



# STRMTG

TECHNICAL SERVICE IN CHARGE OF SAFETY  
FOR ROPEWAYS AND GUIDED TRANSPORTS



# ANNUAL REPORT 2024

[WWW.STRMTG.DEVELOPPEMENT-DURABLE.GOUV.FR/EN/](http://WWW.STRMTG.DEVELOPPEMENT-DURABLE.GOUV.FR/EN/)



**MINISTÈRE  
CHARGÉ DES  
TRANSPORTS**

*Liberté  
Égalité  
Fraternité*



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# EDITORIAL



Daniel Pfeiffer, director, STRMTG.

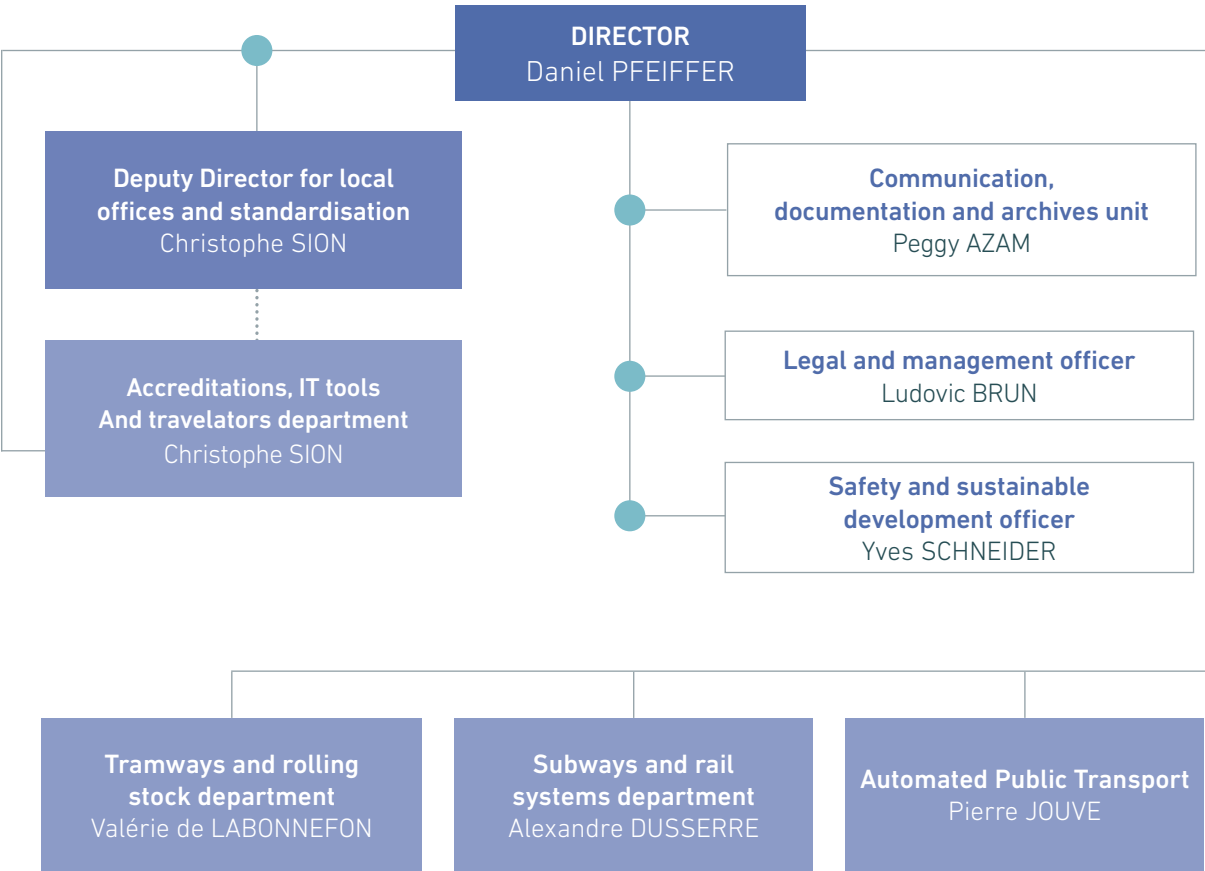
Monitoring innovation is one of STRMTG's priorities.

As a result, the service plays an active role in the development of standards and is heavily involved in national, European and international discussion forums. The aim is to ensure that innovations do not compromise the safety level of systems. The aim is also to support and promote French know-how.

In addition, STRMTG pays particular attention to skills development both with our partners, particularly accredited organisations, and internally for the service's staff. This involves considerable investment, particularly in terms of time and training, but it is necessary if the various parties involved are to play their role to the full and, ultimately, if the systems are to operate under optimum safety conditions.

2025 opens with a significant organisational change: since 1 January, the North-West Office (BNO), which was hierarchically attached to the Ile-de-France Regional and Interdepartmental Directorate for the Environment, Planning and Transport (DRIEAT), has been attached to STRMTG and now carries out all its missions on its behalf. This reorganisation, which completes the reform carried out in 2011, will make it possible to standardise administrative organisation across the country.

The start of the year brings with it many uncertainties. Whatever direction is taken, STRMTG will endeavour to stay on the course set several years ago by ensuring that safety remains a priority shared by all those involved in guided transport, ropeways and automated road transport.

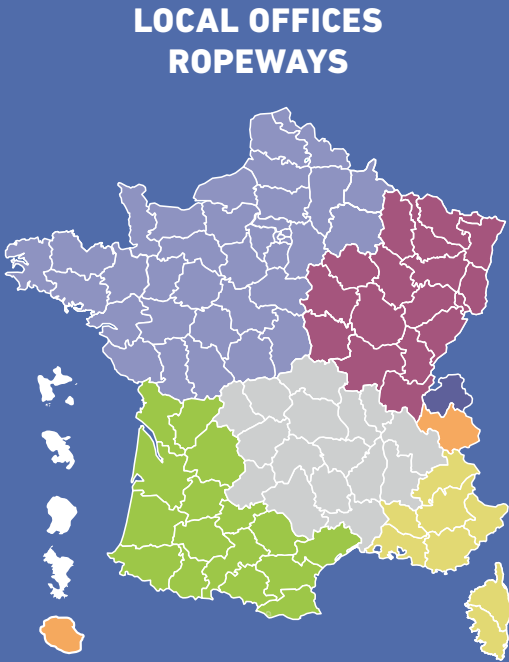


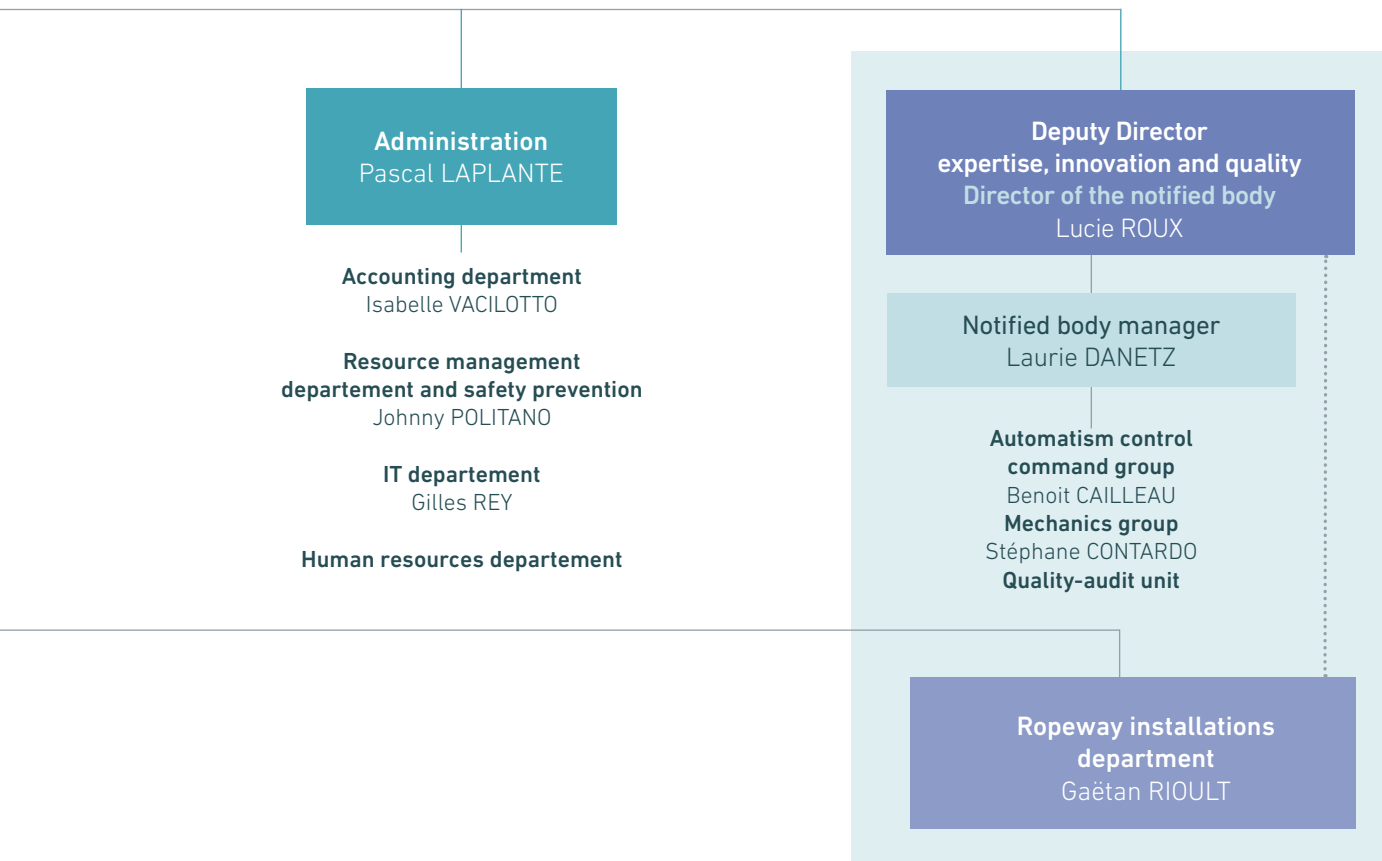
**North-West office**  
Autorité conjointe DRIEAT IdF  
**Manager**  
Nathalie NOEL

