

# ACTION PLAN

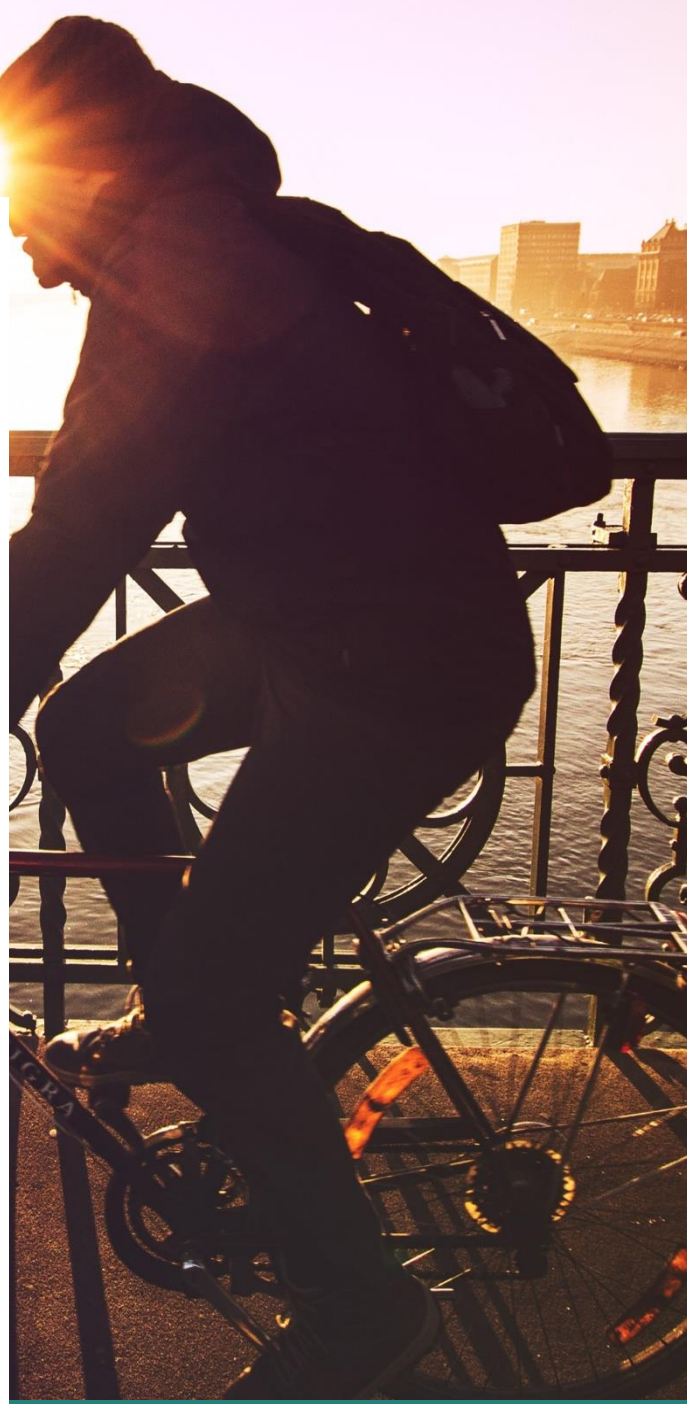
## “SMART TICKET LIGURIA ”

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26.04.2022

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Partner: Regione Liguria, TTS Italia



**PriMaaS**  
Interreg Europe

**Interreg  
Europe**  
European Union | European Regional Development Fund

# PriMaaS ACTION PLAN

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**PARTNER ORGANISATION:** Regione Liguria

**OTHER PARTNERS:** TTS Italia

**ORGANISATIONS INVOLVE (IF RELEVANT):**  
Liguria Ricerche and Liguria Digitale

**COUNTRY:** Italia

**NUTS2 REGION:** Regione Liguria

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# EXECUTIVE SUMMARY

Being part of the activities carried out within the PriMaaS project and thoroughly inspired by the Interregional exchange of experience events along with regional stakeholder meetings with quadruple helix ecosystem actors (e.g., research and academia, business, policy makers, end-users), this Action Plan ('AP') has been produced to tackle the diverse mobility challenges that nowadays affect the whole territory of Liguria region.

Regarding the background context and the specific transport and mobility challenges, the following aspects constituted a starting basis for conceiving a systemic approach to the development of the AP:

- urban settlements develop mainly along the coast, due to the particular orographic condition of a very steep and impervious territory, more than 70% of which is occupied by uninhabited woods;
- the Ligurian road system is comb-shaped, with a ridge running mostly along the coast through the towns and a series of orthogonal axes leading inland along the valley floor or along minor ridges, with only a few valley floor systems running parallel to the coast;
- Approximately 53% of the Ligurian population is concentrated in the cities of Genoa, La Spezia, Savona, San Remo and Imperia. The consequence of this demographic concentration is an increase in the demand for internal mobility and large catchment areas, essentially made up not only of the resident population, but also of a significant part of citizenship coming from the municipalities of the immediate hinterland or the coast.
- In spite of a significant modal share favouring Public Transport mode, the use of private vehicles for travel is still very significant in Liguria, thus resulting in an overloading of the transport network - especially at peak times - which is often critical, with inevitable repercussions on the environmental and socio-economic sustainability of the cities themselves.

With these challenges in mind, drawing upon the POR FESR 2014-2020 policy instrument managed by Regione Liguria, and with specific reference to the Investment priority 4e 'Promoting low-carbon strategies for all types of territories, in particular urban areas, including the promotion of sustainable multimodal urban mobility and adaptation measures aimed at mitigating emissions', Liguria Region set out a transport strategy aiming to achieve the following goals: a) increasing integration between different means of transport; b) increasing collective mobility; c) modernisation of the vehicle fleet, giving priority to vehicles with a low environmental impact; d) increasing dedicated infrastructure.

In line with the objectives of the PriMaaS Project, and therefore thanks to the strengthening of the territorial cooperation, as main tool for the sharing of good practices and experiences in the framework of the MaaS world, Regione Liguria – as responsible body for planning, guidance, promotion, coordination and control of local public transport, and in particular in the planning of the overall regional transport system and in the direct management of railway services of regional and local interest -



promote the PriMaaS vision in order to support policy makers to favour a transition toward a progressively lower carbon mobility at regional level.

The aim of this AP is to contribute to strengthening the core elements of the MaaS system at local level, especially by enhancing transport digitalisation and implementing a regional electronic ticketing system. This ambitious objective emerged from the cohesive and collaborative work between the Liguria Region and the local and interregional stakeholders identified at Project level, which led to identification of a regional electronic ticketing system as a key measure to be addressed in Phase 2. The introduction of an electronic ticketing system in Liguria is a key element in the evolution of the Ligurian local public transport ('LPT') and in the transformation of the existing local tariff systems.

