# Moby for all

## The best mobility and technology partner

We were born to promote a culture of sustainable mobility: our technology and integrated services make us the ideal partner for rethinking transport services based on user needs, while meeting the challenges of climate change.

# Mobyforall

**Mobyforall S.R.L., Technology and Consulting Company, is an innovative start-up providing data-driven services and solutions to transport operators (passengers/freight), companies, public administrations and citizens.**

Mobyforall solutions are proposed to stakeholders and companies also for managing employee mobility and drawing up environmental sustainability reports, thanks to the massive collection of mobility data and advanced analysis. Our services cover mobility, sustainability and safety needs, for better organised cities, more efficient transport and to change behaviour and mobility culture.

# Mission

The company is characterised by "research and development, technological and social innovation" activities.
Mobyforall was born to "encourage a cultural change towards more sustainable mobility: our integrated services make us the ideal partner for rethinking and making transport systems more efficient, starting with the needs of users and meeting the challenges of climate change".
Our mission is in line with several 'Sustainable Development Goals' (SDGs) which, in order to be met, require a mixed technological and social approach.

Targets 11 and 13 relate to sustainable mobility through the digital transition, making cities and communities smarter and greener.

The effects of a more sustainable and inclusive mobility refer to objectives 3 and 10.

Objective 4 refers to innovation in training, based on the creation of technical and emotional skills that enable awareness and behavioural change.

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| **3** Good Health and well-being | **4** Quality education |
| **7** Affordable and clean energy | **10** Reduced inequalities |
| **11** Sustainable cities and communities | **13** Climate action |

The company's activities are therefore related to the **development of innovative systems**, in particular: **Integrated sensor systems (IoT)**, with the possibility of interfacing with other systems for data collection and using multiple and different data sources both open and provided by companies (e.g. smart cards) for planning, scheduling, managing and monitoring services;
Dashboard to monitor flows, crowding, service performance and support organisational choices.
Mobile App for collecting mobility data and providing services for stakeholders.

Integration between APC, app and Passenger Information System.

Data analysis of the performance of transport systems, with advice on process re-engineering.

Data collection and mobility surveys through the use of different methods: from traditional surveys, to those carried out with innovative methods such as smartphone applications, also using mixed (qualitative-quantitative) approaches.

Development of innovative behavioural models to predict user behaviour (including cognitive aspects) and for market profiling, using data analytics, machine learning and artificial intelligence.

**These activities provide a varied portfolio of offers:**

- Research and development.

- Consulting to different stakeholders in the transport and mobility sector (passengers and freight), but also to any company interested in managing the mobility ofits employees.

- Education and training.

- Community creation and engagement, also through the establishment of Living Labs.

# Cristina Pronello, PhD, CEO



One of the leading players in the mobility sector, seen in numerous international contexts, it has chosen to devote its knowledge and experience to optimising solutions for our customers.

After years of teaching and research on the subject, Cristina has built up a company relying on her multiple experiences in the field of mobility and so-called Intelligent Transport Systems, with a great knowledge of the environmental and social impacts of transport systems, thanks also to research and surveys on mobility behaviour.

Professor at the Politecnico di Torino, at the Interuniversity Department of Regional and Urban Studies and Planning (DIST), where she coordinates the TRIS (Transport Research for Innovation and Sustainability) research group on innovative and sustainable transport. She is also a member of the inter-departmental Big Data and Data Science laboratory SmartData@PoliTO.

She was professor at the Sorbonne Universités (UTC) as chairholder of "Intelligent Transport Systems and Territorial Dynamics", and at the Université Lumière Lyon2, where she worked in the laboratory of Economie des Transports (LET), now LAET (Laboratoire d'Economie et Amenagement de Territoire).

She was a member of the Board of Ferrovie dello Stato Italiane SpA until 2021, and chaired the Agenzia della Mobilità Piemontese in the period 2016-2018. She won the TRA VISIONS 2020 award for the cross-modal section of the competition awarded to transport innovators who have carried out high-impact research funded by the EU.

She has extensive international experience in transport and has taken part in numerous research activities coordinating projects in the fields of transport planning and policy, travel behaviour, ITS, and environmental impact of transport and mobility.

# Our Team

**Our strength lies in our organisation: four departments entirely dedicated to the customer, capable of collaborating with each other in an agile and transversal manner to provide a 360° service.**
R&D, Data Analysis, Project Management and Quality Service work closely together to understand the context, analyse the data and develop solutions, based on our expertise in sustainable transport and mobility.

A project manager will support each client to ensure the achievement of the expected results and the optimisation ofits mobility performance (people and vehicles), also through the reorganisation of business activities.

