacity of 6,000 passengers – 3,000 in each direction – per hour. Each cabin can carry ten passengers, the time interval between cabins should be 12 seconds. The masts should be built 100 meters apart. “As soon as the project is completed and regular operation is launched, the cable car should be smoothly integrated into the city’s public transport system. This will help reduce traffic in these highly frequented communes,” said the Chilean Ministry for Infrastructure (Ministerio de Obras Públicas – MOP). According to the weekly magazine Condor, the for-
mer administrative director of the metropolitan region, Claudio Orrego, can see several advantages of the cable car: “A cable car is environment-friendly as it produces no exhaust gases. It should contribute to reducing surface traffic and, thanks to its short travel time, improve residents’ quality of life. Last but not least, the cable car will also create a new tourist attraction in Santiago.”

Santiago needs cableways
The responsible politicians are currently discussing how the cable car can be best incorporated into the city landscape. However, traffic experts point out that it is not the cableway that presents the main problem. Director of the Faculty of Architecture at the Universidad Diego Portales, Ricardo Abuauad, explains in an interview with the radio broadcaster Bio Bio that the entire passenger local public transport needs to be improved: “All city planning projects implemented in the last few years aimed at extending the road and city highway network – and succeeded. This, however, led to an increase in the use of private cars.” But what Santiago – a city where over 40 percent of the country's population is concentrated – needs is a better public transport system and its interconnection with other means of transport, such as bicycles or – precisely – a cable car.

The expert also recommends that a central authority for city planning should be established as traffic projects, such as this cableway project, have so far fallen within the competence of the mayors of the affected municipalities.

Three questions for Juan Carlos Figueroa Quezada, Fiscal Inspector of the Building Department at the Chilean Ministry for Infrastructure.

SI Urban: Why was a decision on the construction of the Bicentenario cable car adopted by the authorities?
Juan Carlos Figueroa Quezada: In the framework of a partnership between the public and the private sectors and the existing practice of granting concessions, private companies had the opportunity to submit to the Ministry for Infrastructure ideas for a project. Such proposals are subsequently analyzed, and, where appropriate, declared to be of public interest by the governmental authorities so that the private offeror can prepare a preliminary design study. The same procedure took place also with respect to the “Bicentennial” cable car. The cableway manufacturer Doppelmayr was a part of a consortium in this case. Implementation of a cable car in the city of Santiago would benefit users of the local public transport who need to minimize their travel time between their homes and workplaces. In addition to that, an alternative, environment-friendly and innovative means of mass transportation should be on offer. These were the objectives as declared by the authorities for the implementation of the cableway as a new mode of transport.

What is the future role of cableways in local public transport in Chile?
Cableway transport has tremendous potential in Chile as the country’s geographic conditions are suitable for the implementation of such systems. Expansion of cities naturally ends at the interface between mountains and valleys. This is why I have no doubt that urban cableways present a genuine alternative for local passenger public transport in Chile.

Are there any other plans for cableways in Chile?
The possibility of implementing cableways in the cities of Valparaíso and Iquique is currently being examined. These are cities with geographical features that call for the implementation of a cableway, particularly because they have expanded substantially in the past few decades and suffer from serious congestion issues due to heavy traffic. Therefore, from a political perspective, implementation of these systems would contribute to a more sustainable and equitable economic, social and cultural development of the country and promote territorial integration for a better quality of life.
For three years now, the plan has been carefully examined and reviewed, but now it finally seems that concrete plans have been made for the proposed cableway project.

Unlike the situation in many other cities, the idea of implementing a cableway project seems to have been very well received by the residents right from the start of the planning phase. Looking at the city of Amsterdam and its culture more closely, however, it is hardly surprising that its residents want to have an environment-friendly public means of transport. Even without a cableway, the capital of the Netherlands can already call itself with a clear conscience a cycling stronghold. The city’s intricate and much-used system of canals, too, holds a clear message: Here, people leave their cars in the garage. The urban landscape correspondingly includes a multitude of cycling paths and it is bicycles, rather than cars, that one is advised to watch out for when crossing a street. With the planned cable car, the Dutch would be able to cross the IJ river easily and comfortably, even bringing their bikes along.

Plans
As the cableway’s route crosses the IJ river, the installation should also be named after it: the name of the 1.5-kilometer-long ultra-modern cableway installation should be “IJbaan”. More detailed information about the installation is not available yet but based on renderings, it will be implemented as a
3S cableway. The estimated travel time is around 4.6 minutes, corresponding to a travel speed of six meters per second. The estimated size of each cabin is 32-37 persons, with sufficient room for up to six bicycles. As the cableway is expected to be in great demand, the initial number of passengers is estimated at 4,000 per day, to grow further to as many as 10,000 passengers per day by 2040.

**Design**
The author of the design, UNStudio, would like to capture the advantages of a cable car also visually. The design of the installation should show it as fast, green and a symbol of public transport integration. Moreover, it needs to blend in with the existing architecture and, at the same time, reflect future design trends. The installation itself has been designed as dynamic to allow for future extensions. During the planning, ship traffic, too, has been taken into account. To avoid restriction of shipping, the support towers are planned to be of different heights, ranging from 46 meters to the tallest, middle tower which will be 136 meters high. The planners have given much consideration also to the implementation of the stations: they should not serve only as points of departure and arrival but also as special meeting places for both districts, North Amsterdam and West Amsterdam.

The UNStudio is proud of the resulting plan which not only complies with all the requirements imposed on this project but, at the same time, integrates well into the city’s UNESCO world heritage image. The cableway’s sustainability fits perfectly with the wishes of the Dutch people. It builds a bridge between efficiency and fun and that’s precisely what people in Amsterdam want. The planned stations are the NDSM Marine Terminal in the district of North Amsterdam and the Minerhaven Terminal in the district of West Amsterdam.