Such measure will be carried out, on behalf of Regione Liguria, by Liguria Digitale (an in-house company at the service of Regione Liguria and its Member Bodies), as well as regional public transport companies, such as AMT Azienda Mobilità Trasporti SpA, RT SpA, TPL Linea srl, ATC Esercizio SpA. It is worth underlining that all these organisations actively participated to the regional stakeholder meetings and interregional events organized in the framework of the PriMaaS Project, contributing to a significant exchange of experiences on the MaaS world at local level.

By drawing on the lessons learnt from the cooperation activities organised during the first phase of the PriMaaS project, Liguria Region, supported by TTS Italia, will promote and implement during Phase 2 of the PriMaaS project a regional e-ticketing systems able to: a) realise an interoperable system open to all collective mobility services (public and private) provided on the territory (LPT road and rail, parking, car sharing, bike sharing, car-pooling); b) implement satellite-based fleet control and travel monitoring systems; c) ensure the security of every single transaction within the functions performed; d) speed up, automate and make transparent the procedures for validation of tickets, collection and distribution of the related fare revenues; e) monitor the levels of use of the services offered.

This will result in an integrated public transport system in terms of increasing transport connectivity, modal and tariff integration, adapting to changing users' needs, and ultimately integrating diverse mobility services, while guaranteeing an effective fight against counterfeiting and fraud.

It should also be noted that the funding for the new regional electronic ticketing system was approved by the Regional Council, and it amounts to a total of ca. 22.5 M euro, 3M euro of which coming from the resources of the POR FESR Programme for electronic ticketing interventions, which is the Policy Instrument being addressed by Liguria Region, Liguria Ricerche and TTS Italia within PriMaaS.

Lastly, it is also noteworthy that, following the completion of the tender, the acts of the open procedure called by Liguria Digitale s.p.a. for the assignment of the implementation and ten-year maintenance of the electronic ticketing system for the public transport service of the Liguria Region were challenged. However, at present, most of the administrative and legal issues have been resolved and there is high confidence that progress will be made in the coming months toward commissioning a third-party provider with all activities related to the Smart Ticket Liguria project.

# LETTER OF SUPPORT



TOPIC  
Low-carbon economy

# 1 BACKGROUND AND POLICY CONTEXT

## 1.1 ERDF ROP Liguria 2014-2020: regional policy instrument to support MaaS deployment

The Regional Operational Programme (ROP) for the European Regional Development Fund (ERDF) valid for the 2014-2020 cycle is the main instrument for the development of the Region, the revitalisation of its economy and support for employment.

This Programme is part of the broader framework of the EU Cohesion Policy, which is divided into 11 Thematic Objectives aimed at achieving the Europe 2020 objectives of smart, inclusive and sustainable growth and territorial cohesion as set out in the Territorial Agenda 2020.

The ERDF Fund is part of the European Structural and Investment Funds (EIS Funds), through which more than half of EU funds are disbursed.

As foreseen by Regulation 1303/2013, concerning the management of the EIS Funds, by defining the Partnership Agreements, each State has identified the development needs, the thematic objectives of the programming, but also the expected results and the actions to be implemented through the use of the EIS Funds. In this context, Regione Liguria has programmed its objectives and resources with a view to implementing the Regional Operational Programmes financed by the aforementioned funds for the 2014-2020 programming cycle, including the 2014-2020 Ligurian ERDF ROP.

The ERDF Fund is intended to contribute to correcting the main regional imbalances that exist at European level. The Fund pursues this objective by supporting the development and structural adjustment of regions whose development is lagging behind and the conversion of declining industrial regions.

There are two main objectives:

- Investment for growth and jobs - aimed at strengthening the labour market and regional economies;
- European Territorial Cooperation - aimed at strengthening cross-border, transnational and interregional cooperation within the EU.

The resources allocated to the first objective have been divided between three different categories of regions:

- the most developed regions, with a GDP per capita above 90 % of the EU average
- the transition regions, with a GDP per capita between 75 % and 90 % of the EU average;
- the least developed regions, with a GDP per capita of less than 75 % of the EU average.



As is well known, the ERDF also supports sustainable urban development. In the 2014-2020 period, at least 5 % of the ERDF allocation for each Member State had to be allocated to integrated action for sustainable urban development, to tackle the economic, environmental, climate, demographic and social problems affecting urban areas.

In the 2014-2020 period, the main priorities linked to ERDF resources were the following:

1. research and innovation;
2. information and communication technologies;
3. small and medium-sized enterprises (SMEs);
4. promotion of a low-carbon economy.

Depending on the category to which the region receiving support belongs, the degree of concentration on these priorities varies. As a region belonging to the category of most developed regions, Regione Liguria has planned to allocate at least 80% of its ERDF resources to at least two of these priorities and at least 20% to the promotion of a low-carbon economy.

In particular, with the 14-20 Programming, the resources of Regione Liguria have focused

- On greater support to investments for innovation and competitiveness of SMEs according to a place-based approach strongly oriented to strengthen the elements and specialisations present on the territory, based on what is represented in the Smart Specialisation Strategy of Regione Liguria;
- On a greater attention to the energy issue, which is one of the elements that can significantly contribute to the Europe 2020 objectives;
- On a new approach to urban development, through the provision of a NOP (National Operational Programme) dedicated to metropolitan cities, which in Liguria involves the City of Genoa, and the focusing of Urban Agenda interventions on realities of strategic importance for the territory according to certain parameters, thus with a greater concentration than in the previous programming of the SIE funds;
- On a specific multi-fund integrated approach to inland areas.

The strategy of the above-mentioned Programme is consistent with the broader strategy for regional development, defining the priority lines of action, shared with the partnership, that the Region intends to take on in view of the challenges, needs and socio-economic-geographical peculiarities that characterise it. In this sense, particular reference is made to aspects that can represent a strategic factor for competitive positioning in the national and international scenario, but also to the regional energy strategy, which represents an important factor for outlining the pursuit of sustainable growth objectives.

Within the above-mentioned national strategy, the Metropolitan City of Genoa, the capital of Liguria, plays an important role at EU and national level thanks to its active role in the development of the regional territorial economy. In fact, the urban centre of Genoa, which is characterised by a wide range of services, work and study





opportunities, attracts considerable flows of users from the surrounding areas on a daily basis, such as schools of all levels, universities, hospitals and health and social facilities, courts, administrative offices of bodies and associations, production centres, sports facilities, etc. At the Ligurian level, therefore, Genoa is the main driver of economic development, as it is the place where productive and social innovation, physical, intellectual and building capital are concentrated, as well as playing a fundamental role as a place of connectivity, creativity and innovation. At the same time, precisely because of the overlapping of the functional mix and the large number of activities present, Genoa suffers from numerous environmental problems, such as

1. congestion due to mobility (also due to the specific orographic characteristics)
2. difficulty of connection between central and peripheral areas;
3. high emission of pollutants into the atmosphere;
4. concentration of public buildings with poor energy saving performance;
5. risks connected to the presence of watercourses constrained within densely built-up areas, if not completely drained, etc.