# Solutions

**We are driven by the context.
Starting from real needs to design more efficient
mobility services, we optimise customer performance
and satisfy users needs.**

## Mobility

All transport systems, public and private, for higher efficiency of network and mobility, with a strong focus on environmental sustainability.

## Transit locations

Airports, stations, bus stops, streets, squares: everywhere, counting people is an essential support for the organisation of services and spaces.

## Open and enclosed spaces

All open and enclosed spaces: trade fairs, shopping centres, museums, construction sites, schools, hospitals and other places having specific requirements and safety criteria.

# Our process

Building on our long experience in the field, we provide integrated and innovative technological solutions to public and private operators with a data-driven approach.

Our aim is to analyse and make individual behaviour more sustainable by involving users through direct participation in Living Labs.

### APC
Innovative technology, maximum accuracy
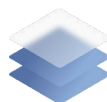
### Dashboard
Everything under control, in real time

### App for surveys
Understand the habits and preferences of your users

### App for users
Information and crowding always accessible

### Ticketing
Modular and integrated ticketing systems

### Data Analysis
Fully data-driven approach

### Process Re-engineering
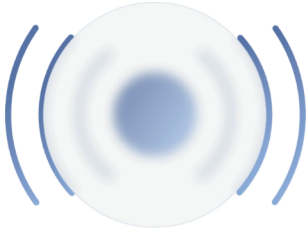Re-plan mobility relying on our experience

### Consulting
Our experience, your case

# Our strenght

## APC

A system counting passengers/users that can be installed in vehicles of a transport company or in any other open or enclosed location!

- Highly integrated from a user-company perspective.

- Completeness of analyses, predictions and support for service reorganizations.

- Low costs of purchase and maintenance.

- High field-tested accuracy.

- Functional beyond transport systems (e.g. commercial, open places).

## Dashboard

**All the possibilities of Data Analytics in real time, at a glance.** A tool to support decision-makers and those planning and programming the service. Thanks to the Mobyforall Dashboard, the mobility picture is immediately available to transport companies: lines, stops, position of vehicles on the map, occupancy rate, passengers boarding and alighting. **An essential tool to intervene in real time and reorganise services** with a data-centric and user-centric approach. Personalised, simple and intuitive.

## Mobile app

**The citizen becomes a player,** from user to promoter of a bigger change, towards **more organised cities and more efficient mobility!** Users will eventually have valuable information on the level of crowding and punctuality of public transport, so that they can:

- Planning their travels.

- Get advice on the best routes

- Get advice on the environmental impact generated.

**Administrations and managers of public and private premises** will understand the mobility dynamics and maintain direct contact with citizens, better managing mobility and reducing the risk of congestion. **Mobility Managers** will be able to collect data more easily on employees' home-to-work journeys. Lastly, discover the **surveys section:** have a direct comparison directly with your users and carry out mobility surveys has never been so easy!

# APC

**A passenger counting system that can be installed in the vehicles of a public transport company or in any other open or closed location!**

**In transport companies, having perfect control over the number of users at all times allows services to be organised according to real needs**, optimising available resources and reducing costs where possible.

The APC was developed as a system for counting passengers in vehicles; it is able to count all users boarding and alighting and to calculate the load factor between stops.

**The system allows directly sending information on load factor of the network to Transport Authorities and Regions** that subsidise the service.

**Our APC system has been designed for multiple contexts, also allowing for the counting of passengers at bus stops, stations, squares, transit places.**

The counting takes place in real time and the data are sent by Mobyforall to **different channels**: to a **Dashboard** available to transport companies, Public Administration or individual operators (e.g. shopkeepers, retailers, enterprises, etc.), as well as to the Mobyforall App or to other **Apps** (through an API), appropriately processed to achieve the results expected by the client/user in terms of monitoring and communication.

# Mobile app for users

**Safety, security and monitoring does not only concern public transport: it is increasingly important to be fully compliant with regulations and offer the best service to the users.**

Knowing the flow of people in open and closed spaces is essential for both the public administrations as well as **managers of private, commercial, leisure and tourist activities**. By monitoring the flow of people in open and enclosed spaces, it is possible to improve the safety of their users, in full compliance with the regulations in force.

Thinking especially of trade fairs, shopping centres, museums, building sites, schools, hospitals, it is obvious how important it is to avoid overcrowding, **especially, but not only, in this pandemic period**.

With the Mobyforall APC, it will be possible to monitor flows by optimising the use of the services, in accordance with the real needs of the territory.

The APC has proved to be effective both on safety, by **reducing crowding situations influencing users' behaviour "bottom-up"**, and commercially, by making it possible to **formulate strategies to enhance the value of individual areas**.

# Four key features:

## Field test accuracy

Our back-end algorithms allow high accuracy in real-life situations, as demonstrated by field tests to date.
Mobyforall APC has proven to be superior to other systems commonly used for similar purposes both in accuracy and in the type of data that can be collected.