The planned stations are the NDSM Marine Terminal in the district of Amsterdam-North, and the Minerhaven Terminal, in the Amsterdam-West district.
Perth is the capital and, by far, the largest city of the Australian federal state of Western Australia. Situated on the continent’s south-west coast, it has a lot of beaches where its residents can relax. However, according to a recent study, the residents’ favorite spots, Kings Park and Elizabeth Quay, attract numerous visitors too. These two favorites are now to be connected with a cableway – at least if things go according to the plan of Western Australia’s Minister, Rita Saffioti.

The idea of building such a cableway is not new. The first calls for this type of project could be heard already in 2014. The hope was that a cableway would further improve a tourist’s experience of the city and attract more visitors. The Minister for Planning at that time, John Day, ordered an analysis regarding the design, cost and function of such an installation from a Swiss company with an international presence. After completion of the feasibility study, the experts described their findings in a 190-page-long report. The study confirmed that, with this type of technology, a connection could indeed be created between Kings Park and Elisabeth Quay which would be relatively simple to implement while creating the connection in any other way would be very difficult. Furthermore, the idea of a cableway was described by the experts as very “attractive” and a further extension by two stations all the way to Synergy Parkland was recommended. But there were also voices opposing the project, among them the manager of Kings Park, Richard Simpson, who was convinced that construction of a cableway would have a negative effect on the park. The idea of an urban cableway was dismissed. It was newly put before the government only by the current Minister for Planning, Saffioti.

Fresh wind for an old plan
The cableway’s proponents described the project as a possible flagship for a unique experience in harmony with nature. They are convinced that an urban cableway ride along Perth’s coast would attract a lot of interest. All the more so because Australia has only a very few cableways of this type. Minister Saffioti confirmed in an interview that plans presented by private sector for such a project were being carefully examined by the government. It looks like, for the time being, the plan for a cableway is on the right track.
Following a feasibility study, Kampala now needs to collect money for a cableway pilot project. 200 mil. US dollars are needed to be able to implement the cableway and provide relief to city traffic.

One can experience progress and tradition next to each other in the capital of Uganda. In the city's modern center, high-rise buildings stand side by side with typical red-brick villas surrounded by trees and hills. This blend creates an interesting contrast appreciated by every visitor. Despite that, however, the city of one-and-a-half million is fighting a continually growing problem. Kampala's traffic is getting out of hand and its streets are jammed even outside rush hours. This is why the city is trying to collect the equivalent of 175 million euros for a pilot project to tame the traffic situation.

Cableways are increasingly implemented as a possible tool to relieve traffic and examples such as La Paz or Mexico confirm that this technology really works. Cableway systems are implemented in the hope that they can reduce local traffic chaos because, thanks to their height, they do not interact with any existing form of surface traffic.

The route of the planned Kampala installation is projected to lead from the Taxipark situated outside the city center to the city center. There is no doubt that such a project would work not only on paper but also in practice in Kampala. Preparations for meetings with investors, which should hopefully result in generating the necessary financial means, are underway.

Prospect

In Europe, cableways are often used to transport larger groups of people. The cable car operating in the French city of Grenoble is one example. It is a very popular means of transport not only with residents but also with visitors who can enjoy a bird's eye view of the city thanks to the cable cars' glass surface.

Similarly, Kampala hopes that the investment not only relieves the streets but also creates a new tourist attraction enabling visitors to see the unique city from a completely new perspective. The success of this strategy can already be seen in the example of other cities. According to expert estimates, the installation could be implemented within twelve to eighteen months.
The operation of urban cableways above populated areas is connected with a number of difficulties if a rescue action becomes necessary. Buildings and streets blocking access, level cable spans or ascending sections, all make a rescue difficult. But the rescue expert IMMOS has a suitable solution ready for every situation.

What happens when a cableway stops and can no longer run due to a technical defect or another reason? By far not every technical issue calls for a rescue; still, the operator must be prepared for the worst. Clear legal requirements apply when passengers need to be rescued. A well-thought-out and well-structured plan of the rescue action is of key importance.

The conditions for a rescue from an urban cableway are very different from those connected with traditional cableways. Populated areas with buildings and streets underneath the cableway’s route make access to the trapped passengers more difficult. Moreover, it is usually not possible to bring the passengers directly down by rope; rather, they have to be rescued along the cable.

Unlike common cable carriages which cannot be used on level or ascending cable spans, IMMOS’s cable rescue carriage SS1 is perfectly suited for this work. Photos: IMMOS
Cable rescue carriage SS1 for special situations

The rescue expert IMMOOS can offer the perfect rescue tool for such situations in the self-propelled cable rescue carriage SS1. It enables the rescuer to reach the blocked cableway carriage without the help of a second person.

SS1 can be used even on level or slightly ascending cable spans as a motor drive can be attached to it. While level or ascending cable spans are rarely present on traditional cableways, they occur quite frequently with urban cableways. And although standard cable rescue carriages are of no use in such cases, cable rescue carriage SS1 is perfectly well-suited. Thanks to its motor drive, the carriage can handle inclines of up to 20 degrees. The motorized SS1 is the ideal rescue carriage even in situations where the passengers cannot be brought down, vertically or diagonally, by rope but have to be rescued horizontally along the cable.

A rescuer on SS1 can tow passengers with the help of special additional equipment. But IMMOOS also has another possible solution in store: the use of cable winches. With its many-years’ experience in the area of cableway rescue, IMMOOS is the perfect partner for you to plan and implement a tailor-made solution to handle any challenges.

The urban cable car operating in Madeira already relies on a rescue plan prepared by IMMOOS.

Only well-trained rescue staff can evacuate an urban cableway within a reasonable period.
In terms of the total number of passengers transported, the cableway is the world’s safest means of transport. In terms of kilometers travelled, it is the second safest after air travel. Learn about a system that guarantees safety on the cable.

The German Federal Statistical Office reports only one accident per 17.1 million kilometers travelled by cableways as a means of transport. That’s a better safety record than travel by car (one accident per 1.46 million km), railway (one accident per 1.31 million km), bus (one accident per 616,000 kilometers) or tram (one accident per 225,000 km). Only airplanes are safer with one accident per 113 million kilometers. In terms of total number of passengers transported, cableways are the safest means of transport of all.