## 1.2 The role of Regione Liguria as the regional public transport planning Body

Legislative Decree 422/97 and subsequent legislative interventions initiated a process of transferring functions, tasks, assets, structures and financial resources to the Regions, and a reference model for planning and defining transport policy in the territory for which it is responsible.

The Region of Liguria implemented Legislative Decree 422/97 initially with Regional Law no. 31 of 9 September 1998 "Standards on local public transport", and subsequently with Regional Law no. 33 of 7 November 2013 and subsequent amendments and additions "Regulations governing the regional and local public transport system and the integrated regional plan for infrastructure, mobility and transport (Priimit)", implementing a wide-ranging delegation process involving the Metropolitan City and the Provinces and a division between planning and service management functions, and defining the Optimal Territorial Ambits (ATO) for public transport and the relative governing bodies.

In the light of the legislative changes, therefore, the Region's tasks can be summarised as planning, guidance, promotion, coordination and control of local public transport, and in particular the planning of the overall regional transport system and the direct management of railway services of regional and local interest.

In fact, the Region has the task of defining the priority strategic guidelines, through the planning instruments for which it is responsible, which are

- 1) the guidelines and criteria for local transport planning and for the preparation of Basin Plans by the governing bodies and the programme of regional and local public transport services, as set out in Regional Council Resolution No. 7 of 27 June 2017;



- 2) the regional transport programme (Prt) within the integrated regional plan for infrastructure, mobility and transport (Priimit);
- 3) the guidelines for the planning of regional and local rail transport services under the responsibility of the Liguria Region.

In this context, the Infrastructure and Transport Department consists of two sections: the Infrastructure Sector and the Regional Public Transport Sector.

The Regional Public Transport Sector is responsible for preparing the Regional Transport Plan and for planning and coordinating regional mobility flows, carried out by all modes of transport, both public and private. Moreover, it takes care of the planning of the regional and local public transport system, with functions of direction and coordination of the LPT through the planning of the network of regional services with a view to improving efficiency and respecting the objectives of public finance balance. It also oversees the planning and management of LPT investments for the renewal of the fleet of vehicles, and prepares local public transport tenders and service contracts for the assignment and management of regional railway services and concessionary railways, managing the qualitative and quantitative monitoring of services. It defines the pricing policies for the profiles of regional competence in the field of LPT and prepares the program agreements with local authorities for the definition of quantity and quality standards of LPT services by road.

In this context, the Sector is extremely active in taking care of the Region's participation in specific EU and national LPT projects, as well as the experimentation and implementation of innovative technological solutions in the field of Infomobility.

Moreover, as an active part and promoter of the sustainability of regional public transport, Regione Liguria is strongly involved in the partnership established through the PriMaaS Project, which is part of the Interreg Europe Programme.

## 1.3 The Ligurian mobility system

Mobility in the Liguria region has been suffering for several decades from economic decline and a lack of public and private willingness to invest and innovate. In this context, in order for mobility to become one of the keys to the city's turnaround, it is necessary to introduce radical innovations in infrastructure, public services and private mobility by applying the technological and organisational innovations available and committing economic resources and skilled labour.

In Liguria, urban settlements have developed mainly along the coast, due to the particular orographic condition of a very steep and impervious territory, more than 70% of which is occupied by uninhabited woods. In many cases, these settlements have taken place by filling in the sea and by intensively consuming land on the hillsides facing the sea, in order to guarantee the space needed for road infrastructure, housing and production activities.

The Ligurian road system is comb-shaped, with a ridge running mostly along the coast and crossing the towns, and a series of orthogonal axes leading inland along the valley floor or along minor ridges, while only in a few cases are there valley floor systems running parallel to the coast.



In this difficult context, therefore, out of 235 municipalities about 78% are made up of municipalities with less than 5,000 inhabitants and more than half of these are under 1,000, settled partly along the coast and in the immediate hinterland (Istat data, 2014). Only 20% of municipalities have a population between 5,000 and 30,000 inhabitants, while the most significant gap is recorded in the five main cities: Genoa (596,958 inhabitants), La Spezia (94,535 inhabitants), Savona (61,761 inhabitants), Sanremo (55,498 inhabitants) and Imperia (42,489 inhabitants).

Thus, 53% of the Ligurian population is concentrated in the cities of Genoa, La Spezia, Savona, San Remo and Imperia. The consequence of this demographic concentration is an increase in the demand for internal mobility. These urban realities, in fact, gravitate daily on large catchment areas, essentially constituted not only by the resident population, but also by a significant part of citizenship coming from the municipalities of the immediate hinterland or the coast.

In Liguria, there is a high level of use of public transport, at levels higher than both the national average and that of the North West. Despite this, the use of private transport for travel is still very significant, which leads to an overloading of the networks - especially at peak times - that is often critical, with inevitable repercussions on the environmental and socio-economic sustainability of the cities themselves.

In today's scenario, the local public transport service by road in the Region of Liguria is divided into 5 basins:

- Province of Genova, basin TG (Extra-urban), with the exception of the services that take place only in the territory of the Municipality of Genova (urban GU basin);
- Provincia di Imperia, basin I
- Provincia di La Spezia, basin L;
- Province of Savona, basin S.

The railway services, which are under the responsibility of the Region, constitute a single transport network operating throughout the territory of the Region.

With the exception of Trenitalia and AMT Genova (urban and suburban LPT service), the companies ATC, Riviera Trasporti and TPL Linea essentially offer a public transport service by road.

The Ligurian public transport system, therefore, is characterised overall by the scarce presence of local public LPT companies, as well as by the concentration of demand in well-defined and territorially limited geographical areas, but also by the presence of LPT basins that are geographically limited with negligible overlaps (thus connected by a limited number of lines and routes) and finally by the existence of a single railway operator that acts as the glue between the different basins.

The results that the Region has set out to achieve under the 2014-2020 ERDF ROP on this matter, more specifically with investment priority 4e "Promoting low-carbon strategies for all types of territories, in particular for urban areas, including the promotion of sustainable multimodal urban mobility and adaptation measures aimed at mitigating emissions", are:

- increased integration between different means of transport;
- increasing collective mobility;
- modernisation of the vehicle fleet, giving priority to those with a low environmental impact;

- increasing dedicated infrastructure.

In this context, in the Ligurian cities of Genoa, San Remo and Imperia, actions have been and are still being financed, such as: the creation of preferential lanes dedicated exclusively to the transit of public transport; the creation or integration of traffic light centralisation and synchronisation systems; the creation of systems for management, monitoring, communication and control; as well as the development of actions for tariff integration and interoperable payment (e.g. electronic ticketing, infomobility, anti-avoidance tools). In order to improve the public transport service and significantly reduce polluting emissions, the Liguria ERDF ROP 2014-2020 has also provided for the renewal of part of the rolling stock for at least 50 vehicles for the three cities. In order to guarantee an impactful action, a massive modernisation of the fleets of the regional public transport system and the improvement of the rolling stock has been foreseen with the purchase of at least EURO 6 vehicles and a link to integrated actions for the improvement of infrastructures compulsorily and exclusively framed in the Urban Mobility Plan, used only for public service obligations and in line with the Partnership Agreement.