**Southern Alps office**  
Gap  
**Manager**  
Bruno ANDEOL

**Savoie office**  
Chambéry  
**Manager**  
Romain PAULHE

**Haute-Savoie office**  
Bonneville  
**Manager**  
Anatole ARMADA






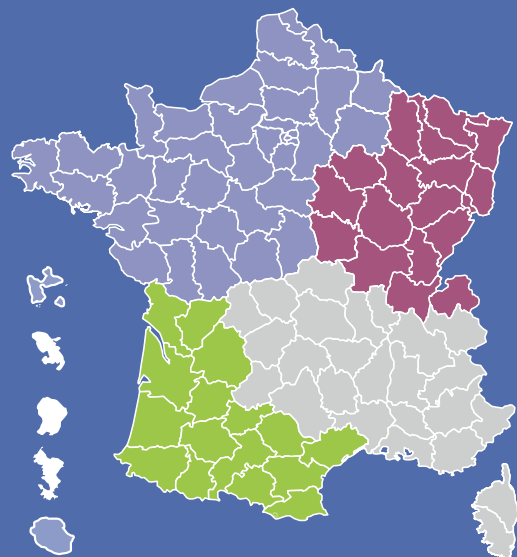
**North-East  
office**  
Besançon  
**Manager**  
Thomas VILLALBA

**South-West  
office**  
Tarbes  
**Manager**  
Jean-Louis ABADIE

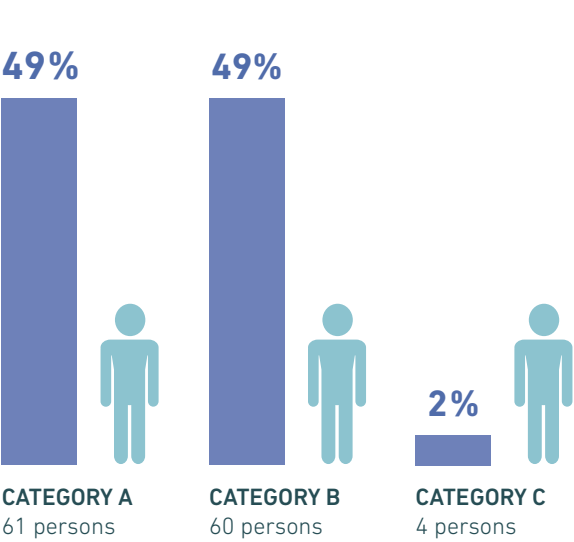
**South-East  
office**  
Grenoble  
**Manager**  
Claude MERLE

  
Areas managed by STRMTG  
head office

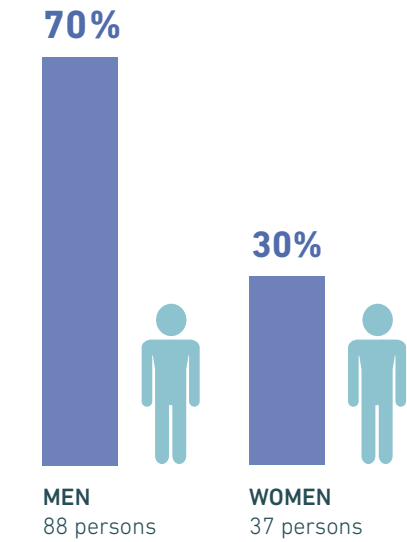
## LOCAL OFFICES GUIDED TRANSPORTS



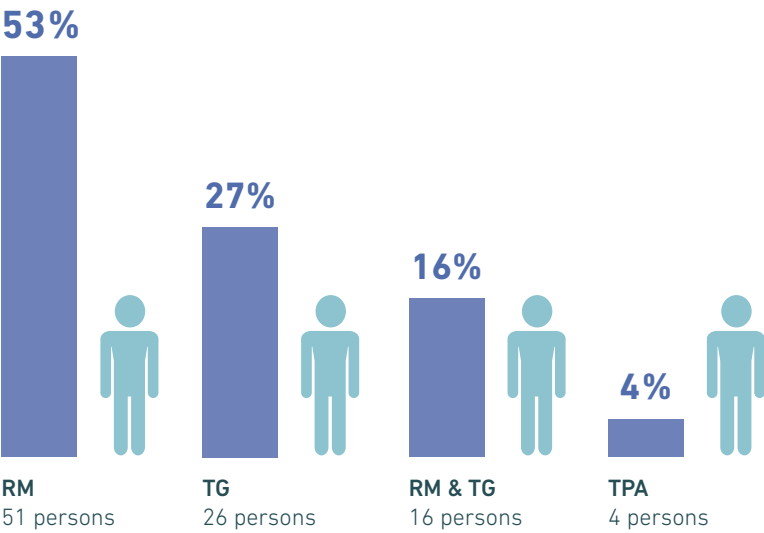
BREAKDOWN OF STRMTG STAFF  
BY GRADE AND AREA OF EXPERTISE



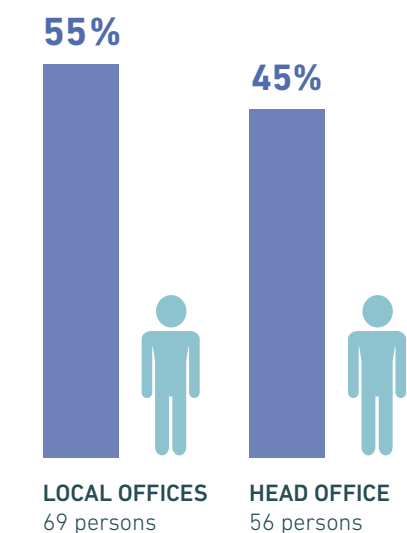
WORKFORCE BY MACROGRADE



GENDER DISTRIBUTION



WORKFORCE BY TRANSPORT SYSTEM



LOCAL OFFICES AND  
HEADQUARTERS BREAKDOWN

RM: cable cars / TG: guided transport / TPA: automated public transport

# SYSTEMS MONITORED BY STRMTG, KEY FIGURES JANUARY 1, 2024



**1837** ski lifts



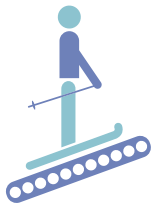
**1085** aerial ropeways



**84** trams



**31** metro



**494** travelators



**34** other installations\*



**3** light rail system



**5** railway systems  
commuter

## ROPEWAYS PARK

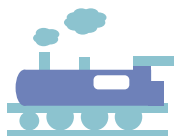
Units: 3450

## URBAN GUIDED TRANSPORT NETWORKS

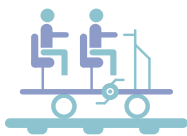
Fleet: 123 lines



**5** metre-gauge  
railways



**59** tourist and  
heritage railways



**65** rail bike\*\*

Rail bike are not subject to guided transport regulations. However, STRMTG provides assistance to prefects at their request, within the framework of their general police powers.

## LOCAL RAIL NETWORKS AND RAIL BIKE

Fleet: 129 lines

\*Other installations» include rack trains, funicular railways and inclined elevators. \*\*Of which 14 networks are mixed Tourist and heritage railways and rail bike.

# 1 - REGULATIONS AND STANDARDS

Before building a ropeway, a guided transport system or an automated public transport system, you need to know the rules governing this type of construction, particularly in terms of safety. These rules include regulations in the strict sense (laws, decrees, orders, European regulations and directives), technical guides and standards.

## TRANSPORT STANDARDISATION: STRMTG'S COMMITMENT IN 2024

In 2024, STRMTG continued its commitment to the standardisation of transport systems. Through several working groups, it has presented and defended its safety policies, contributing to the development of standards applicable to urban guided transport and cableway installations.

### URBAN GUIDED TRANSPORT

#### ► Designing tram front ends for pedestrian safety:

STRMTG is participating in work to transform the technical report "Designing tram and light rail vehicle front ends for pedestrian safety" into a standard.