## Lower purchase and maintenance costs

Mobyforall APCs have a **competitive price**.
In addition, they do not require periodic maintenance and do not wear out over time.
They are a **plug&play solution**, requiring only a few minutes' downtime for installation, guaranteeing great continuity of service.

## Integration

There is no one single integrated "company-user" system on the market.
Our system integrates data collection through our **APC IoT** with backend and visualise the information for the companies through multiple channels: **Dashboard** and **on-board unit displays.** For the user, instead, **Apps, vehicle displays** and **information at the bus stop** are used.

## Completeness

The system is able to provide predictive information on crowding, which is essential for the company to better plan the service and for the user to better plan trips.

In addition, **it is possible to calculate the free-riding rate** by crossing the counting data with those from validations, suggesting which lines should be more closely monitored: companies can keep costs down by only providing controllers on lines and routes with a higher probability of free-riding.

We also offer a service to support **service reorganisation** (network, stops, line monitoring, cost centre analysis). **We provide the data that companies need and how they need** it thanks to our knowledge of transport planning and the perfect combination of innovative technology and in-depth market analysis by cost centre.

Finally, the lines' load factor is processed and provided in a useful format to the Transport Authorities and Regions that request it for control and monitoring purposes of the subsidised services.
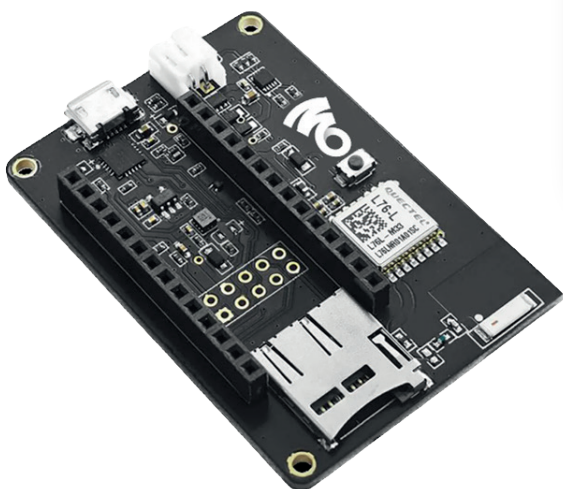
# Dashboard



**Our Dashboard is simple and intuitive: it will allow you to monitor user flows and the organisational status of existing activities in a timely manner.**
The data collected by our systems, including the APC, are processed and displayed on a dashboard to meet the needs of different transport operators, companies and administrations.
**Everything under control in real time!**
The dashboard allows you to monitor the flow of people and the performance of transport systems in order to better plan and programme services, **ensuring that KPIs are achieved and user needs are met.**

**Plus:**

Determine and supply load data

Determine the number of users and their location

Real time monitoring to provide an efficient, sustainable, and high-quality service

Reduce costs and prevent free-riding



## Companies

Transport operators and non-transport companies increasingly need to support their employees in organising their home-work travels.
Throughout Europe, mobility management policies are becoming a priority in all administrations to achieve more sustainable mobility.
Several companies have an in-house mobility manager who collects employee mobility data through ad-hoc surveys in order to implement sustainable transport plans, allowing to identify sustainable alternatives to car use.
Mobyforall makes easier the analysis of real needs and allows carrying out new mobility plans, also drawing on existing funding.

## Administrations

The dashboard allows administrations to visualise people's movements thanks to data collected with our IoT-based counting devices and to understand the mobility dynamics on the territory in order to define transport policies and carry out Sustainable Urban Mobility Plans (SUMPs).
In addition, the dashboard allows crowding monitoring and people's presence in open spaces (streets, squares, construction sites, etc.) and enclosed spaces (schools, hospitals, museums, shopping centres, leisure venues, etc.) and managing different situations to avoid crowding or optimise security services.

# The Mobile apps

## App for surveys

Our app allows for mobility surveys at **different scales** and over different **intervals of time** (one day, several days, one week, a month, several months, a year, several years), at any given time and/or location.

The app allows to collect anonymised data on a selected sample, **by tracking people movements and means of transport** (origin, destination, mode of transport route) during the selected time.

Additionally, it is possible to administer specific questions, saving the burden of face-to-face or telephone interviews. **It is a new concept**, totally opposed to the current survey system, which is very expensive and relates to small sample sizes or for a very short period.



## App for users

Transport service users have access to an app for a tailor-made service and the administrations acquire data on mobility dynamics.

**The app is free** and allows users to receive notifications and contextualised suggestions on mobility in the surroundings, to visualise the mobility footprint (in terms of space, time, cost pollution and more), and to access travel statistics. In addition, it allows a comparison of the different mobility footprints by the multimodal travel options.