Sustainable development at urban level is also pursued through a "City Axis" in which, in accordance with art. 96, paragraph 1, c.1 (c) of EU Regulation n. 1303/2013, several complementary investment priorities of different OTs are combined, with reference to EU Regulation 1301/2013. The decision to include more than one objective in the Axis is part of the regional strategy of concentrating investments on the promotion of services for citizens and city users, in an integrated approach aimed at improving the quality of life and satisfying their needs through the use of new communication technologies, in the strengthening of sustainable mobility and energy efficiency and in the development of security and defence of the territory which, given the fragility of urban areas, makes it possible to implement, in a system logic, investments preparatory to the realisation of lasting infrastructural interventions.

The urban realities identified as beneficiaries of the City Axis, as specified in section 1.1 of the POR FESR Liguria 2014-2020, are:

- **Genova**, as the capital city. In this case, the OT5 priority has been activated as a complement to the OT4 priority of PON METRO. This reality, in fact, has developed an integrated project on the Valbisagno that is implemented both in the PON METRO, with sustainable mobility operations along the road axis that runs along the Bisagno River (OT4), and in the Asse città, by activating in OT5 an intervention of hydraulic safety on the portion of the Bisagno river bank, with reorganization of the embankment and adaptation of road bridges and pedestrian walkways corresponding to that affected by the mobility redevelopment of the METRO PON, which is preparatory, synergistic and complementary to it;
- **La Spezia**, Imperia, Savona - provincial capitals - as well as Sanremo, which express instead a particular administrative capacity for a catchment area larger than their size (around 150,000 inhabitants on average). In these realities, therefore, the priorities of the urban Axis OT2, OT4 and OT5 have been activated.

The choice of the above-mentioned objectives has matured following the comparison with the selected Urban Authorities and with the partnership activated by the Liguria Region, in the framework of which shortcomings and criticalities still persisting in these urban contexts have been highlighted with respect to the strategic actions adopted in the last years. In this sense, the 14-20 programming period is in continuity with the ROP 2007-2013, in which the Integrated Urban Development Projects have contributed to raising the standards of liveability in the contexts concerned and to resolving some specific situations. Integration should therefore also be read in relation



to the previous programming period. Operational Programme 2 concerns La Spezia, Savona, Sanremo and Imperia, as it allows to innovate the services offered by the local authorities to users from a performance point of view. On the other hand, OT4 - energy efficiency and sustainable mobility - is limited to Savona, Sanremo and Imperia, as it was expected to solve persistent problems, but in other contexts, such as Spezia, which have already been addressed (sustainable mobility and ITS development). Finally, OT5 focuses only on Spezia, which has identified as a priority the action of securing the peri-urban hydro-geological system, and on Genoa, implementing the complementary action to PON METRO.

Thus, a series of Sustainable Urban Mobility Plans (SUMP) have been prepared for several cities in the Liguria Region, as important tools to stimulate cooperation between different policy areas and to promote a participatory process in order to design and manage integrated low-carbon mobility systems. Regione Liguria in fact considers e-ticketing and sustainable mobility - with low environmental impact - two important themes for the territory. In particular, POR Liguria finances e-ticketing and the purchase of low-carbon buses. However, at present, the expected results have not yet been achieved.



# 2 ACTION: Smart Ticket Liguria: towards the renewal of the Liguria Public Transport tariff system

## 2.1 Background context

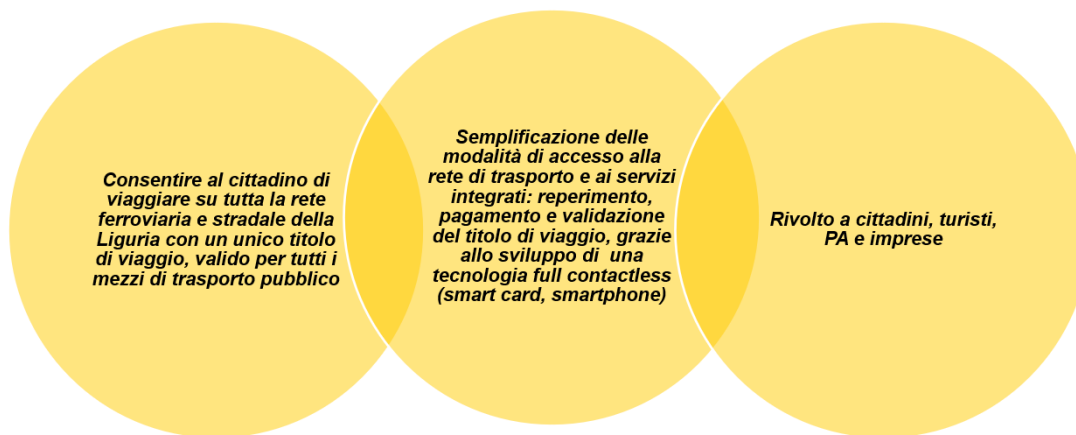
Regione Liguria, in the framework of the policies to encourage and simplify accessibility to the local public transport service, has defined with the deliberation of the Regional Council n. 1089 of 30.12.2016 the guidelines and addresses for the development of interoperable and innovative ticketing systems, to support the modal and tariff integration rail-road throughout the region.

The introduction of a smart ticketing system in Liguria is a key element in the evolution of the Ligurian LPT and in the transformation of the existing local tariff systems. Therefore, the regional activity is aimed at the promotion of electronic ticketing solutions able to:

- Creating an interoperable system open to all collective mobility services (public and private) provided on the territory (LPT road and rail, parking, car sharing, bike sharing, car pooling);
- Implementing satellite fleet control and travel monitoring systems; where these systems do not exist, integrating existing AVM systems into the ticketing system;
- Ensure the security of every single transaction within the functions performed;
- Speeding up, automating and making transparent the procedures for validating tickets, collecting and distributing the related fare revenues;
- Monitor the levels of use of the services offered.

From this point of view, Regione Liguria intends to promote an integrated public transport system in terms of territory, modes, tariffs and technology, which is dynamic and adaptable to the needs of users at different times of the day, but also to simplify the methods of access to the transport network and to integrated mobility services in the broadest sense, at the same time guaranteeing an effective fight against counterfeiting and fraud. Moreover, thanks to the definition of a unitary and coordinated tariff system, Regione Liguria intends to enhance the contribution of the Managers, guaranteeing a fair and balanced participation of the same in the induced advantages.

This context would also allow the systematic acquisition of significant and reliable data on demand flows for a timely and prompt adjustment of the supply levels and the reduction of costs of the sales and distribution network of tickets, also through the opening to new sales channels, first of all the Web and mobile. For this reason, Regione Liguria promotes the opening towards modern pricing and access systems with devices equipped with proximity technologies such as NFC and EMV credit/debit cards and optical reading (2D BarCode).