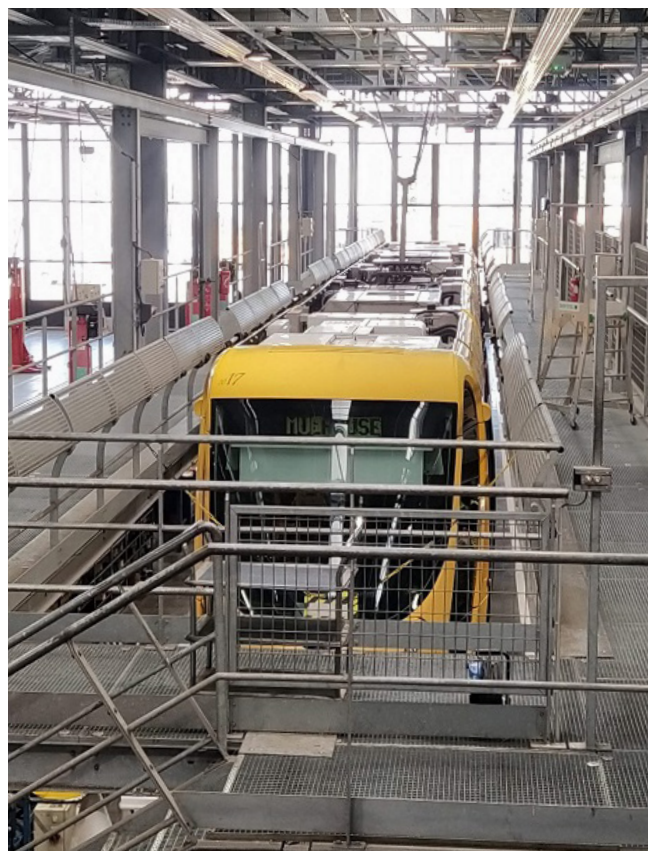
STRMTG is keeping a close eye on this work, which falls within the scope of the STRMTG technical guide "Design of tram front ends", which is still applicable in France;

#### ► Driver's cab: STRMTG took part in the work:

- drafting standard EN 16186-6 "Part 6: Integration of displays, controls and indicators for tram vehicles".
- amendment to standard EN 16186-8+A1 "Part 8: Tram vehicle layout and access", published in 2024.

#### ► Access door systems for rolling stock:

STRMTG is taking part in work to revise standard EN 14752, which will be submitted for public inquiry in 2024.



► **Braking systems for urban and suburban public transport:**

STRMTG continues its involvement in the revision of standard EN 13452, which was submitted for public enquiry in 2024.

► **Digital simulation:**

STRMTG is taking part in the work to turn the CEN/TR 17833 technical report into a standard. This technical report focuses on digital simulation as an alternative to physical testing;

► **Platform barrier systems:**

STRMTG is contributing to the international work to migrate standard EN 17168 “Platform barrier systems”, published in 2021, to the ISO.

► **Cybersecurity:**

STRMTG is participating in international work to migrate the European technical specification CLC/TS 50701 “Cybersecurity”, published in 2021, to the IEC.

## CABLEWAY INSTALLATIONS

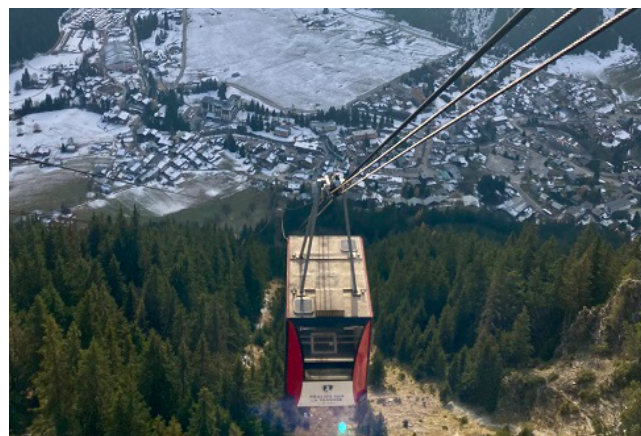
► **Vehicles:**

STRMTG is leading the revision of standard EN 137961, with several objectives.

- Better addressing the risk of passengers becoming trapped between the guardrail and the armrest of chairlifts;
- Improving the way in which dynamic forces are taken into account when designing the walls of cabs or cars,
- Supplementing the fatigue calculation requirements for single-cable cable cars operating intensively.

► **Evacuation and recovery:**

STRMTG is leading work to revise standard EN 1909 to include integrated return. This means that vehicles and passengers can be returned to stations without the need for another method of evacuation (in particular vertical evacuation). It applies to a growing number of cableway systems, particularly urban cableway systems, which are expanding rapidly.



► **Gauges:**

STRMTG is taking part in work to revise standard EN 12929-1 “General” in particular to include new rules for taking account of wind in vehicle inclinations to determine gauges.

► **Electrical installations:**

STRMTG is taking part in the work to revise standard EN 13243.

► **Civil engineering works:**

STRMTG is leading the revision of standard EN 13107-1.

► **STRMTG is taking part in the new TC 242 working group on “Cable cars as a mobility service”. This working group aims to:**

- Provide mobility stakeholders with guidelines to ensure that the specific characteristics of cable cars deployed as mobility services are properly taken into account right from the initial phases,
- Support the development of cable cars integrated into public transport networks in Europe and around the world.

In 2024, STRMTG was heavily involved in work to standardise urban guided transport and cableway installations. By playing an active role, we are helping to ensure that our infrastructure is safer, more reliable and better adapted to today’s challenges.

## UPDATE OF THE GUIDE FOR SIU\*

The presence of derelict ropeways in France has major consequences, both for the environment and for the safety of the operators. Among the risks identified, parts falling from these deteriorated structures represent a major hazard.

In an attempt to remedy this problem, the Mountain Act II (published in 2016) incorporates a concept of:

- ▶ final shutdown,
- ▶ disassembly of installations
- ▶ reclamation of sites.

These concepts provide a framework for the end-of-life of obsolete ropeways by requiring guarantees from the time of

device authorisation. Town planning departments have a crucial role to play in this process.

An application guide was published in October 2019 to assist planning departments, and has recently been updated to incorporate these new provisions. This document, co-signed by the French Department of Housing, Urban Planning and Landscapes (DHUP) and STRMTG, was published on 2 September 2024.

The aim of this update is to clarify the regulatory framework and make it easier to implement dismantling requirements, thereby ensuring better environmental integration and enhanced safety.

\* *Services Instructeurs en Urbanisme (town planning departments)*



## DEVELOPMENT OF REFERENCE SYSTEMS FOR AUTOMATED ROAD PASSENGER TRANSPORT SYSTEMS

Since 2020, STRMTG has been working on drawing up standards to accompany the regulations on automated road passenger transport systems defined by Decree no. 2021-873 of 29 June 2021. A first phase of work was completed at the end of 2024, enabling STRMTG to make available a body of application and technical guides. These cover the various aspects of commissioning and operation for these systems.

These standards were drawn up by working groups led by STRMTG in consultation with all those involved in the sector: manufacturers, designers, research bodies, assessors, operators, organising authorities and government departments.

All in all, this work led to nearly 100 meetings of the various groups and 9 guides were published:

► **Application guide concerning:**

- the mission of the approved qualified organisation for the safety assessment and the operational safety audit,
- the GAME principle,
- cybersecurity,
- the requirements applicable to safety management systems (SMS),
- the Annual Operational Safety Report,
- handling of events,

► **Technical guide concerning:**

- the GAME demonstration,
- description and safety analysis for predefined routes,
- description of events.

In the medium term, these guides may be supplemented following their implementation on deployment projects. To this end, STRMTG has initiated a framework for "dry-run processes". This system enables experimental project leaders to voluntarily apply these standards in order to improve them.



At the same time, Decree 2024-1063 on automated road haulage was published on 27 November 2024. The commissioning process for automated road haulage systems is based on the architecture used for passenger transport systems.

From 2025, STRMTG will begin work, in consultation with the industry, on updating STRMTG's body of guides to include freight transport.

## TRAMS AND ROAD TRAFFIC: SAFETY FOR TURNING VEHICLES.

Very numerous in France, junctions where road vehicles turn before crossing tramway tracks represent an accident-prone category of intersection for tram traffic. According to annual reports, there is an average of 1 in 3 collisions with third parties in this type of configuration. IUTCS\* Factsheet No. 11, designed in collaboration with Cerema, follows on from a study of turning movements carried out by STRMTG. After validation by a working group, this factsheet was shared with the industry to gather feedback from operators, contractors, road managers and organising authorities. It was published in July 2024.

The purpose of this factsheet is to explain:

- ▶ The issues surrounding this problem;
  - ▶ Design recommendations to be implemented in order to reduce the risks of collision between a vehicle making a turn and a tram;
  - ▶ Recommendations applicable to specific configurations;
- IUTCS FACTSHEET NO. 11:
- ▶ Servicing and maintenance recommendations. Like the other IUTCS factsheets, it applies to urban guided transport systems operated according to the principle of line-of-sight operation interfacing with third parties. Future projects will be able to use these recommendations as a basis for integrating trams as effectively as possible into intersections with turning movements.

\* Insertion Urbaine des Transports Collectifs de Surface  
(Urban integration of public surface transport)



FICHE IUTCS N° 11

# 2- INNOVATION

STRMTG encourages and supports the rise in innovation in transport systems, ensuring that safety is well integrated from the beginning of development.