**Exclusive paths**

This is especially thanks to the exclusive paths which are owned by the cableways. There is no collision with other traffic participants because the “path” is only used by the cableway. There are no traffic jams or other obstacles that could impair the cableway’s operation. If the cableway must be stopped due to winds or bad weather conditions, its cabins can be detached and parked in a garage.

But this scenario is implemented rarely because there are cableways, such as multi-cable gondolas, for example, that can easily withstand winds of over 100 kilometers per hour. Special protective equipment ensures that the cables do not derail. “Most accidents are caused by passenger misconduct while getting in or out of the cabin, not by technical failures,” explains Gabor **Oblatka**, Professor at the ETH Zurich. Thanks to double drives, urbane cableways can avoid stops and prolonged standstills en route in the event of a disruption or accident. Thus, emergency rescues must be carried out extremely rarely.

**Proven rescue concepts**

A certified evacuation concept based on multi-level back-up systems ensures that even in case of individual technical components’ failure, the cableway continues to run and all gondola cars are always brought back to the stations. If despite all this, a rescue action becomes necessary, we can rely on concepts, technologies and products that have been tried and tested over decades. And whether it is cable descending equipment, well-educated rescue teams with safety gear, or sophisticated rescue plans – no cableway
will be approved without a proper safety concept.

**Video monitoring possible**

In addition, cableways can be equipped with an audio and video communications system and monitored centrally. Criminals have little chance of escaping in the stations with platform screen doors and secured exits. The platform screen doors do not open for passengers getting on until the gondola car is standing right in front of them. That way, nobody can get into the incoming car’s way.

Windows usually remain closed and the cabins are well ventilated. This prevents the dropping of objects or still-burning cigarette butts. The peering of passengers into the private gardens and courtyards can be prevented by blinds with horizontal slats, opaque window glass and all-round collars.

Thanks to all that, fear of heights occurs less frequently and the privacy of those living below the cableway remains preserved.

**Fear lurks in the heads**

Despite all these comforting facts, cableways are perceived as a dangerous means of transport in the heads of many. A whole night spent in a gondola with a yawning abyss underneath the cage – it is this kind of report that evokes fear and stress even in those uninvolved and exerts a dark fascination. “Almost everyone has once taken a cableway and that makes one feel highly empathetic with those affected,” explains a social psychologist Dieter Frey from the University of Munich. A standstill, fall and collision – plastic, concrete dangers that everyone can immediately picture. A cableway accident doesn’t usually come in single bang, like, for example, the fall of an aircraft – it evolves over a time of anxiety and uncertainty.

Just experiencing the loss of control can develop fear in cableway passengers. They cannot do anything, they are utterly and completely at someone else’s mercy. “This feeling of powerlessness is perceived even stronger by passengers in a cableway than those travelling in an aircraft. It is intensified by the sensory impressions connected with the gondola,” explains Frey. The cold, the swinging, the height. Compared to a plane, here the abyss is a concrete imminent threat, the distance from the ground seems larger than it is, and the gondola’s suspension cable feels like a silk thread.

This psychologically conditioned fear of accidents, falls and standstills is one of the greatest obstacles to implementing urban cableways. It has to be removed through intensive persuasive efforts. As Anton Seeber, CEO of the cableway manufacturer LEITNER ropeways, appealed in the SI Urban issue no. 2/17: “We must dispel people’s fear that cableways are dangerous.”
While for material haulage ropeways the absence of the right lubrication and maintenance of the components only results in financial loss, for urban passenger cableways they are extremely relevant for cableways safety as well. Only an ideal lubricant can preserve the resistance and durability of the lubricated parts, provide safety for both passengers and operators, and reduce operation costs. This is why the lubricant manufacturer MOTOREX has also been focusing on cableways. SI Urban briefly presents the most important lubricants for urban cableways:

**Lubricating cables**

*Alpine Cable Protect* is a special re-greasing agent for cables which efficiently protects the cableway's wire cables from the effects of wear and weather, thereby increasing their service life. The product is pre-diluted with a special solvent in the factory, resulting in very good application. Once the solvent has evaporated, a thin, highly adhesive, water-repellent protective film is formed. It has also proven its worth during application on anchor cables and the area of windlasses and reels of the track cable reserve. Whether utilized as a spray or classic lubricant, *Alpine Cable Protect* offers numerous advantages. It prevents corrosion and inner wear of wire cables, extends their life cycle and is neutral in contact with the most common cable pulleys and sheaves. It is fully compatible with common basic cable lubricants and needs to be applied in small quantities only twice a year. *Alpine Cable Protect* may be applied only to dry and cleaned wire cables. It should be applied using a sprayer at temperatures from plus ten degrees centigrade. The solvent evaporation time needs to be observed before the installation is put into operation.

**Greasing bearings**

*Lubricant 3800 TS* is a lithium grease for urban cableway bearings that are exposed to harsh operating conditions and great temperature differences. Thanks to its high oxidation resistance, the product is highly shear stable and water resistant. The grease offers excellent protection from corrosion, superb adhesion capability and resistance to high temperatures and pressure. It allows for extended lubrication intervals.

**Servicing hydraulic systems**

The hydraulic oil *Alpine Corex Polar S370* has a very high viscosity index.
which means that it becomes thinner at very low temperatures and thicker at high temperatures compared to common hydraulic liquids. In addition, this special hydraulic liquid is able to immediately and efficiently separate penetrating condensation water or the finest snow particles from the oil and deposit it on the tank bottom where it can be well drained. This universally applicable hydraulic oil is thus best suited for cableway hydrostatic drives and stand-by drives. Its red color helps to reveal immediately possible leaks. Alpine Corex Polar S370 can be applied at an extremely wide range of different temperatures and is fully compatible with all standard seal materials. Thanks to its good air release capacity, it also does not build any foam.