In this scenario, the main objective is therefore to allow customers to travel on the entire Liguria rail-road network with a single ticket valid for all means of public transport - urban and suburban, rail, road - facilitating the mobility of citizens within the entire Region. In this way, the aim is to improve the efficiency of public transport and recover modal shares with respect to private transport, by simplifying access to mobility services and making public transport more attractive, with a consequent increase in tariff flexibility.

## 2.2 PriMaaS exchange of experience events as a key tool for trend reversal

In line with the objectives of the PriMaaS Project and by fostering territorial cooperation as main tool for sharing good practices and experiences around MaaS topics, Regione Liguria by promoting and supporting the PriMaaS vision enables policy makers to adopt a critical a trend reversal (from ownership to service accessibility model) paving the way to an increasingly lower carbon mobility ecosystem in the region.

In this context, the overarching aim of this AP is to support regional initiatives contributing to developing the building blocks of a local MaaS system, especially by fostering transport digitisation and, hence, addressing social challenges. Such ambitious objective emerged from synergies and collaborative work between Liguria Region, TTS Italia and several local stakeholders from the Public sector and industry representatives who proactively took part to the consultation process leading to the design of this AP.

Notably, one of the decisive factors for the integration of mobility services is the existence of smart and interoperable payment platforms that minimise the effort of citizens to access multiple services.

Awareness of the importance of this factor has been built throughout the cooperation process, starting with the baseline assessment report, through the construction of a multidimensional MaaS platforms analysis indicator – to which TTS Italia played a major contributing role – in which reservation and payment capacity is a key factor.

Numerous project events, either in the form of capacity building workshops being part of project-level Interregional exchange of experience events or regional stakeholder meetings, took place to address and reinforce local such knowledge and awareness.

Among the most important events for the consolidation of this strategy was certainly the second Interregional Exchange Event, organised by Liguria Region, Liguria Ricerche and TTS Italia on 2<sup>nd</sup>-3<sup>rd</sup> December 2020, within the framework of the wider Joint Event "Interregional Mobility: the different approaches and solutions of cooperation". The event was organised together with two other projects on smart mobility – MOBIMART and MOBIMART PLUS, both co-funded by the Italy-France Maritime Programme – which represented a unique opportunity for the exchange of experiences and knowledge on matters related to passenger mobility, MaaS as well as associated interoperable data and standards, and integrated payment systems.

In particular, the smart ticketing theme was addressed during several tracks for the event, namely the Thematic Conference entitled "The role of the ICT in the Governance of the system of transport of the passengers in the territories of the cooperation" as well as specific sessions and interactive discussions within the following Building Capacity workshop, such as the "Standardisation of information and interoperability of systems" session.

During such Thematic Conference, numerous transport & mobility stakeholders provided valuable insights into their needs, challenges and experiences regarding the uptake and promotion of MaaS-oriented mobility systems and interoperable integrated payment systems in their territories, including amongst others the Municipality of Genoa, AMT Genova and Liguria Digitale; particularly, such stakeholders contributed to specific sessions on the standardisation of information and interoperability of systems by anticipating the solutions and methodologies that can be adopted at local level.

Another vital event for the consolidation of this strategy in the Liguria region was the open discussion "from integrated ticketing to MaaS platforms" on the 2<sup>nd</sup> June 2021 at the building capacity workshop organised in cooperation with Civitas Platform. Similarly, the good practice of the Finish transport act philosophy, submitted as part of the PriMaaS workplan, contributed to reinforcing the goal of developing a interoperable platform open to all collective mobility services (public and private) provided on the territory (LPT road and rail, parking, car sharing, bike sharing, carpooling).

At a more local level, the development of the Action Plan was informed by key challenges and solutions coming from public-sector and industry stakeholders, which regularly attended the PriMaaS meetings collaboratively held by Regione Liguria, Liguria Ricerche and TTS Italia. These meetings allowed Regione Liguria to collect some important testimonies, experiences, and good practices about MaaS deployment. Specifically, each stakeholder who participated in these events shared relevant experiences challenges and opportunities concerning on demand mobility, data sharing and interoperability issues environment, digital and interoperable smart ticketing systems.

Particularly, the 4<sup>th</sup> regional stakeholder meeting held on 31<sup>st</sup> January 2022 focused on challenges, experiences (both research-oriented project and real-world service integration solutions for diverse geographic regions) concerning transport digitalisation, with more emphasis toward smart ticketing and payment systems.

It should be pointed out that AMT, which manages the public transport in the Municipality of Genova, on this event shared some key principles for developing a regional MaaS System in Liguria. Additionally, during this meeting, Liguria Digitale contributed with the description of Liguria Region's perspective on the digitalization of transport systems. All the above cooperation and knowledge exchange opportunities, contributed to inform a bottom-up





design of an electronic ticketing system, which is to be realised through specific funding allocated to the Smart Ticket project, financed by the ROP Liguria ERDF 2014-2020.

Notably, the objectives and activities of Smart Ticket project, described in this AP, will be accomplished, on behalf of Regione Liguria, by Liguria Digitale, as the most relevant public-sector body at pursuing the qualitative improvement of public management through the creation and provision to public operators of an integrated system of information and IT services and the dissemination of an information culture as a source of social and technological development. In this context, Liguria Digitale was actively involved in the activities and meetings organised in the framework of the PriMaaS Project, in particular in relation to planning, technical assistance and consultancy for the development of the information society in Liguria and on ICT solutions for the Ligurian public system, as well as the promotion of ICT innovation in the territory also through interregional, National and European initiatives implemented by the Liguria Region and its Member Bodies.

In this wide context, the Ligurian ROP ERDF represents a valuable tool for financing initiatives aimed at decarbonising mobility, especially by increasing cycling and improving LPT infrastructure and services.

Building upon the fruitful exchange of experiences among PriMaaS partners, but also among the territorial stakeholders who actively participated in the project activities, this AP will guide regional policymakers in the implementation of innovative projects on MaaS and its key enabling elements (particularly integrated digital ticketing systems), with the expected benefits being not only the positive impacts on mobility and socio-economy generated at the micro-scale, but particularly the scaling up of such positive outcomes at regional level.