## PRESENTATION OF THE URBANLOOP SYSTEM IN SAINT-QUENTIN-EN-YVELINES

Urbanloop is an innovative rail-based guided transport system. The aim of this transport system is to offer a journey without waiting and without intermediate stops, thanks to the structure of its network.

The system is made up of loops, and the stations are positioned as diversions from the main flow.

To coincide with the 2024 Olympic Games, a demonstrator was commissioned on 27 July 2024 on the Saint-Quentin-en-Yvelines leisure island for a 17-month operating period. The location was chosen to serve an Olympic fan zone. Between 27 July and 11 August 2024, this Urbanloop system hosted over 6,500 passengers. The capsules covered over 6,800 km.

This network consists of a 2 km loop on a protected dedicated site; there are no interactions with other modes of transport. Two stations link a car park at the entrance to the leisure centre and an educational farm in 2 minutes.

The fleet is made up of 10 capsules with a capacity of 2 passengers, enabling up to 240 people to be transported per hour and per direction. The capsules are accessible to people with reduced mobility. The commercial speed is estimated at 30 km/h and the maximum speed is 50 km/h. The capsules travel autonomously, without a driver, thanks to automatic control systems based on those used on automated metros.



There are no switches on the ground, and the direction selection system is carried by the capsule itself, which means that traffic flows more smoothly.

To avoid waiting at stations, several capsules can be present simultaneously at the platform. Once the capsule at the head of the station has left, the others are repositioned to make way for other capsules arriving at station.

To ensure that all stations have a capsule, a fleet management system is used to allocate them between stations. This is made possible by scheduling departure of an empty capsule to a station needing one.

## 3.1-NEW PROJECTS ROPEWAYS

Once the regulations, standards and procedures are known, it is then possible to design then build new transport systems or modify existing ones. The transit authority will then take all the necessary steps to obtain permits for its transport system. STRMTG is responsible for the technical assessment of the files required by the regulations prior to commissioning.

### A NEW CABLE CAR TO MODERNISE THE LES DEUX ALPES RESORT



After 40 years of loyal service, it is time to remove the two Jandri Express 1 and 2 facilities from the list of systems monitored by STRMTG's South-East office. On a slightly different route for the second section, the backbone of the Les Deux Alpes resort has been completely rebuilt, with the commissioning of two twin-cable 3S cable cars. The intermediate station should enable transfer of the 32-seater cabins in 2025, for a distance of 6.4 km and 1500 m of ascent in 17 minutes. This significantly improves the reliability of installations, as these systems benefit from cutting-edge

technology in the field of cable transport. The significant reduction in the number of pylons and in the impact on the landscape compared with the old equipment is also a valuable aspect of the project.

This project, which certainly represents one of the longest and most accomplished cable transport lines in France, has mobilised a great deal of resources from the Sud-Est office, both on the analysis of the technical files, but also during the lengthy on-site acceptance process. STRMTG head office also contributed its expertise and feedback on a number of issues, including the integrated recovery concept, which was due to be introduced in 2024 but has been postponed until the following year.

The recent commissioning of the Toulouse urban cable car, which uses the same 3S technology from POMA, has been used by both the manufacturer and all those involved to ensure acceptance of the equipment under good conditions.

Despite the very tight schedule and the sheer volume of technical files, operating permits were issued at the end of November for the second section and at the beginning of December for the first, as requested by the project owner.

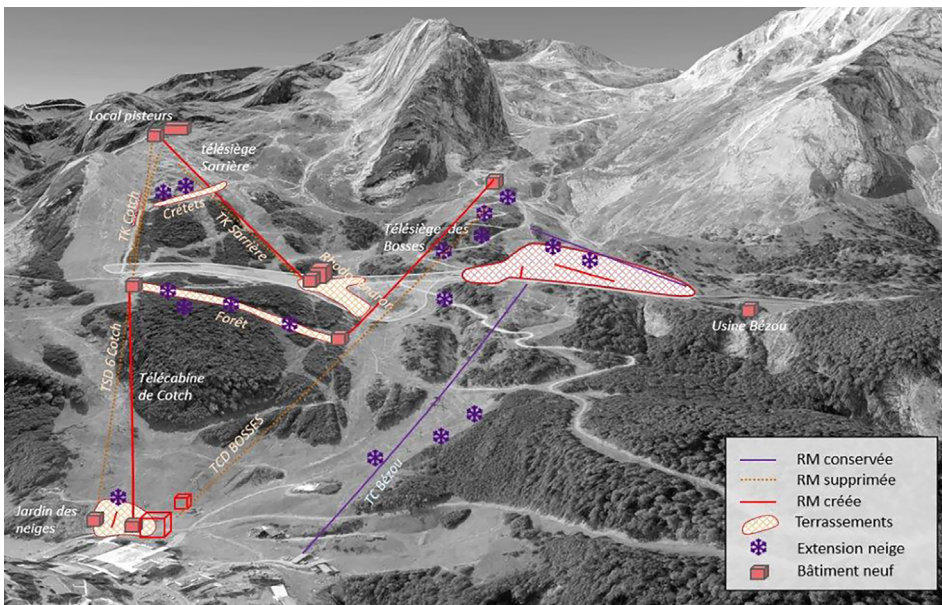
## RESTRUCTURING THE GOURETTE SKI RESORT (FRENCH PYRENEES)

Situated at an altitude of 1400 m in the Pyrénées-Atlantiques, the resort of Gourette is facing up to the effects of global warming. To adapt and regain its appeal, in 2020 the Department of Pyrénées-Atlantiques launched a vast project to restructure its ski resort. The aim is twofold: to modernise the resort around a new "4-season" business model and to guarantee skiability above an altitude of 1,500 m.

6 new ropeway links for a total investment of €34m ex. VAT:

- ▶ 2020: redevelopment of the Bezou plateau to improve the beginners' area with the installation of 2 covered conveyors – FICAP (Lièvre and Tetra mountain resort conveyor belts);
- ▶ 2023: installation of the fixed 4-seater Les Bosses chairlift (GMM), with a capacity of 1,800 p/h, which takes over part of the old Les Bosses (detachable) gondola lift line dismantled in 2020;
- ▶ 2024: installation of 3 ropeways:
  - Replacement of the ESF conveyor with a FICAP covered conveyor;
  - Relocation of the Cotch 6-seater detachable chairlift on the Sarrière ski lift line. The Sarrière 6-seater detachable chairlift (Doppelmayr), with a throughput of 3,000 p/h, will enable the Cotch sector to be modernised and consolidated, and will facilitate the switching of flows between these different sectors;
  - Creation of a second snow front at an altitude of 1,600 m, with snow guaranteed throughout the season thanks to the installation of a 10-seater (detachable) gondola lift (Leitner) to replace the Cotch 6-seater detachable chairlift. It acts as a lift for skiers and pedestrians (capacity of 2000 p/h) between the heart of the Gourette resort and this second level.

**The South-West office was responsible for examining the various authorisation applications and monitoring the on-site tests in conjunction with the manufacturers.**



Plan for the restructuring of the Gourette ski area

**INVESTMENT OF €34m  
BETWEEN 2020 AND 2024**

### ▶ Dismantling obsolete installations:

3 conveyors, 1 cable car, 3 ski-tows

### ▶ new ropeways:

1 x 10-seater gondola lift (LEITNER),  
1 detachable chairlift 6 seater (GMM) and 1 x 4 seater (recovery detachable chairlift Cotch - DOPPELMAYER),  
3 covered conveyors (FICAP)

## INNOVATIVE GONDOLA LIFT BETWEEN TOWN AND MOUNTAIN



The Le Valléen gondola lift in Saint-Gervais-les-Bains went into service on 30 August 2024, in time for the start of the 2024/2025 school year - an astonishing deadline for a mountain lift system. Its special location starting from the Le Fayet SNCF station gives it a dual purpose:

- ▶ an attractive urban public transport solution,
- ▶ a valley lift serving the Saint Gervais ski area, via the Alpin gondola lift, brought into service on 13 December 2024 with which it shares its station.

The challenge was met by the builder POMA, the project management firm DCSA and STRMTG. They have succeeded in safely and reliably translating this dual role into an system that operates all year round over a wide range of hours, overflying both urban and mountainous areas. A number of challenges have been met:

- ▶ Ensure operator-free operation (ESA) at all stations,

- ▶ Fine identification and management of fire issues related to overflight of the urbanised area (buildings, roads with different types of traffic)

- ▶ Crossing a power line and a deep thalweg (span of 680 m with a flyover height of 60 m)

This necessitated the development of an integrated return (IR) concept, a first for POMA in single cable. The challenge faced by the system's operator, SA STBMA, was to meet the organisational requirements specific to 4-season operation, and to manage the safety devices associated with operator-free operation and integrated return.

Finally, for a complete presentation of this combination of equipment, note the ability of the Alpin cable car to travel at a speed of 7 m/s to guarantee a reduced overall journey time. As the President of the French Republic emphasised at the inauguration, this is a dual public transport, urban and tourism project, at the cutting edge of the energy transition.