**Taking care of cable saddles**

*Top Glide* is a special lubricating grease used for cable saddles – but also for other lubricated areas outside or in contact with water exposed to slow movements under very high loads. *Top Glide* is a special light lubricating grease produced from fully synthetic base oils. It has excellent high-pressure characteristics in the mixed friction range (slow movements under very high loads), thereby efficiently preventing wear. It also prevents the jerky stick slip effect of the track cable on the cable saddle which can cause unwanted vibration at the mast. This product is water-, snow- and UV-radiation-resistant, does not engage with non-ferrous metals and does not form any hard deposits. In addition, *Top Glide* adheres also to wet surfaces, is compatible with all common rubber and synthetic materials and has a very good thermal resistance.

**Individual lubrication plans**

All MOTOREX products are incorporated in an integrated and efficient plan prepared for the given customer. The plan includes, in particular, on-going support and consulting, for example by way of preparation of individual lubrication plans with oil analyses or application tips for care and maintenance.

Further information at:

www.motorex.com
With its new snow blower Rolba R500, ZAUGG offers many-faceted innovation, especially with regard to technology, propulsion, comfort and safety. Individual adjustability completes the offer.

The new self-propelled snow blower Rolba R500 from ZAUGG may be adjusted to the customer’s needs thanks to different clearing widths. Moreover, various methods of snow ejection can be selected – the efficient direct ejection, a snow output chimney with 2 or 4 flaps or a telescopic chimney. If needed, the blower can also be fit for alternating use.

The variable ejection range can reach up to 40 meters. The vehicle, 5.46 meters long, has only one turning radius of 480 centimeters enabled by an innovative steering concept with front-wheel steer, rear-wheel steer, all-wheel steer and crab steer. The blower is thus especially agile and well-maneuverable. It can reach a clearing capacity up to 1,800 tons per hour depending on the configuration and the existing snow conditions.

**Powerful motorization**

The 170 kW MTU diesel engine can accelerate the blower’s eight tons of weight to a maximum speed of 40 km/h. The vehicle’s engine emission class EuroMot V complies with the latest statutory requirements for emission levels. The continuous hydrostatic propulsion with a speed control function and two mechanical cutting planes increase driving comfort. A hydraulic, backward foldable engine bonnet provides better access to the engine compartment and makes maintenance of the vehicle easier.

**High-performance blower**

Rolba R500 is equipped with the SF 90-100 blower from ZAUGG. Its two-stage mechanical drive is controlled with a joystick. The customer can choose from four different widths. Snow layers up to 130 cm high can be conquered in a single pass. The cutting reels and fan blower are secured by a disenagement clutch. And what is especially practical: the cutter’s rotation direction can be reversed, for example if jammed parts need to be removed. The snow blower is connected to the vehicle by means of a 3-point lift system whereby the apparatus is eased and more precise ground adjustment.
and better vibration damping is enabled.

**Comfortable cabin fit-out**
The double-cab is highly comfortable thanks to hydraulic suspension. Sound isolation guarantees protection from noise and the interior is ergonomic and user-friendly.

The main functions, including hydraulic functions of the cutter, the speed control function and propulsion, are controlled with a joystick. The driving direction – forward or backward – is controlled with a switch on the steering wheel. A 12-inch control screen serves primarily for information viewing, function selection or, optionally, camera monitoring. Navigation and handling are conducted by turning and pushing a control button. These clear features ensure comprehensive control of the vehicle. To increase safety, a birds-eye view camera or a rearview camera can be integrated.

The size of the engine compartment has been reduced thanks to a compact, built-in exhaust gas system, resulting in a lower engine bonnet and ultimately an improved rear view. The whole driver’s cabin offers roll-over protection and is ROPS-certified.

<table>
<thead>
<tr>
<th>ZAUGG SNOW BLOWER</th>
<th>ROLBA R500 TWO-STAGE</th>
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<tr>
<td><strong>CLEARING PERFORMANCE</strong></td>
<td>1,800 T/H</td>
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<tr>
<td><strong>CLEARING WIDTH</strong></td>
<td>180/200/210/220 CM</td>
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<tr>
<td><strong>CLEARING HEIGHT</strong></td>
<td>130 CM</td>
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<td><strong>EJECTION RANGE</strong></td>
<td>UP TO 40 M</td>
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<td><strong>TURNING RADIUS</strong></td>
<td>APPROX. 4.0 M</td>
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<tr>
<td><strong>CLEARING SPEED</strong></td>
<td>0.15 - 40 KM/H</td>
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<tr>
<td><strong>ENGINE OUTPUT</strong></td>
<td>170 KW</td>
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<td><strong>FUEL TANK</strong></td>
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<tr>
<td><strong>TOTAL WEIGHT</strong></td>
<td>APPROX. 8,000 KG</td>
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**ROLBA OVERVIEW**
The Rolba series is outstanding in terms of quality and offers enormous clearance capacities of up to 8000 t/h. Powerful engines, finely tuned hydrostatic wheel and auger drive, variably adjustable steering and long casting distance make handling easy and enable efficient working. Depending on the model, they are ideal for clearing narrow streets, mountain passes and airport service areas.
This is how our sector has come to know the UITP Global Public Transport Summit. With almost 130 years of history behind us, the UITP biennial Summit is a truly global occasion that remains the world’s biggest event dedicated to public transport and sustainable mobility.

The 2019 edition will be held in Stockholm, Sweden (9-12 June 2019) under the theme “The Art of Public Transport” and will cover all urban and regional transport modes across the globe. The Summit will witness a diverse programme full of leading congress sessions, combined with a world-class exhibition displaying the latest and greatest innovations, solutions and products our industry has to offer.

Local hosts 2019
The Local Host for the upcoming Summit will be SL, the Public Transport Administration or Trafikförvaltningen at Stockholm County Council has overall responsibility for transport services in Stockholm County. Stockholm has made great achievements in public transport of late, making the Swedish

THE UITP GLOBAL PUBLIC TRANSPORT SUMMIT

“THE ART OF PUBLIC TRANSPORT” MAKE STOCKHOLM YOUR DESTINATION IN 2019

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SL

Over 780,000 people travel by public transport in Stockholm County every day and the number of travellers is increasing every year. The various means of transport – buses, the metro, commuter trains, local rail services and boats – are all coordinated within an ever-growing transport network.
capital an excellent location for the Summit. The public transport sector will only advance so long as the brightest and best minds come together to discuss its future. Everyone has a stake in the future of public transport, as moving around our cities with accessibility and fluidity is of interest to us all.