## 2.3 Regulatory framework

The regional transport reform law (LR 33/2013) provides in art. 18, paragraph 5, the creation of an SBE on the regional territory:

*"5. The Region, from 2016, starts the implementation of the integrated electronic ticketing system throughout the regional territory, in order to ensure greater integration and simplification of the fare systems and to allow the optimal planning of public transport services based on demand, with the consequent efficiency of the overall system and further benefits for users and operators. The Regional Council determines the methods for implementing this intervention benefici per gli utenti e gli operatori".*

The Project is also part of the wider Liguria Region strategy for digital growth and transposes the directives on digital administration and ITS. Therefore, the initiative is in compliance with the legislation on the development of ITS in Italy, as represented by the ITS Decree of 1 February 2013 of the Ministry of Sustainable Infrastructures and Mobility (Ministero delle Infrastrutture e della Mobilità Sostenibili), in agreement with the Ministry of the Interior (Ministero dell'Interno) and the Ministry of Education, University and Research (Ministero dell'Istruzione, dell'Università e della Ricerca), on the "Diffusion of intelligent transport systems (ITS) in Italy" and the consequent National Action Plan on ITS of February 2014 which, in the context of priority sector 2 "Continuity ITS traffic and freight management services", provides for Priority Action 5 - Encourage the adoption of integrated and interoperable electronic ticketing for the payment of LPT services. This action is aimed at encouraging, both at a



regional and national level, the adoption of integrated electronic ticketing for the payment of local public transport services and for private mobility. The application of integrated payment systems must allow users to use the various transport services (locally, regionally and nationally) using interoperable digital supports for shared travel tickets, parking and taxis. To achieve this goal, it is necessary to use standards that allow a combined use of the same ticket for multiple functions related to urban mobility, as well as ensuring maximum integration with other payment and sales systems at a regional and national level. The standards must therefore guarantee, as previously mentioned, the possibility of using wireless and mobile technologies both for proximity and nearness, provided on mobile phones on credit/debit cards, etc.

Liguria Region thus defined, by resolution (*DGR n ° 1309/2016*), the guidelines and inputs for the development of interoperable and innovative ticketing systems, to support rail-road modal and tariff integration throughout the regional territory.

Liguria Digitale, as in-house body of the Liguria Region, will have the task of achieving the objectives of Smart Ticket: from the definition of the Basic Legal Technical Specifications to the procurement of hardware and software supplies through a European tender, to the definition of a policy system security. The primary location of the Smart Ticket Liguria system must also be hosted at the Liguria Digitale Data Center, located in Genoa.

## 2.4 Smart Ticket: towards the renewal of the Ligurian Public Transport fare system

Smart Ticket Liguria is a prelude to a complete restructuring of the fare system.

The evolution of the tariff system will be carried out in accordance to the revision project of the regional rail-road tariff system of the Liguria Region. Liguria Region, in the implementation of the Smart Ticket project, decided - in a first phase - to replicate the fare system currently in use. However, the system will have to ensure technological evolution towards new tariff solutions that can be adopted in the Liguria Region.



First, the designed system will have to satisfy a series of fundamental technological requirements.

It must first of all be highly reliable, available, resilient and safe, such as to guarantee a level of service h 24 (7 days a week) and easily monitored in its entirety. Its architecture will be modular, open and service-oriented (OSO) and the management of the system user profiles will take place on the basis of standardised mechanisms for managing system access authorizations.

All equipment must be both adequately sized, in order to ensure the minimum functions required through suitable performance and being of the most recent generation and configuration available on the market at the time of purchase. Its software platform must be designed in such a way that it can be easily maintained and updated, both for the application programs and the data used. The data and procedures will be managed in compliance with the regulations currently in force regarding the protection of privacy and according to the privacy scheme of the Smart Ticket Liguria system which will subsequently be made available to the successful bidder.

The supply is full service and must include, in addition to the equipment offered by the successful tenderer, the communication network equipment, the software necessary for the full functionality of the system (including the licences for the use of the operating systems and applications), all the material and all the services directly and indirectly necessary to make the system fully functional in accordance with the provisions set out in the tender documents, in the Basic Technical and Legal Specifications, in the offer project, in the contract and in the executive project (even if not expressly provided for and analytically specified in the tender documents and in these contract documents). All the equipment to be supplied shall comply with the sector standards and international regulations concerning public utility equipment. In particular, each device must bear the EC certification marks.

Returning to the security aspect, the Smart Ticket system must guarantee the protection of the entire computer system against the risk of misuse, falsification and loss of data. The security measures that will be adopted will have to ensure that data are stored in such a way as to minimise the risk of accidental destruction or loss. Consequently, only authorised personnel should be allowed access to system data.

Access to the operational functions of the various devices shall be granted by recognition of the individual identification code, by reading the personal card and/or by entering a password. Data must be protected against undue accessibility at several levels. Each management data shall be stored and safeguarded in the memory of the peripheral devices for a period of no less than 15 days, unless otherwise defined by the Customer for the individual devices. Finally, the Smart Ticket Liguria system shall manage the anti-passback function, in order to avoid improper use of tickets and/or anomalous validations to the detriment of companies and users.

Therefore, in terms of security, in addition to Liguria Digitale, which is responsible for establishing the project's security policy, two other bodies play a decisive role:

- The first is the Regional Service Centre (RSC), which will be responsible for applying the policy defined by Liguria Digitale on the subject, verifying its correct implementation by the operators, physically managing the Region's SAMs and checking their correct use through a supervision service (SAM Remote Management), all of which will provide the Region with the availability of the data collected on a continuous basis;
- The second, on the other hand, includes all the Corporate Control Centres (CCC), which help to apply the security policy and transmit to the Regional Service Centre information on the serial numbers of the POs

to be included in the black list of recharge and validation data, and finally promptly notify the RSC of the theft or non-functioning of one or more SAM modules.

The Smart Ticket Liguria system shall also be able to manage electronic media for tickets: personal, if there is an indication of the holder of the media itself and with a set of personal data; impersonal and nominal, always with an indication of the holder and a set of personal data (usable at different times, however, by different people); impersonal and not nominal, if there is no indication from the holder (therefore usable at different times by different people).

This system shall thus allow the construction of solutions based on all the combinations of tariffs envisaged by the tariff structure and shall be able to manage electronic media for tickets. These digital supports shall be identified by means of a unique code within the system, regardless of the operator issuing the media, and users shall be able to register the media on special web channels (even for media issued as impersonal) in order to access the relevant information.

Smart Ticket Liguria shall make it possible to create: combined and integrated fares between different transport operators, also by combining portions of a route with different types of fares (e.g. kilometre-based fares integrated with zone-based fares on different operators or first class fares integrated with LPT or second class fares); combined fares (with or without discounts) or integrated between different fare systems. (e.g. kilometre-based fares integrated with zone-based fares of different operators or first class fares integrated with LPT or second class fares); combined fares (with or without discounts) or integrated between different fare systems (e.g. of different basins); commercial offers with discount policies associated with some of the identified attributes (e.g.: daily fare cap, PAY PER USE / PAY AS YOU GO). The payment of the ticket/contract can be made, without the physical writing of the contract on the support itself, through payment by contactless debit and credit card, with charge on the current account.

The tickets/contracts must be: lump sum, for prepaid preference tickets (e.g.: season tickets), also with daily, weekly or monthly fare cap function; pay-as-you-go, for prepaid non-preference tickets (e.g.: one-way trips), with identification of the validity or without identification of the specific validity, with dynamic management of the ticket by the user; pay-as-you-go, for post-paid non-preference tickets and periodic debit on Credit Card/Bank Account (e.g.: one-way trips), without identification of the specific validity, with dynamic management of the ticket by the user. (e.g. one-way trips), without identifying the specific validity, with dynamic management of the ticket by the user; dynamic management of the ticket by the user (scaled Transport Credit/value card, model similar to that of prepaid telephone credit).