# 3.2- PROJECT NEWS

## URBAN CABLE TRANSPORT

### TWO NEW URBAN CABLE CARS BY THE END OF 2025



A.-M. Lupinski / STRMTG

Over the last ten years or so, a number of “urban” cable transport projects have been added to the range of urban transport services available in French towns and cities. In 2025, two more will be opened in Ajaccio on Corsica and in Créteil in the Paris region.

After the urban cable cars in Brest (2015), Saint-Denis on Réunion (2022) and Toulouse (2022), these two new detachable cable car projects have been keeping STRMTG busy for several months.

The Ajaccio project, named Angelo, links two multimodal hubs: St-Joseph in the Ajaccio basin and Mezzavia in the hills. It is 3 km long and has 54 m of elevation. With 4 stations, it serves, in particular, the la Miséricorde Hospital (2023 premises) and the Stiletto College (2019 premises). Commissioning is scheduled for Autumn 2025.

The Cable 1 project is seen as a southward extension of line 8 of the Paris metro. It will link Villeneuve Saint-Georges to Créteil / Valenton, via Limeil-

Each of these projects has specific features, linking areas on either side of urban divides, which give these projects their full relevance:

- ▶ The Ajaccio project does not overfly housing, but over traditional Corsican maquis shrubland, a cultural and sports centre, and a shopping area etc.;
- ▶ The Cable 1 project features a route within a dense urban area, with overflight of buildings, railway zones, high-voltage line crossings etc. See you at the end of the year when these cable cars go into service!



P. Gailllard / STRMTG

# 3.3-GUIDED TRANSPORT PROJECTS

## COMMISSIONING OF RER NG ON LINES E AND D



New rolling stock known as RER NG (New Generation) is to equip the E and D lines of the Ile-de-France RER. In terms of design, the RER NG is train that is:

- ▶ spacious and open throughout for easy on-board movement.
- ▶ accessible to people with reduced mobility with enlarged doors.

It will also be equipped with the NExTEO CBTC (communication-based-train-control) system, which will increase throughput on these two lines and improve the robustness of operations. The graduated ordering of 255 RER NG trains, launched in 2015, is part of a policy of massive renewal of trains in the Île-de-France region. Since 13 November 2023, RER NG has been running on the E line with 112-metre trains (Z58000). This line is the responsibility of the French public rail safety authority (EPSF). Nevertheless, during the first meetings to discuss the project and in anticipation of the arrival of the 130 m version of RER NG (Z58500) on line D, STRMTG was involved in discussions with the project developer. With regard to the commissioning of RER NG on line D,

the safety files submitted by the petitioner are being examined by two inspection departments:

- ▶ STRMTG for the section between Châtelet and Gare du Nord (excluding Gare du Nord station).
- ▶ the EPSF, for the rest of the line

A mixed system safety dossier (DSM) for the new 130m RER NG trains was submitted in April 2024. The EPSF and STRMTG worked closely together on this project. Their aim was to ensure a consistent approach to the various technical issues, in line with both rail and urban guided transport regulations. The work carried out to assess this request has not only strengthened coordination between the two safety authorities, but has also enabled them to harmonise their respective working methods.

The STRMTG side of the investigation of this case resulted in a Prefectoral Order dated 2 October 2024. This authorises the commercial operation of 36 new trains on the non-interoperable part of RER D. 8 trains were delivered from 15 December 2024 and 4 RER NG trains were put into service on RER D in December.

## NEW CITADIS TRAMS BROUGHT INTO SERVICE ON THE TRAMWAY NETWORKS IN NANTES AND PARIS.

The Nantes tram network has acquired 46 Alstom Citadis 45m-long 7-car trams in 2024, which will go into operation in April 2024.

The Paris network has purchased 37 trams from the same range to renew the rolling stock on line 1.

These 33.5-metre-long 5-car TW20 trams, have been in service since December 2024.

The trams on the 2 networks are equipped with:

- ▶ Small end-bearing bogies, equipped with magnetic pads.
- ▶ The Integrated Traction and Auxiliary Converter (ITAC), which groups the traction box and static converter, freeing up roof space.
- ▶ A curve speed limitation system constituting a driving aid to avoid high lateral acceleration in curves.

In addition, the Nantes trams have the following special features:

- ▶ Integrated monitoring (Smart Vigilance), which includes, in addition to the handle-sensitive controls, control of the bell, horn and joystick variation to attest to the driver's presence;

- ▶ Collision detection, the aim of which is to minimise the consequences of a derailment following impact with a road vehicle.

The TW20 trams have the following special features:

- ▶ The small end bogies are fitted, in addition to the pads, with disc brakes.
- ▶ The anti-pedestrian-crush device has been upgraded compared with Nantes given the interruption to the fairing at bogie skirt level, in order to minimise the possibility of a pedestrian entering under the tram;
- ▶ The doors are equipped with an anti-entrapment device, making it possible to manage the entrapment of a person when the tramway departs by detecting trapping and generating emergency braking.



## COMMISSIONING OF THE EXTENSION OF LINE 14 OF THE PARIS METRO



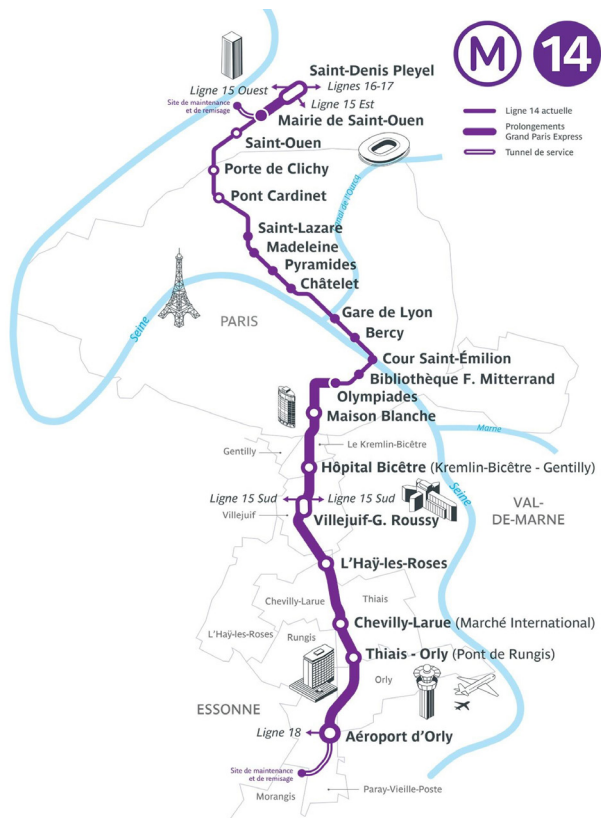
On 24 June 2024, the first line of the Grand Paris Express was commissioned. Line 14 of the Paris metro has been extended by 16 km to a total length of 27.7 km. This makes it the longest metro line in the Ile-de-France region, with 21 stations. This extension was brought into service for the Paris 2024 Olympic and Paralympic Games to link Saint Denis Pleyel station in the north with Orly station in the south. The line has been extended 1.7 km underground to the north to link Mairie de Saint-Ouen and “Saint-Denis Pleyel” stations. The latter is an important station in the context of the Grand Paris Express, as it will provide connections with future Metro lines 15, 16 and 17. The extension of the line to the south is 14 km long underground. It connects the existing line from Olympiade station to Orly airport. On these extensions, the average distance between stations is much greater than on the traditional line. This is helping to increase the commercial speed on the line from 40 km/h to 44 km/h.

Opened in 1998, line 14 is fully automated. It had already been extended, first to Saint Lazare station in 2003 and then to Olympiade station in 2007. The last previous extension was to the Mairie de Saint-Ouen station in 2020.

As part of the modernisation of this line 14, with the aim of increasing capacity, the automated driving systems have

been renewed. The new-generation Automatic Train Operation System has been brought into service on the entire line and its extensions. Thanks to this new system, the minimum interval between two trains in operation has been reduced from 95 seconds to 85 seconds.

These operations were accompanied by the commissioning of 37 new MP14 trains in 8-car configuration, bringing the total number of MP14 trains on the line to 72. These trains have more capacity than the legacy trains MP89 and MP05 (which have 6 cars) and also contribute to this increase in line performance with more passengers carried.



## EXTENSION OF TRAMWAY 17 TO ANNEMASSE

The first cross-border line in Geneva's tram network went into service at the end of 2019. With 11,000 passengers a day, it is the second busiest line on the Geneva network. Its terminus is now just outside Annemasse town centre.

A project to extend line 17 has been submitted to the prefecture in 2024 to supplement service of the area. This extension of 3 stops over a distance of almost 1.5 km will run through the heart of the town as well as some of its major

junctions, such as the current Étoile roundabout. Approval of the preliminary safety file (DPS) by the Prefect of Haute Savoie on 8 August 2024 means that Annemasse municipality, the mobility organising authority (AOM), can start work and aim for operation in 2026.

This project represents a major step forward for local and cross-border mobility, offering residents an efficient and sustainable alternative to car travel.



# 4- STUDIES AND RESEARCH

STRMTG conducts important studies and research work, essential to maintaining and building knowledge of systems and the skills of its employees.

STRMTG therefore oversees a number of studies each year. Some are conducted with partners from the scientific and technical network of the Ministry of Ecological Transition and Territorial Cohesion, and others are conducted by consulting firms.