Hosting transport ministers, mayors, operators, authorities, industry CEOs, operations and network managers, public transport entrepreneurs, ITS experts, business developers, urban visionaries, managers involved in marketing, finance and IT and more, the UITP Summit is perfect occasion to ask the questions on the future of public transport and hear the answers. Stockholm is the perfect location for hosting the UITP Summit under the theme 'The Art of Public Transport'. All branches of the sector, are constantly evolving and designing mobility of the future through an art that truly moves you - this is the Art of Public Transport.

Public transport is already a form of art in the capital city of Stockholm. It is believed that there is a genuine craft in using public transport to unite city districts and the archipelago itself – creating a better environment for all, and dynamic growth along the way. Public transport improves people’s quality of life.

With all of this in mind, UITP is well on the way to hosting the biggest ever Summit with with over 70 per cent of the total space of the exhibition already sold and 110 stands already booked. Some Exhibitors that confirmed so far include GIRO, VDL, Solaris Bus & Coach and Volvo Bus Corporation, to name a few.

The Summit exhibition space will cover 40,000m², with over 330 exhibitors expected as around 13,000 visitors come through the doors of the Stockholmsmässan. The venue for the 2019 Summit is one of Europe’s largest and most experienced congress and exhibition centres. Sustainability is important to UITP and 95 per cent of everything produced throughout the venue is recycled.

The UITP Global Public Transport Summit is the only event that covers the challenges of urban mobility worldwide and brings together the international public transport community, mobility decision makers and industry suppliers all under one roof.

Be part of the industry’s biggest event on public transport and urban mobility by visiting the dedicated website www.uitpsummit.org

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More about the UITP

UITP, the International Association of Public Transport, is a passionate champion of sustainable urban mobility and the only worldwide network to bring together all public transport modes. It has 1,500 member companies giving access to 18,000 contacts from 96 countries. The members are public transport operators and authorities, policy decision makers, research institutes and the public transport supply and service industry.
InnoTrans is an international trade fair for transport technology held every two years in Berlin. Around 137,000 trade visitors from 119 countries come to learn about innovations in the global rail industry from some 2,900 exhibitors from 60 countries.

InnoTrans’ five segments include Railway Technology, Railway Infrastructure, Public Transport, Interiors and Tunnel Construction. InnoTrans is organized by Messe Berlin. The 12th InnoTrans will be held from 18 to 21 September 2018 at the Berlin exhibition grounds.

A unique feature of InnoTrans is its track and outdoor display area where everything from tank wagons to high-speed trains is displayed on 3,500 linear meters of tracks. Since the introduction of the Bus Display in 2016, InnoTrans offers vehicle manufacturers the possibility to showcase their buses on a static display area and on the adjacent Demonstration Course. The Public Transport segment is especially well represented this year. More than 400 exhibitors will present their latest products in the fields of information technology and passenger fare management, wireless and telecommunication systems, as well as software, ticketing and transport management over 22,000 gross meters, making this segment the third largest at InnoTrans. Digital networking, too, is once again a major theme of the exhibitions. The purpose is, firstly, to enable customers to gain quick access to all modes of transport and inform them about the best possible combination in a matter of seconds. And, secondly, to provide transport operators with smoother and safer management of the growing offering.

Market place of opportunity
The composition of the exhibitors and trade visitors is just as varied as InnoTrans’ product and services offering. Trade visitors will come to the latest industry get-together in Berlin from 119 countries. 62 percent of the exhibitors and 55 percent of the visitors are travelling to the German capital from abroad. A total of 60 countries, from Egypt and Bahrain to Malaysia and Singapore to the United Arab Emirates and Belarus, are represented.
New Zealand will attend for the first time. 76 percent of the trade visitors are involved in decision-making and 94 percent of the exhibitors confirm the high quality of their contacts from among trade visitors. Representatives of public as well as private transport enterprises and operators, transport technology manufacturers and suppliers, construction companies, engineers, geologists, miners, management, authorities and ministries, consulting firms, professional associations and institutions, science, research and development, loading industry and media can be found among the visitors and exhibitors.

**Extensive support program**

The exhibition hosting some 2,900 exhibitors presenting in 41 exhibition halls and in outdoor areas will be rounded off with a top-class support program. It will be launched with a grand opening to which more than 1,000 guests from the fields of economy, politics and media have received an invitation. The event will be concluded with the InnoTrans Convention in the framework of which discussion forums, exhibitor presentations in the Speakers’ Corner and Executive Tours will be held on the last day of the fair. 

[www.innotrans.de](http://www.innotrans.de)
As a supplement to public transport a cableway can resolve many problems related to city traffic.

Multimodality, i.e. utilization of an optimal combination of various means of transport, is characteristic of modern urban transport networks. Thanks to their specific features, cable-drawn systems are especially well-suited to fulfil transport functions, being far superior to other means of transport in this regard. Circulating cableways’ special qualities are best suited to routes of up to ten kilometers and for a flow of up to 5,000 passengers per hour per direction.

To transport 10,000 passengers per hour (5,000 per direction), one needs:
With modern systems, the direction can even be changed and entire cableway networks, where one can change from one line to another, built by adding intermediate stations. Depending on the required transport capacity, financial framework and topographic challenges, mono- or multiple-cable circulating cableways can be used.

Reversible aerial tramways, on the other hand, are particularly well-suited for extreme terrains or where there are high requirements for availability, wind-stability or operating safety; for example, reversible aerial tramways are used to traverse rivers, bays or ravines or transfer visitors to look-out spots, castles or city hills.

In addition to aerial cableways (circulating or reversible), Automated People Movers (APM) and funiculars are utilized in urban environments. They use their own lanes independent of the regular traffic level and their routing is very flexible. However, for short routes between 20 and 400 meters, inclined elevators are the best solution.