In the context of the Smart Ticket Liguria system, multiple types of tickets on electronic media will be used, e.g. Mifare UL contactless Smart Cards, tickets with 2D BarCode also on paper, or those on smartphones in HCE host card emulation mode and contactless credit/debit cards with EMV technology.

During the transition phase, the current paper tickets will be managed alongside the old mechanical ticket machines that are being replaced using QR code technology or so-called COP (chip on paper) tickets.

Lastly, validation will take place either on buses, i.e., at the moment of boarding (check-in) and possibly also at the moment of disembarkation (check-out) of each individual means of transport used to make the trip, or at the

entrance to railway stations, underground stations, lifts and funiculars, in the same way during the check-in phase as during explicit (where applicable) or implicit (i.e., calculated ex post) check-out.

## 2.5 Logical functional architecture of Smart Ticket Liguria

The new electronic ticketing system of Liguria Region pursues the following aims:

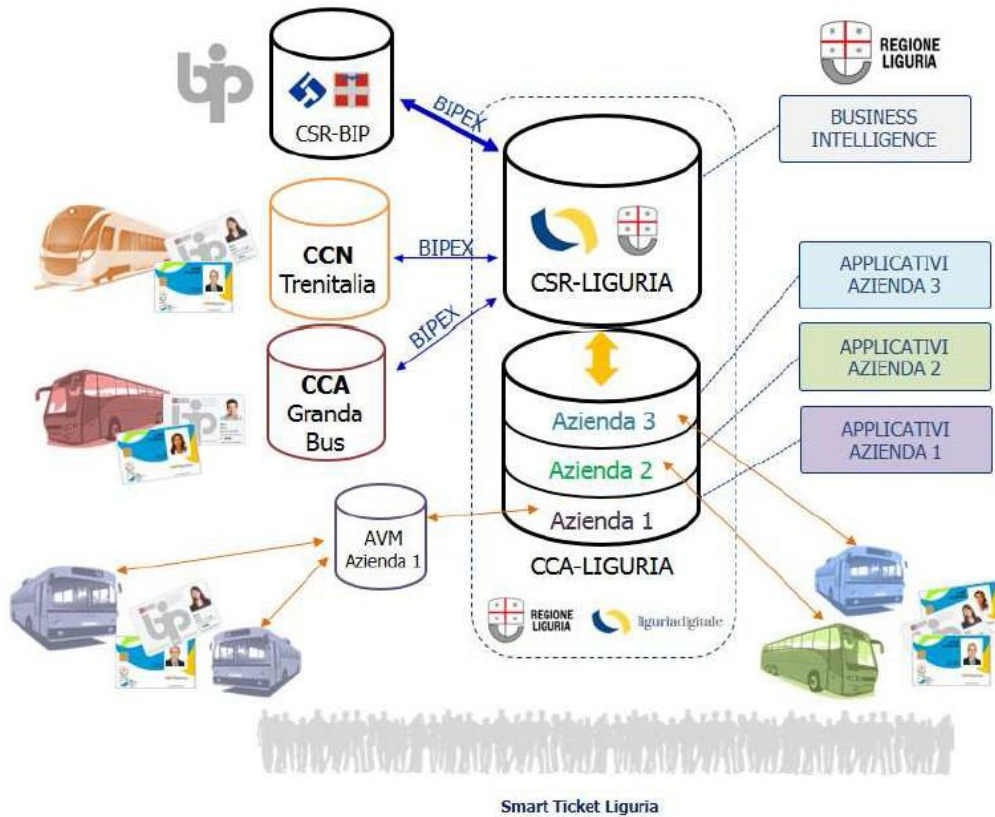
- The supplier shall act under a full-service regime, so that the operation of the installed system as well as corrective and evolutionary maintenance can be guaranteed and ensure against system obsolescence. The system must be able to evolve with new market standards and products without being bound by architectures linked to proprietary software specifications of the applications present on the sales and recharging machines.
- Integrate value-added services and innovative channels, such as the introduction of contactless credit cards, electronic commerce circuits and mobile phones with NFC technology;
- Adopt new-generation but proven products that have already been tested and are already on the market and used in similar projects;
- Concentrate system activities in the CSR and in the installations of the regional data centre (Liguria Digitale server), relieving the LPT companies from tasks that are inappropriate to their core business;  
The data warehousing and reporting activities will be centralised and will be accessible by the subjects - companies and regulatory bodies - through appropriate profiling.

As regards the structure of Smart Ticket, on the other hand, as already mentioned above, it will foresee at regional level the presence of a single Regional Service Centre (RSC) and several Company Control Centres (CCC) of the LPT companies participating in the project.

In particular, the CSR will have the task of managing the functions necessary for the correct functioning of Smart Ticket Liguria and the role of coordinator of the regional processes related to the Liguria LPT. RSC shall also be able to guarantee the coherence and alignment of the information coming from the CCCs. CCCs shall therefore be guaranteed operational independence, also in the event of lack of and/or partial activity by the RSC. The CCCs preside over and manage, in an integrated and organic manner and in coordination with each other, the operational project components in each individual Company and of the local public transport services and electronic ticketing systems associated with it.

The RSC, therefore, is the core of Smart Ticket Liguria, with the task of guaranteeing the operation of an electronic ticketing system that is interoperable, i.e. able to technologically manage travel contracts of different operators/modes of transport, allowing the single Company to issue, sell, renew/recharge, validate and control its own and other travel contracts, resident in the same or in different PO typologies, and integrated, i.e. interoperable and able to technologically manage unique travel contracts integrated in the overall interesting Smart Ticket network.

The CCC-Liguria, on the other hand, is made up of all the CCCs of each individual LPT company, constituting the operational core of each individual company within the Smart Ticket Liguria project. It mainly performs the tasks of parameter management and activity data collection and feeds off the data transmitted in real time by the on-board equipment (e.g., vehicle location, vehicle operation, etc.), communicated by RSC-LIGURIA and directly downloaded by the on-board equipment at the end of the day.



Regione Liguria has chosen to implement the Smart Ticket Liguria system with an architecture that guarantees: the role and functions of local public bodies; data ownership; system supervision; interoperability within Regione Liguria (and with surrounding regions). This architecture is compatible with the need to achieve road-rail integration and sometimes guarantee the participation of railway operators in the regional electronic ticketing system. This architecture, de facto centralised, is also able to allow a faster and more effective centralisation of data, especially with regard to the coordination and control of the Regulatory Bodies. It also ensures a central role of public entities, through the ownership of data and systems by the Regional Administration, as well as allows the creation of a system that is easily scalable (such as to accommodate a possible new company) and allows to contain the costs associated with multiple purchases of systems, by creating a single central system.

The data collected by the RSC of Smart Ticket will be managed by Liguria Digitale so that they can be accessed in a programmed way by the offices of the Transport Sector and the IT Sector of Regione Liguria.

Liguria Digitale will design and implement this interface service exposed by the RSC. The information accessed through the Interface Service will be collected in a data warehouse system that will constitute the "regional information heritage" dedicated to public transport.