## “SAFERTRAMDIVING” RESEARCH PROJECT



- Provide the transport system with an estimate of the current state of the driver, in particular level of attention, without disrupting the driving task, i.e. without requiring an additional task of the driver;
- Provide information about the driving environment (location of obstacles, trajectory, etc.);
- Develop advanced driver assistance systems, which can adapt in real time using previous information, enabling the driver's load to be modulated to better monitor their vigilance and attention;
- Ensuring safety.

At the end of 2023, STRMTG's Department for tramways and rolling stock (DTMR) was involved in setting up a research project initiated by Université Polytechnique des Hauts de France. This project brings together a consortium of researchers, human factor experts, operators and simulator developers to propose a driving assistance project for tram drivers. The aim of this project is to develop a tool for better accident prevention, by taking into account the external environment and the cognitive state of the tram driver in order to adapt the system's reaction requirements.

One of the DTMR's tasks will be to help define the representative situations addressed in the project (intersections, dense areas, etc.) in relation to their impact on the driver's workload and therefore on attention and performance.

After several months of putting the project together, the French national research agency (ANR) approved its funding in July 2024. It will launch in January 2025 for a projected duration of 4 years. The work areas are as follows:

## CLOSURE OF THE PRISSMA PROJECT

The PRISSMA1 project, aimed at proposing an approach for the assessment of artificial intelligence (AI) systems integrated into automated mobility systems, ended in June 2024 following three years of work.

The project brought together nearly twenty partners, including STRMTG, with a wide range of expertise (research bodies, operators, vehicle manufacturers/equipment suppliers, technical services, public authorities, software designers, expert companies).

The project resulted in the production of almost fifty deliverables on a variety of topics:

- ▶ High-level requirements on systems to be tested and test equipment,
- ▶ Simulation testing,
- ▶ Test track testing,
- ▶ Field testing,
- ▶ Cybersecurity requirements and testing,
- ▶ Audit requirements,
- ▶ Feedback and maintenance under operational conditions,
- ▶ Interfaces with current regulations and other technical standards.

The contributors to the project have also produced a white paper summarising the content of the work carried out.

The project has enabled progress to be made on the specific methodology for assessing AI systems integrated into automated mobility systems.

However, there are still a number of points to be clarified, particularly with regard to the “black box” aspect of AI algorithms, definition of validation thresholds, proof of coverage of scenarios associated with the system’s operating domain, transition from the simulated environment to the real environment and statistical interpretation of test results in a controlled environment.

The planned follow-up to the project includes improving the representativeness of simulation environments, creating digital twins, progressively extending the operating capabilities of the systems, applying the PRISSMA methodology to a complete system over the entire lifecycle and sharing this methodology with international working groups working on the regulation of automated vehicles.



### **Evaluer et homologuer des systèmes de mobilité automatisés et autonomes intégrant des briques à base d'intelligence artificielle**

Author : E. Arbaretier, C. Bohn, R. De Sousa Fernandes, C. Gava, D. Gruyer, A. Hedhli, S.S. Jeng, T. Jonville, P. Jouve, J-F. Marlière, L. Maisonneuve, K. Quintiero, G. Perrin, R. Regnier.  
Date : Septembre 2024





# 5 - PATHOLOGIES AND ACCIDENTS

Accidents and incidents can occur throughout the life of a system. STRMTG monitors and analyses these events and draws lessons from them to improve safety.

## ACCIDENT ON CIME CARON CABLE CAR IN VAL THORENS

On 19 November 2024, there was an accident on the Cime Caron two-cable reversible cable car in Val Thorens. The incident occurred while the system and ski area were closed to the public, during a journey to transport company staff working on a building site near the top station.

The two cabins were not slowed down when they arrived at stations and hit the station structures at high speed, regarding transporting people on cableway installations outside the period when they are open to the public.

STRMTG analysis of the circumstances of the accident showed that, at the time of the event, the rules for transporting people formalised in the RM1 guide had not been correctly applied.

A recommendation was issued by STRMTG in December 2024 to make operators aware of the issues regarding transporting people on cableway installations outside the period when they are open to the public.

A reminder was thereby issued that use of an installation, outside the periods when it is open to the public, to transport people for purposes other than work on the installation itself, is subject to the same safety rules and operating conditions as "normal service".



While some steps are intended to enable an operator to operate an installation with extended possibilities for fault reset, bypassing safety functions and ramping up speed, they are limited to very specific cases and for the most part are not authorised for personnel transport.

A French Land Transport Accident Investigation Bureau (BEA-TT) investigation was also launched following the accident, and its conclusions should be available in the first half of 2025.

## MARKET SURVEILLANCE BY STRMTG

To ensure that cable installations and their civil engineering works, subsystems and safety components guarantee a high level of health and safety protection for people and property, rules for design and construction were laid down by European Regulation 2016/424. These design rules apply to all countries in the European Union, and to some non-EU countries. Safety subsystems and components complying with Regulation 2016/424 benefit from CE marking and thus from the principle of free movement of goods<sup>1</sup>.

Under (EU) Regulations 2016/424 and 2019/1020, each Member State must monitor the compliance of products entering its territory with the applicable regulations. This is commonly referred to as “market surveillance”.

In France, STRMTG has been appointed to carry out this market surveillance for the components and sub-systems of cableway installations carrying persons.

In concrete terms, within STRMTG, this surveillance is carried out by the inspection offices which, when they observe that a sub-system or safety component presents a risk to people's health or safety, report it to STRMTG's Conveyor Belt Tools Certification Department (DAOT).

After assessment by the DAOT, with the possible support of the Mechanical Engineering – Cable Groups, the Automation and Control Group and the Cable Transport Installations Department, the elements are forwarded to the manufacturer concerned for compliance.

When these non-compliances concern products placed on the market in other European countries, STRMTG communicates them via the Information and Communication System for Market Surveillance (ICSMS) to the EU national surveillance authorities.

For 2024, STRMTG investigated 3 cases of non-compliance (glazing on gondola lifts, shutters at the entrance to cable car stations, automatic restart of a low-cable system), two of which were reported to the European authorities.

# 6- ORGANISATION AND MANAGEMENT

STRMTG's organisation is based on a high-performance ISO 9001-certified quality management system. It is also based on a multi-year service project whose priorities are approved by DGITM.

## CLOSURE OF CLERMONT-FERRAND OFFICE

The Clermont-Ferrand branch of our South-East office saw successive departures of staff between 2023 and the end of the first half of 2024. After some thought had been given to maintaining local skills in this unit, which was made up of three project managers, the situation had become too tenuous. The departure of the last networks staff member

therefore led to the closure of the branch in July 2024 while redeploying other staff to the South-East office located in Saint-Martin-d'Hères. This has enabled us to benefit from the expertise of a strengthened team throughout the office's territory.

## ATTACHMENT OF THE DSTG

When inspection offices were attached to STRMTG in 2011, a special situation was maintained in the Ile-de-France region, where the DRIEAT retained these missions within its guided transport safety department (DSTG). This exception, which made sense in 2011 when STRMTG was still developing its expertise in guided transport, was no longer justified in the light of the changing context. STRMTG Head Office has developed real expertise and the systems have diversified, requiring close collaboration between Head Office and the DSTG. The Decree amending our organisational structure Decree was published in the Journal Officiel on 29 December 2024 and applies from 1 January 2025. The Service is now responsible for monitoring projects and networks in the Ile-de-France region with the North-West Office team. As a result, the organisational structure is the same as in the provinces, with close links to the Prefect's planning department, which remains the DRIEAT. The agents who were hierarchically

attached to DRIEAT will therefore join our organisation (until the end of 2024, they were only under the functional authority of the Director of STRMTG for networks in the 'provinces'). This clarifies the organisational structure and simplifies all procedures, which will be now carried out on behalf of a single entity. Work with DRIEAT, and in particular the transport policy department, will be maintained through coordination of the examination of applications in accordance with the Circular of 6 July 2011 relating to application of Decree no. 2010-1580 of 17 December 2010 pertaining to STRMTG.

Hierarchical attachment to STRMTG on 1 January 2025 will therefore complete the organisational structure that prevailed in 2011 with the transfer of the inspection offices. The aim of this consistent overall plan was to entrust STRMTG with the entire safety 'loop' for ropeway and guided transport systems at the national level.

# 7- DISCUSSIONS AND TRAINING

STRMTG strives to build its own skills and those of other stakeholders through training initiatives and its ties with organisations in the Scientific and Technical Network (RST). It involves the industry in drawing up rules to ensure that safety issues are properly understood.

## MANAGEMENT TRAINING

Skills enhancement is a major challenge for a technical department, including for management functions.

As part of the 2022-2025 service project, STRMTG has defined a focus on internal skills. In particular, it has set up a group training course on management in order to:

- ▶ better share our common values,
- ▶ foster a team spirit marked by solidarity and mutual respect,
- ▶ value the technical skills of all staff.

In order to work on the positioning and posture of its managers, the department therefore organised training on the levers of motivation and recognition of the work of its staff.

This training, which took place on 8 October 2024, brought together all the service's managers. Designed to combine theory and practice, it was structured around a number of workshops covering:

- ▶ management styles,
- ▶ sources of motivation
- ▶ signs of recognition.