**The information is personalised and is accessible to everyone** : each user has access to their own information, and everyone can view information showing the status of transport systems and the crowding of public transport and places.



**Suggestions for getting around better are also available** , such as more suitable routes regarding the concentration of pollutants, pollen, etc.

The application is the first **multimodal mobility social network** , allowing the community to participate in public discussions share ideas, difficulties, and information related to mobility issues. People can write comments, messages, upload photos and videos about public transport, stops, stations, routes, taxis, carpooling, etc.

Administrations will finally have knowledge about the mobility of their citizens, for better planning and programming of transport systems.

## Integration between APC, app, and Passenger Information System (PIS)

The Mobyforall service integrates the app and the Passenger Information System. When a user enters a station or accesses a transport system, it is engaged in a private and secure environment and receives information on the network, vehicle crowding, etc.

**This interface can enable a series ofintegrated functional scenarios, based on three main directives: safety, security, and engagement.**

# Ticketing



**Mobyforall offers modular smart ticketing systems that can be integrated into different business contexts**, starting from more traditional solutions (hardware, software, and cloud) to innovative solutions, depending on the company needs.

**Different subsystems can be provided to integrate with the desired hardware.** A first example consists of subsystems on board buses, control and sales, ticketing stations and resale network. Another one comprises a system with **complete hardware** (already present or installed) on the vehicle fleet connected via software with the necessary back end.

**The integration of the ticketing and validation system with Mobyforall's APC allow for a real-time control of the fraud rate.**

### Mobyforall smart ticketing systems

Integrates modularly even with existing solutions

Reduce costs, allowing to deal with new transport policies

Fully integrated with Mobyforall's APC and Dashboard

Designed and selected with integrated hardware and proprietary software

Range from simplified solutions to levels including blockchain

## The simplified system

For example, a simplified app-based system allows users to make a quick purchase and requires only one validator on the vehicle for printed QR codes.

## The advanced solution

The passenger has a **digital wallet** that holds all travel tickets purchased from any affiliated operator: single tickets, impersonal season tickets of different durations, points from a pay-per-use system, personal season tickets.

Tickets can be uploaded and made available immediately in the electronic wallet by using the Android and iOS mobile application or a dedicated web portal.

The payment methods can vary and are agreed with the customer; among the most common, we propose bank gateway with credit/debit card, Satispay, PayPal.

Tickets are delivered and expended on a computer system that allows to track the entire life cycle of the ticket from issue to use, and make it possible to publicly verify each passage.

The electronic wallet can also be 'converted' into a disposable paper ticket or a season ticket with an NFC interface.

With Mobyforall's ticketing, it will be possible to make purchase and validation operations more efficient and, thanks to the integration with the APC system, to **understand the needs** of both companies and passengers.

# Technical detail:
# APC system

**The APC system has three main components:**

### The IoT devices for data collection.

Mobyforall IoT devices are an effective, secure and fast way to collect data without compromising user privacy. The devices are very small in size, and easy to install requiring no maintenance.

### The backend system for processing and analysing the collected data.

The Mobyforall backend system has multiple levels of data processing and analysis, in order to derive the most useful information and the most meaningful forecasts for administrators and planners.

### The Dashboard for displaying output information.

The result of the analysis is then presented on a Dashboard customised to the needs of each customer, to provide the data they require.
If necessary, it is also possible to provide integrations to display data directly on our customers' websites or to interface our software with existing applications via an SDK.

### The Mobile app for users.

The user is informed through our app or through the company's app to which we provide our SDK service.

# From Living Labs to Living Hub

Mobyforall considers the Living Hub as an integrated system that interconnects the various territories: **each Living Lab becomes a reference point** within a network, both on a national and international scale (hub), to create a wider universe dedicated to mobility.

**The lab is part of an integrated network (Hub) whose members (administrators and private individuals) can benefit not only from the experiences of their own territory, but also from the exchange of data, practices and modus operandi of other territorial ecosystems.**

**The Living Lab model proposed by Mobyforall is the perfect place to co-create and shape the future of cities by offering citizens various services, including:**

- Collection and dissemination of mobility data.

- Meeting centre for the exchange of ideas, as well as test-bed and showcase for mobility innovations.

- Education and training services.

- Community creation and engagement activities.

- Point of contact with local associations.

- Support for local mobility surveys.

- Customer care for the installation and use of Smart City technologies (especially referring to cultural groups less accustomed to change and older age groups).

- Creation of a contact point with local administrations and companies for the development of further services that can be integrated into the App.

In this way, administrations and companies will have the opportunity to get closer to the real needs of citizens, creating a trustful and collaborative climate to **promote sustainability and facilitate a cultural change.**

# Contacts

Contact us to find out more, learn about our tailor-made services
and work together to make mobility more sustainable,
safe and efficient.