In cities, cableways can take on various functions as part of local public transport.

**Filling In Gaps**

Cableways are especially well-suited to fill the gaps between traffic-generating locations such as hospitals or industrial zones and other, remotely situated, infrastructure. They supplement the existing network and upgrade the entire system as a “connecting link”.

**Connecting**

Cableways connect locations that belong together, yet are situated far away from one another, e.g. campus, factory or exhibition grounds. As car park shuttles, they also link car parks with buildings. Conventional means of transport, such as shuttle buses, are often too expensive and require a high number of staff.

**Traversing**

Cableways traverse obstacles that either cannot be overcome at all by conventional means of local public transport (train, subway, tram and bus lines) or only at great expense. In addition to topographic obstacles such as mountains or rivers, they can also overcome dividing traffic infrastructure such as railway lines or highways to achieve a necessary extension of the network.

**Building New Transport Networks**

In urban spaces without a sufficient transport infrastructure, new transport networks are built by interconnecting several cableway lines.

**Extending**

Cableways represent a practical way to extend the existing local public transport network routes.

**Relieving**

Where traditional means of transport and the existing infrastructure reach their limits, cableways can relieve traffic congestion areas.

Conclusion: Urban cableways truly offer a lot of “freedom of movement”.
Whenever a cableway becomes an issue in a city, the question of whether it should be implemented as circulating or reversible needs to be answered, too.

With **circulating operation**, the cable with the moving function forms an endless loop supported by large sheaves and always moves in one direction. Several cabins or cars travel evenly distributed along the cable, departing on one side and returning on the other.

With the classical **jig-back (or reversible) design**, one or two vehicles, consisting of a running gear, a suspension gear and a cabin, shuttle back and forth between the stations. Alternatively, there can also be a group aerial tramway which, instead of two large cabins, has two groups of small cabins attached to the cable directly behind one another. Reversible aerial tramways are moved by a haul cable on one or two track cables. As a rule, these cables are firmly anchored in the upper station, run over cable saddles on pillars along the route and either firmly anchored or stretched by using weights in the lower station. The vehicles’ running gears moving on the track cables are interconnected with one another by the upper and lower haul cables. This cable is led through a drive system in one of the stations – and weighed down with weights in the opposite station to reach the required necessary tension.

If the cableway runs on rail tracks, it is usually a single track with a passing loop (Abt’sche Weiche) in the middle.

**Transport capacity**

With **circulating design**, the transport capacity depends on the size of the cabins. The size of the cabin is a determining factor for the transport capacity; it ranges from 4 to 200 persons. Photo: GANGLOFF

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With circulating operation, cabins travel evenly distributed along the cable, departing on one side and returning on the other. Photo: LEITNER

**CIRCULATING OR JIG-BACK?**

**URBAN CABLEWAYS ARE DESIGNED FOR CIRCULATING OR REVERSIBLE OPERATION**
Cabin or cars and their sequence interval. Gondolas typically hold 4 to 15 persons. At the same time, they reach a transport capacity of up to 3,600 persons per hour depending on the size of the cabins. Circulating cableways are equipped with operationally detachable clamps, enabling departure in the shortest possible intervals. The passengers do not need to remember any departure times. The detachment technology also enables a comfortable and safe entry and exit at a lower speed in the stations and a speed of up to six meters per second along the route. Transport of wheelchairs and child carriages is not a problem. In addition to all that, sports equipment (such as sleds, bikes etc.) and freight (there is enough space for one euro-pallet) can be transported as well.

With **jig-back design**, the size of the vehicles, the traveling speed, and the length of the route are the determining factors for the maximum transport capacity. The greatest capacity is possible with track-mounted cableways (highest speed) in jig-back design (largest cars) over short distances (shortest travel time).

An aerial tramway's transport capacity depends on the size of its cabins (from 6 to 200 persons), traveling speed (up to 12 m/s) and the length of the route – between 500 and 2,000 persons per hour.

With track-mounted cableways, one can achieve an even higher transport capacity – for example, with the Cable Liner or MiniMetro (up to 3,000) and funiculars (up to 8,000 persons per hour).

**Areas of application**

Circulating cableways represent a standard solution for urban cable car traffic. Whether designed as mono- or multiple-cable installations, circulating cable cars can assume numerous functions in public spaces: they extend the transport network, overcome obstacles, extend and relieve traditional lines of public transport, fill gaps and connect locations that belong together but, at the same time, are situated far away from one another. Their advantage is that the passenger flow is continuous while with aerial tramways passengers arrive in batches.

Reversible aerial tramways are particularly suited for extreme terrains or where there are high requirements for availability, wind-stability or operating safety; for example, they are used to traverse rivers, bays or ravines or transfer visitors to look-out spots, castles or city hills. Most track-mounted cableways are designed as reversible, too.

Another big plus is the possibility to use a reversible aerial tramway to transport freight, whether inside the cabins or as an additional suspended load.
Cities play a key role in the economic and social development of a country. Especially in developing countries, tremendous potential lies in a functioning infrastructure. The rapid rise in passenger cars leads to increasingly more frequent traffic congestion and a poorly-functioning public transport system brings little relief. The Academy of Sustainable Urban Mobility, established by the UN-Habitat and DOPPELMAYR, should promote development of urban transport solutions for the 21st century.

Despite a worldwide increase in burdensome traffic, suitable tools to create sustainable mobility and evaluate transport projects are still missing. Limited access to examples of international best practice and academic program’s poor coverage of sustainable urban mobility are often the reason why there is only limited capability to formulate coherent urban transport policy. For this reason, the Academy of Sustainable Urban Mobility was founded in 2017.