At the end of the course, each participant received a "tool-box" jointly put together and fed by shared discussions. They were also given a personalised action plan to enhance their day-to-day managerial practices.



## MANAGEMENT TRAINING FOR THE ECOLOGICAL TRANSITION



### PLAN DE TRANSFORMATION ÉCOLOGIQUE DE L'ÉTAT pour des Services publics écoresponsables



On 28 March 2024, the State's ecological transformation plan, was officially presented. It consolidates previous Circulars committing the administration to an environmentally responsible approach. One of the key actions is to train the 2.5 million French government workers on the issues and goals of the ecological transition by 2027, which is a sizeable challenge.

STRMTG is fully involved in the first part of this undertaking, which is dedicated to management. By 2024, the staff concerned had completed six of the seven modules in the training cycle:

- ▶ a workshop to raise awareness of the challenges of the ecological transition (3 hrs 30 mins);
- ▶ a workshop exploring the levers for accelerating such a transition, based on tools for understanding its individual and collective impact on the ecosystem (3 hrs 30 mins);
- ▶ three conference-debates, each lasting 3 hours, organised by the CNRS and addressing each of the three ecological crises: the climate crisis, the depletion of natural resources and the collapse of biodiversity;
- ▶ a half-day field visit to meet actors in the field, who have put in place exemplary pragmatic solutions.

The service has benefited from its location on the Grenoble campus, a leading research centre for environmental crises. Various specialists (scientists, economists, legal experts) were able to illustrate the different issues based on work carried out in mountain areas, which are heavily affected by climate change and host some of the richest and most sensitive environments in terms of biodiversity in the country.



The possibility of transmitting information based on highly concrete data relating to environments in which our staff operate on a daily basis in their private and professional lives is a real plus in this awareness-raising action.

Despite the professional constraints of the 21 people to be trained, the results at the end of 2024 show a high take-up rate of around 80%.

A second stage, even more demanding in terms of implementation, will extend the approach to all employees from 2025.

## FEEDBACK FROM CEREMA, STRMTG, URBAN INTEGRATION AQOS AND OPERATORS

On Thursday, November 21, 2024, the STRMTG organized another REX day, bringing together approved or accredited qualified organizations (QQA) in the field of urban tramway insertion, tramway operators, Cerema, and the STRMTG.

It took place in Lyon and brought together over sixty people to discuss issues and regulations relating to the urban insertion of tramways.

The STRMTG took the opportunity to present the latest studies and reference documents, while the Cerema also reviewed regulatory changes that have been enacted or are underway.

Cycle management was at the heart of the discussions, whether in terms of cycle facilities for tramway projects or on existing networks. The issue of bicycles on unmarked sites, and the risk of them falling when crossing the rail, was also raised, with the sharing of feedback. This was an opportunity for STRMTG and Cerema to reaffirm their position on the subject.

Topics relating to roadways (islands, fusibility of emer-

gences, bollards) were also shared. The day ended with a discussion on the integration of rolling stock into the urban environment: an opportunity for operators to consider ways of avoiding intrusions into certain tramway spaces, and for STRMTG to share its experience in handling GLO calculations.

Given its success, this type of day will be repeated in 2026.



## ARTIFICIAL INTELLIGENCE TRAINING

Technologies based on artificial intelligence and in particular machine learning are set to be integrated into the various transport systems monitored by STRMTG:

- first in automated road transport systems,
- and also in guided transport systems or cable transport systems.

The use of such systems raises a number of questions about how to assess their safety.

STRMTG therefore wants to develop its expertise in this area. In this context, 7 people from STRMTG attended a training course at ESTACA engineering school at the end of December, presenting the principles of machine learning as applied to methods, trajectory planning. In addition, one per-

son from the automated road transport department (DTRA) is taking second-year modules in the Master's course "Artificial Intelligence" at ENSIMAG engineering school.



## RAIL BIKE CONGRESS

STRMTG's annual meeting with rail bike operators took place this year in October at Miremont in the Puy de Dôme. The meeting was held in conjunction with the Annual General Meeting of Vélorails de France, the only organisation of its kind in France. Institution representing rail bike operators in France. These meetings are an opportunity for STRMTG to share safety topics with operators and manufacturers of rail bikes. A number of topics were discussed:

- ▶ operating events 2023 and 2024,
- ▶ feedback on inspections carried out by STRMTG in 2024 n regulatory topics such as level crossing safety diagnostics (decree of 6 April 2021) and publication of the future STPG Decree.

The meeting also provided an opportunity to share with all the operators the forthcoming changes to technical standards relating to the manufacture and safe operation of rail bikes. These changes were defined in consultation with the industry through a working group that met around ten times between 2023 and 2024.

New requirements have been defined for electric rail bikes, as well as for manufacturing provisions and operating conditions. The aim of updating the standard was also to take into account the inclusion of rail bikes in the STPG decree and the corresponding authorisation procedures: templates for the operation safety rules (RSE), annual report and response and safety plan have therefore been defined. It is expected to be published in the first half of 2025.

A presentation was also given on the "rolling-stock type" approval that will replace the "manufacturer" approvals when the system switches to STPG. STRMTG also responded to a number of concerns about the involvement of approved qualified organisations (AQO) and the change management regime.

This meeting is also an opportunity to find out about the host network (Vélorail des Fades) and to talk freely with the operators. Representatives from the South-East and North-West offices and STRMTG head office were present.



## TOURIST RAILWAYS CONGRESS

The UNECTO Congress took place at the end of November 2024 in Dax. Every year, this congress brings together numerous member operators of tourist railroads, as well as players in the fields of maintenance, training and marketing. Over 300 people attended this year's congress. STRMTG's Director, as well as representatives from headquarters, the South-West office and the North-West office, were all present.

On Thursday, November 28, STRMTG Director Daniel Pfeiffer closed the plenary session with a speech emphasizing the importance of rail transport safety, in conjunction with the need for the service's missions.

On Friday November 29, among the many workshops on offer, the STRMTG presented operators with an overview of the previous year's network news. In 2023, some 1,460,000 passengers travelled on the 59 tourist rail networks monitored by the STRMTG. This was followed by a review of the accident rate on tourist railways in 2023 and 2024, and

other topical subjects, such as the steam recommendation, the evolution of the STPG decree to include cyclo-draisines, level-crossing diagnostics and the legal obligations to clear undergrowth.

Finally, this exchange also provided an opportunity to take stock of developments in the technical guidelines for tourist and cyclo-draisin railways, and to present operators with the first elements of the new guide for mixed-use networks. In particular, the STRMTG presented to operators the changes concerning the management and follow-up of modifications, as well as the procedure in the event of the introduction of new rolling stock on a tourist railway network.

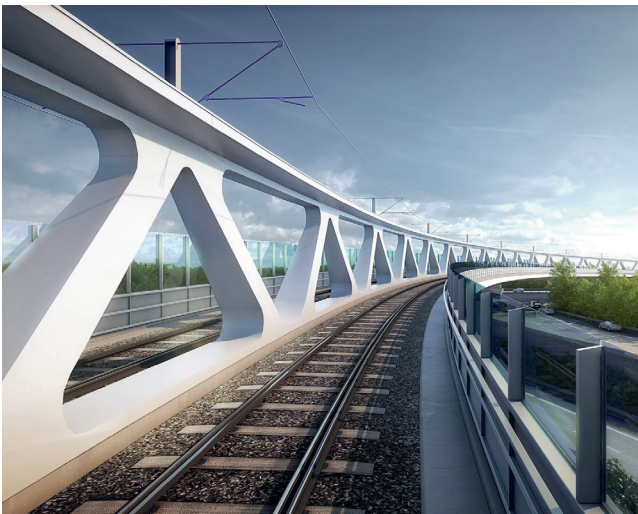
To round off the 2024 congress, and after two days of round-table discussions and workshops, delegates were finally treated to a tour of the facilities of the Train de la Rhune, a cogwheel railway in the Basque country celebrating its 100th anniversary this year.



# 8- INTERNATIONAL

STRMTG shares its expertise with various international bodies. It provides training, exchanges and assistance to foreign supervisory authorities outside France. It also participates in international meetings in the field of transport safety.

## RESCOR 2024 DUSSELDORF



At the end of November 2024, the members of the RESCOR group (European Network of Services in charge of the Control and Regulation of the Safety of Urban Guided Transport such as metros and/or trams) met for discussions. This latest meeting of the group took place in Germany, in Düsseldorf. It brought together around fifteen participants from Spain, Portugal, Germany, Great Britain, Ireland, Slovakia, Denmark, Switzerland and France.

The first morning was an opportunity for our hosts to present their organisation and the scope of their work, and to look back at a particular event concerning the collapse of part of the Carola Bridge in Dresden, which supports the tramway tracks, in September 2024.

The day continued with a visit to an extension of the urban guided network to Düsseldorf airport (future line U81) and then a tour of the SkyTrain. This transport system is a monorail suspended some ten metres above the ground. It is made up of fully automatic cabins that move passengers between the car parks, Düsseldorf Airport station and Düsseldorf Airport terminals.