On this database, Regione Liguria - by means of applications developed and managed by Liguria Digitale - will carry out all the processing required for its own institutional and planning purposes.

During the executive design phase, Regione Liguria and Liguria Digitale will provide the specifications of the "Interface Service" defining the types of data and their format, access frequency, security criteria and connectivity. The data necessary for the creation of the "regional information assets" are related to the movement of passengers and the use of tickets.

Smart Ticket project shall be capable of managing the fare structure of both the systems existing at the time of its introduction and of that envisaged and planned for the system when fully operational, and it shall be designed so that the underlying "fare system" can be modified, by configuring appropriate parameters and reference settings, but without the need for an evolution of the software which is an integral part of the application system supplied with Smart Ticket.

The management of tariffs is carried out through the use of relevant tariff parameters which must be able to be distributed to the various levels of the system. The introduction of new tariffs or the variation of existing ones must be possible by modifying the tariff parameters stored in the CSR database. This change will generate an update of the tariffs that will have to be propagated to the peripheral terminals concerned (e.g., issuing, selling, renewal/recharge, control equipment).

The tariff policy will be determined from the system's point of view, by the application and combination of the following parameters:

- Number and mode of trips in the unit of time (e.g., number of trips for fixed or free O-D relations, on a daily, weekly, monthly basis);
- Geographical-administrative scope of validity (e.g., mileage band, O-D relationship, route, fare zone);
- Temporal scope;
- Number of persons;
- Transport modes, their combinations and reference areas (e.g., urban area, suburban and rail services);  
User profile (e.g., ordinary and preferential, by age and professional status).

# 3 TIMEFRAME, COSTS AND FUNDING SOURCES

## 3.1 Financing arrangements for the new regional electronic ticketing system

Following the Deliberation of the Regional Council no. 12 of 24.03.2015 "POR FESR Liguria 2014-2020, Objective investments in favour of growth and employment", taking into account the decision of the European Commission C(2015) 927 of 12.02.2015 which provides for the allocation of resources on intelligent transport systems for the development of actions for tariff integration and interoperable payment in the cities of Genoa, Sanremo and Imperia and following the L. R. no. 33 of 7.11.2013 and subsequent amendments and additions concerning the "Reform of the Regional and Local Public Transport System" (as amended by R.L. no. 19 of 9.08.2016) which, in art. 18, paragraph 5, Regione Liguria, starting from the year 2016, has started implementing the integrated electronic ticketing system throughout the region.

The introduction of an electronic ticketing system in Liguria is a key element in the evolution of the Ligurian LPT and in the transformation of the existing local tariff systems. The willingness of Regione Liguria to move towards this technological system is due to the advantages achieved for the Liguria Region, Local Authorities, Companies and Users, especially since the system will be interoperable with the system implemented by Trenitalia (National state-owned rail operating company) and neighbouring Regions thanks to the cooperation path undertaken with Regione Piemonte.

In this context, the Regional Council with resolution no. 1309 of 30.12.2016 approved the Electronic Ticketing project in Liguria. The funding for the new regional electronic ticketing system amounts to a total of € 22,559,910.00 including VAT. Specifically, the financing arrangements are as follows:

- 3 million euros from the resources of the POR FESR Programme earmarked for electronic ticketing;
- 8M euros from funds allocated by Law 26/2016 on the "Fund for financing the electronic ticketing system";
- Co-financing with a contribution of 1,155,991.00 euro for the 10 years following the intervention, as established by Regional Law 19/2016.

Moreover, in the framework of the approval of the funding for the Smart Ticket Project, the Memorandum of Understanding between the Liguria Region and the Regional Public Transport Companies, such as: AMT Azienda Mobilità Trasporti SpA; RT SpA; TPL Linea srl; ATC Esercizio SpA. This Memorandum of Understanding concerns the agreement between the Companies on the electronic ticketing system for the Ligurian territory, which, among other things, establishes a technical round table made up of the Liguria Region, the Local Authorities and the Companies operating public transport services. In this perspective, it is worth underlining that AMT Genova SpA, as the Company managing the local public transport in the city of Genoa and in the suburban areas, has actively participated in the regional stakeholder meetings organized in the framework of the PriMaaS Project, contributing to a significant exchange of experiences on the MaaS world at local level, also in view of the actions and main objectives of Smart Ticket in terms of integrated and intelligent electronic ticketing.





With reference to the expenditure commitment and in order to provide for the supply of an Electronic Ticketing System, a European open call for tenders was prepared for the implementation of the electronic ticketing system for the Public Transport service of the Region of Liguria. The call for tenders was published in June 2017 and, taking into account the tender procedures, the task of implementing the Smart Ticket Project was entrusted to Liguria Digitale, in house provider of Regione Liguria for IT services and Central Purchasing Body for the same services, is the Contracting Authority on behalf of Regione Liguria.

Following the completion of the tender, the acts of the open procedure called by Liguria Digitale S.p.A. for the assignment of the implementation and maintenance of the electronic ticketing system for the public transport service of Regione Liguria were challenged.

In this framework, it should be pointed out that the Regional Administrative Court for Liguria, in its ruling of 28/01/2022, ordered the Contracting Authority, Liguria Digitale, to award the tender.

Consequently, for the time being, Regione Liguria doesn't foresee any other reason to prevent the start of the Smart Ticket Project activities, with the consequent installation of all the technological devices on the Ligurian LPT fleet, as well as their testing and probably their start-up, within one year from the beginning of the activities, therefore coinciding with the 2nd phase of the PriMaaS Project.

So, relating to the provision of the Smart Ticket system, Regione Liguria can state that during the 2nd phase of the PriMaaS Project there will be:

- the final awarding of the tender, described above,
- the contract of the successful bidder,
- the executive project,
- start of works and activities until their start-up.



# 4 PLAYERS INVOLVED

The Smart Ticket Liguria Project involves above all the Liguria Region as the planning body and manager of local public transport.

The task of implementing the activities of the Project was entrusted to Liguria Digitale through a tender procedure. Liguria Digitale is the in-house provider of Regione Liguria for IT services and Central Purchasing Agency for the same services, it is the Contracting Authority on behalf of Regione Liguria. Liguria Digitale has been involved in the dissemination and experience exchange activities of the PriMaaS Project, as territorial stakeholder.

Moreover, in the framework of the approval of the financing for the Smart Ticket Project, the Memorandum of Understanding between the Liguria Region and the Regional Public Transport Companies, such as: AMT Azienda Mobilità Trasporti SpA; RT SpA; TPL Linea srl; ATC Esercizio SpA. This Memorandum of Understanding concerns the agreement between the Companies working on the electronic ticketing system for the Ligurian territory, which, among other things, establishes a technical round table made up of the Liguria Region, the Local Authorities and the Companies operating public transport services.

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# 5 SIGNATURE OF THE ACTION PLAN

Date: \_\_\_\_\_

Signature of representative: \_\_\_\_\_

Stamp of the organisation (if available)