Implementation of global responsibilities, such as the fulfillment of the climate treaty, can be achieved only through joint efforts of governmental and non-governmental entities, civil society and the private sector. The DOPPELMAYR group has shown great interest in developing sustainable mobility solutions for global challenges regarding infrastructure. The Academy’s goal is to equip decision-makers with the knowledge and tools necessary to evaluate the existing mobility challenges and produce feasible strategies and measures for a more sustainable, safe, inclusive, efficient and clean mobility. Decision-makers should be encouraged to develop an alternative paradigm for these areas and thus improve the system of public transport. The Academy wants to create a knowledge base and partnership platform for the exchange of information and thus support future projects in this field. Infrastructure network, together with buildings
and open spaces, are among the main features characterizing any city and we must keep in mind that the challenges existing in the mobility sector are global.

**Target group**

AoSUM (Academy of Substainable Urban Mobility) targets decision-makers who want to develop a better understanding of sustainable and innovative urban mobility solutions and be able to exchange their experiences with the like-minded. Representatives of local, regional or national governments, transport operators and transport authorities are eligible to apply. From over 300 applications, a total of 51 participants from 28 countries were selected to join the 2017 and 2018 Academy. They had an opportunity to discuss with experts from various fields and mutually exchange expertise with the other participants. In this way, innovative and participatory concepts of the workshops Planning and Design-Thinking could be applied in the course of the Academy. The Academy also included study trips and workshops. For the first time the participants visited, among other places, the Koblenz cable car, an urban reference project from DOPPELMAYR, and had an opportunity to also learn more about the compelling environmental advantages of such projects. Furthermore, the participants were able to see how well an installation of this kind can be included in an urban planning concept.

DOPPELMAYR, as a founding partner of AoSUM, has played a key role in the planning, organization and implementation of the Academy. This capacity development activity helps all decision-makers to acquire the tools necessary for development and successful implementation of innovative mobility projects.

**Success**

The number of applications per year is a clear indication of how interested decision-makers are in acquiring information about sustainable urban mobility. The combination of theoretical instruction, practical visits on site and examples of best practice in European cities are met with great enthusiasm from the applicants. The participants’ feedback has been consistently very positive. Continuing exchanges and networking after completion of the Academy course is possible via various media channels and platforms. Given the popularity of the Academy's first year, the founders have decided to make the program a recurring annual event. AoSUM's success is based on strategic partnerships among various institutions and their contributions. These partnerships contribute to collecting global expert knowledge in the field of sustainable mobility, simplifying travel logistics for course participants and generating public enthusiasm worldwide. Discussions among an even higher number of partners are already underway to make the Academy of substantive urban mobility 2019 a great success as well.
With constantly changing humans’ demands, the expectations regarding their environment change as well. Cities are no exception. They must be able to accommodate the wishes and needs of both the present and future generations. In an interview with SI, mobility expert Michael Hanita shares his views of the developments that cities will experience in the future.

Si Urban: We hear complaints about increased traffic volumes from just about every city. What can be done to relieve cities in this respect in the future?

Michael Hanita: As in all areas of life, we need to further develop our cities to keep up with the times. In my opinion, there is only one way to counteract the growing traffic volumes – to bet on further development of public transport networks. Only four to five people can be transported in one passenger car which is not going to be enough. Buses and trams offer more space and, for this reason, they will be in higher demand in the future. I don’t believe that even a well-developed public transport network will completely push out personal vehicles from the streets but public transport will relieve inner-city traffic.

What means of public transport do you think are best suited to fulfill this role?

If we look at the present situation, we must conclude that the streets are al-
ready overcrowded and not even buses can avoid getting stuck in traffic jams. This is why people will increasingly more rely on alternative means of transport. What I mean by that is that if the streets are already full, we need to look for solutions either underground or in the air.

In Latin America, the concept of escaping surface traffic by going up in the air is already being implemented in the form of branched cableway networks. Do you think it is something that could work also in Europe?

I like the idea of cableways but I think that their implementation takes way too much time here at the moment. Everybody would like to have cableways and understands their benefits but no one wants one to swing above or in the immediate proximity of their own land. Bonn is a perfect example. For years, there has been demand for a cableway to run up to the University Clinic because the street simply was not built for so much traffic. The project has been repeatedly delayed not because the concept is bad but because the residents oppose it.

So you don’t think that multiple urban cableway networks will appear in Europe in the near future?

I would be happy if they did. I’d like to see a cableway running along the banks of the Rhine, for example, but I think people first need to see what a successfully implemented and also visually well-integrated project looks like to be convinced. Strict environmental requirements pose another obstacle. We have a lot of rules due to which diverse fauna and flora must be considered in any such project. And also birds – an installation of this kind cannot be built in any major bird migration area, just to name some of the restrictions.

If we continue talking about relieving traffic, what do you think about the pilot “Air Taxi” project planned in Ingolstadt? It sounds fantastic and I can’t wait to see what technology will be used to implement it. But if we look at the situation on some streets, perhaps it is not such a good idea to create something similar also 10 to 20 meters higher. Not everyone has the ability to be a pilot.

Are there any cities or regions that are already well-prepared for mobility issues of the future?

The cities that have emerged in the last 30 to 40 years are probably somewhat better prepared to face such challenges than cities whose structure has been inherited from the past. Many European cities simply lack the space for large projects. Plus, we are talking about a dynamic field that is hard to calculate. When the ring road was built in Vienna, the city was sure it was a great solution for the future. But, instead, getting stuck in the morning bumper-to-bumper traffic on it, you feel like you are on the city’s largest parking lot. The cities currently emerging in the Middle East, for example, are already planned in a way that makes them ready for future expansion.

Does it mean that the only way to relieve the situation is to develop public transport? Not necessarily only develop but also interconnect it to create networks. People’s flows need to be analyzed – where do people want to go and when – and the departure times coordinated. We need to create a situation where it no longer makes any sense to use a car inside a city because one can get to his destination just as fast without it.
What do the world’s cableway manufacturing market leader DOPPELMAYR, the access system expert SKIDATA, the Viennese transport company INTERCONT and the French cableway manufacturer POMA have in common? All of these European enterprises have achieved outstanding positions on the African market. Using different methods, they have all seized the immense market opportunities on the continent of the future.