The second day was devoted to discussions and presentations by the participants. The French delegation presented a number of topics relating to the latest regulatory and technical developments in tramways and metros. It was also an opportunity to present Urbanloop, an innovative system that went into service this summer in the south-west of Paris during the Olympic Games.

The Swiss, Spanish and Irish representatives also shared feedback, indicators and trends on the subject of guided transport safety.

The 2024 session once again demonstrated the value of sharing and presenting information in this way. Next year's event will take place in Ireland.

## ITTAB IN SWEDEN



At the end of September 2024, STRMTG took part in the 72nd edition of ITTAB (International Meeting of Technical Authorities for Cableways) in Sweden.

ITTAB is an international meeting of authorities and technical inspection bodies responsible for ensuring the safety of cableway installations. Its aim is to exchange information and feedback on these transport systems.

In particular, ITTAB focuses on:

- ▶ analysis and conclusions drawn from accidents and incidents with the aim of improving safety;
- ▶ promoting an open exchange of views between supervisory authorities in a spirit of partnership.

ITTAB members collect and analyse statistical data, present significant accidents and their follow-up, discuss international safety regulations and monitoring methods.

and all matters related to the operation of cableway installations (including maintenance, passenger recovery and evacuation).

STRMTG, represented by Daniel Pfeiffer, Christophe Sion and Gaëtan Rioult, presented:

- ▶ an overview of integrated recovery including examples of immobilisation scenarios to consider.
- ▶ the objectives that ultimate plans should take into account in cases where the evacuation plan or integrated recovery could not be fully implemented in technical problems recently observed in France.

STRMTG will organise the next ITTAB, which will take place in Toulouse, France, in September 2025.

## URBAN TRAM FORUM 2024

The 2024 edition of the Urban Tram Forum (UTF) was held in Basel on 17 and 18 October, with the participation of local operator Basler Verkehrs-Betriebe (BVB). Around twenty participants came together for this annual event, part of the European network of experts created following the success of COST Action TU1103.

This gave all the participants the opportunity to visit the only cross-border tramway network linking France, Switzerland

and Germany, and to discuss various subjects relating to the urban integration of tramways, in particular:

- ▶ Interfaces between the tramway and soft mobility (pedestrian crossing signs, challenges related to bicycles, etc.);
- ▶ The interfaces between the tramway and motorised transport (turning movements of vehicles, accidentology, etc.);
- ▶ The driver assistance system implemented on trams enabling speed control of trams implemented by the Tenerife network.

## OITAF 2024

The International Organization for Transportation by Rope (OITAF) organised its 12th World Congress from 17 to 21 June 2024 in Vancouver (Canada). The meeting provided an opportunity for stakeholders in the sector to discuss:

- ▶ their vision of the situation of cableway installations in the world of transport, in mountain and urban environments, n advances on environmental issues and intermodality,
- ▶ the work carried out to optimise operation, maintenance and safety.

STRMTG presented two approaches designed to enhance the safety of installations:

### Changes in French rules to deal with fire risk

These changes are in response to the rapid development of urban projects and new cable links between valleys and ski resorts in recent years in France.

Cable cars now cross areas at specific risk of fire (roads, railways, various buildings, wooded areas, etc.), requiring appropriate measures.

As a result, the following provisions have been adopted:

- ▶ establish a common methodology for fire risk analysis, n to set objective criteria for the acceptability of the fire risk (maximum cable temperature, heat fluxes received on vehicles, etc.),
- ▶ set minimum safety distances to minimise hazards, ,.
- ▶ define the cases in which automatic fire detection is unavoidable,
- ▶ apply simplified rules to standard installations with little or no fire risk.

### Drawing up of an OITAF recommendation for the management of old installations

Accidents on cableway installations affect their reputation and hamper their development. OITAF is therefore drawing up a recommendation aimed at guaranteeing the safety of old equipment. This approach will enable:

- 1) assessment of older installations to ensure they comply with minimum safety standards

2) and, if necessary, identification of the measures to be taken to supplement and improve their safety.

STRMTG presented the principles of the approach, the main stages adopted and the progress made in drafting the recommendation, which is scheduled for completion in 2025.



# 9 - NOTIFIED BODY

## LA SAULIRE CABLE CAR

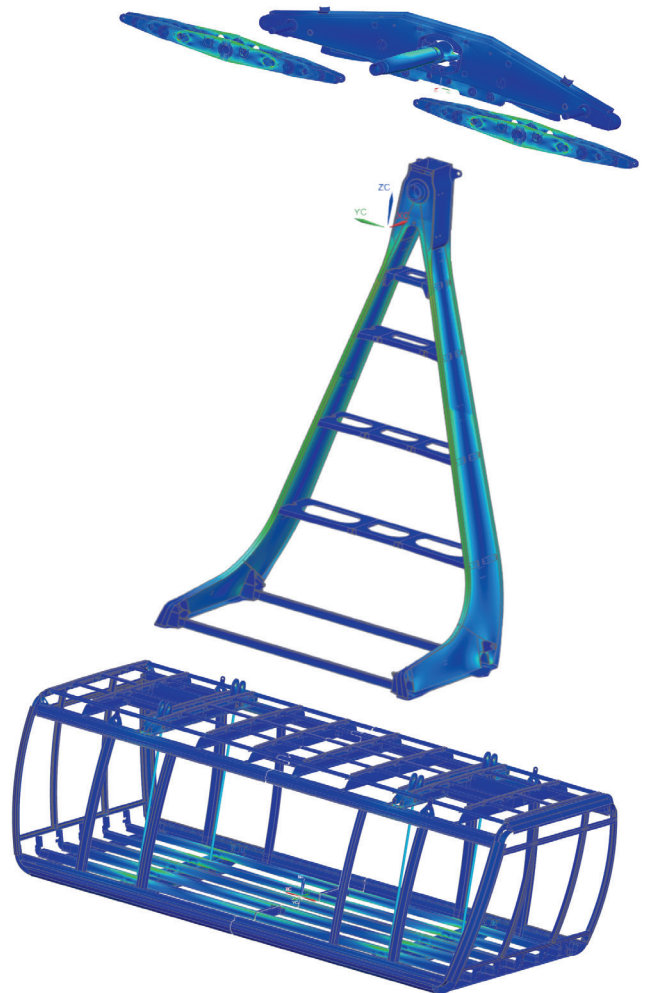
Following a major incident during the statutory annual inspection in September 2021, Société des 3 Vallées opted to rebuild the ropeway, which was launched at the end of 2023. Like its predecessor, this is a two-cable, back-and-forth ropeway: two vehicles are arranged on separate tracks, each with its own carrying cables. Each vehicle is connected to one side of the loop formed by the haul rope. The inauguration took place on Thursday, December 12, 2024 in Courchevel.

As part of this reconstruction, the manufacturer POMA asked STRMTG-NB1267 to evaluate several safety components dedicated to this installation and included in the vehicle subsystem.

The stations, pylons and supporting cables remained in place, but everything else was replaced, starting with the visually most important component: the two special cabins produced by Sigma. Visually, they are reminiscent of the Symphony 3S cabins, although the structure is quite different, the verification having involved complex calculations. Laminated glass is used instead of traditional Plexiglas, which is known to be sensitive to scratches and to turned yellow over time, particularly under the effect of sunlight.

This choice is all the more striking in that the cabins are fully glazed, from 10 cm above the floor to the ceiling. The cabins also feature additional functionalities, such as the ability to transport equipment underneath the cabin or on its roof. For this installation, we also certified a service vehicle specifically designed to carry out on-line inspection and maintenance operations.

Last but not least, STRMTG-NB1267 was also entrusted with the evaluation of the new power station installed in the plant.



## AEROLIVE CABIN

The operator, Société d'Aménagement de la Plagne, has decided to install a special vehicle on its new POMA 10-seater Glacier gondola lift in 2024. This cabin will offer thrills to passengers paying a supplement for this attraction.

This vehicle, called Aerolive by the manufacturer, is based on the classic cabin structure. However, it has no glazing whatsoever and its slatted floor ensures a "full throttle" atmosphere on the very high gondola line. Passengers are secured with harnesses and belay devices using the same system as on rope courses.

STRMTG-NB 1267 certified the cabin safety component on behalf of Sigma. This incorporates a number of special features, mainly relating to the integrity of passenger belay systems and demonstration of the strength of associated anchors.

POMA also entrusted us with the certification of the vehicle sub-system, for which quite different subjects were discussed, particularly in relation to gauges.

In handling these cases, STRMTG-NB 1267 once again demonstrated its ability to adapt and support manufacturers in deploying innovations under acceptable safety conditions.



### Notified Body KEY FIGURES 2024

- ▶ **140** new certificates (or revisions) of design assessment for safety components and/or subsystems.
- ▶ **90** changes to previously evaluated components or subsystems.
- ▶ **12** manufacturer audits.

#### Since 2003, under directive 2000/9/EC

- ▶ **3 821** procedures (modules H7, B, F, G) and **141** manufacturer audits.

#### From 2018, under Regulation (EU) 2016/424

- ▶ **1 422** procedures (modules H1 Section 3.6, B, F and G) and **84** manufacturer audits.



**STRMTG**

The Technical service in charge of safety for ropeways and guided transports

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