For SKIDATA, the FIFA world cup in South Africa was the impulse to enter this new market. The access control system on Table Mountain was delivered by them already in 1993 but they have the major football event to thank for their rediscovery of the market. FIFA relied on the Austrian company to deliver access systems for stadiums and the Austrians seized their opportunity to participate in the development and shaping of the African market. SKIDATA has established its permanent presence in South Africa with demand from some large African cities already surpassing that from the USA. This has lots to do with the frequent use of mobile phones as a means of payment in Africa while paying by credit card, the payment method preferred by Americans, is rare here.

**Flying high**
Demand for cableways is also high. Algeria, in particular, holds the lead. DOPPELMAYR has been active in various African countries for years and has had the opportunity to build its good reputation both with tourist and urban cableway installations. The Moses Mabhida SkyCar in Durban is one example. Mounted on a chassis, the SkyCar is a single cabin that runs along the northern bend of the stadi-
um on steel tracks. From its highest point, one has a magnificent view of the whole area. The special design of the cableway’s arch, which ensures that the car does not roll down pulled by its own weight, is quite interesting. With this uniquely-developed system, the subsidiary DOPPELMAYR TRANSPORT TECHNOLOGY has already secured several orders for ropeway material transport in South Africa.

A pioneer in Tanzania
Tanzania is among one of the poorest countries in Africa with a large income gap between urban and rural areas and a high level of dependency on agriculture. However, thanks to the discovery of new resources, including gold, diamonds and natural gas reserves, Tanzania’s economy has grown almost seven-fold over the last twenty years. This not only gives the country hope but is also gradually putting it on the radar screen of foreign businesses. The Viennese company INTERCONT is one of them. This international transport company first positioned itself in Dar Es Salaam, Tanzania’s largest city. The Viennese are convinced that to win the market, one has to be patient but there is great potential especially in the fields of agriculture and road reconstruction. The French, too, are paying attention to the African market. The cableway company POMA has already implemented several projects in Northern Africa.

Business for Africa
While traditional development assistance was a dominant feature in the past, experts can now see a path towards establishing business relations. It seems that the time of development projects has come to an end and self-help is now considered the best kind. Experts agree that business activity will deliver a boost to the African economy in the future. Many European businesses clearly share this view as increasingly more projects are being implemented in Africa. In the long-term, solutions, know-how and attention to quality are what is going to score on the African growth market; and these are areas in which European enterprises are far ahead. POMA, SKIDATA, DOPPELMAYR and INTERCONT – these are only a few examples of companies which have already demonstrated that the African market offers future opportunities in various sectors.
MUNICH GOING IN THE AIR?

In the coming years an urban cableway could close a major gap in the local public system in the north of Munich. An approximately 4.5-kilometer-long, fast and transfer-free direct connection between the east and west of the state capital could be established running over the Frankfurter Ring – one of Munich’s busiest roads. Authors of the idea are Bavaria’s Minister for Transport Ilse Aigner, the Mayor of Munich Dieter Reiter and Jürgen Büellesbach, member of the board of company group Schörghuber.

CABLEWAYS FOR THE PHILIPPINES!

To Arthur Tugade, a Philippine businessman and the Secretary of the Ministry for Transport, urban cableways represent a transport solution of the future for the islands plagued by traffic jams. He has already proposed several cableway lines, including one route connecting Santa Rosa, the capital of the Province of Laguna, with the metropolis of Makati. Another line, running between the city of Pasig and the Epifanio de los Santos Avenue (EDSA), the most important transport artery of the metropolitan region of Manila, is also being considered. In addition, Tugade is planning two cableways in the city of Baguio and on Boracay Island. The companies Megawide Construction Corp. and GMR Infrastructure Ltd. expressed their intention to build a cableway line between the Mactan-Cebu International Airport and Cebu City already in March 2017. The Philippine Ministry for Transport is currently also planning a feasibility study for a cableway route in the metropolitan region of Manila. The research is expected to be supported by the French Embassy.

A CABLEWAY IN HOLLYWOOD?

The media group Warner Bros. Entertainment has proposed the construction of a 100-million-dollar cable car to take Los Angeles (USA) visitors to the famous Hollywood sign in Griffith Park. The film and television studios headquartered in Burbank would cover the costs of the project, construction, operation and maintenance of the Hollywood Skyway. The cable car should start in the Forest Lawn Drive area, ascend the hill on the San Fernando Valley side and end near the famous sign.

INDIA WANTS TO ADOPT EUROPEAN CABLEWAY STANDARDS!

The NITI Aayog, the Indian government’s political Think Tank, has recently published legal guidelines/rules under which cableways on the sub-continent should in the future comply with the European standards. The proposal recommends the adoption of the world-wide accepted European CEN standards to “ensure the safety and quality of the services” of (urban) cableways.

Most countries in the world, including the USA and China, have already adopted the CEN standards as a benchmark for reliable and high-quality cableways.

Indian cableway manufacturers are not exactly enthusiastic about this initiative. “Cableways have been operating in India for a long time and there have not been any safety issues. Nevertheless, the proposal suggests that Indian cableways are less safe than the European ones,” says Apurv Jhawar, President of the Ropeway Association of India. The association fears that the four Indian manufacturers could fall behind European companies as import tariffs for CEN-standardized parts would grow. There are currently 65 cableways operating in India, most of them of Indian production and manufactured in accordance with domestic standards.
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Transport planners all over the world discover the ropeway to provide mobility solutions for cities. As cities grow, their transport systems have to grow as well to provide the mobility needed for the city’s success as a place to work, live and spend leisure time. Mobility is also an important factor for the economic competitiveness of a city.

The last decade saw ropeways appear as a mode of public transport. Their characteristics made them a valuable addition to transport systems. They are fully integrated reliable and comfortable components of transport networks and allow for seamless modal interchange.

The small footprint makes them ideal to retrofit existing settlements and provide vital transport infrastructure. Areas difficult to access by conventional modes of transport can be reached by ropeways.

The future of modern mobility are integrated multi-modal transport networks. Ropeways are a vital part of it.

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