



MCE
4x4
2021

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Back to the future... of mobility

OPERATIONAL GUIDE
FOR COMPANIES AND STARTUPS

*"If you want to go fast, go alone. If you want
to go far, go together."*

African proverb

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This Guide was edited by Emil Abirascid, journalist, founder and editor of Startupbusiness.
Working Group: Andrea Agresti, Pietro Cattaneo and Emanuela Curtoni for Assolombarda;
Palmina Clemente and Angela Pinna for the Chamber of Commerce of Milan Monza
Brianza Lodi; Francesco Inguscio, Sara Farruggia and Luca Vizzielli for Nuvolab.

Introduction

BY ASSOLOMBARDA

The mobility sector is among those most involved in the process of establishing a model based on environmental, social and economic sustainability. The fundamental role of mobility is therefore, on the one hand, to be a protagonist in the ecological transition, and on the other, to offer innovative solutions to provide concrete and “adaptive” responses to the new lifestyles that the pandemic has strongly contributed to accelerate. Also for these reasons, mobility represents one of the most fertile grounds for the experimentation and implementation of open innovation processes.

However, we must be well aware that mobility is only one of the components of a broader process of radical technological renewal that will affect cities, infrastructure networks, vehicles and services and that will have a profound impact on our behaviour and our living and working habits. The new forms of mobility already make it possible to experiment with a range of possibilities integrated with applications and services that will increasingly involve the reorganisation of public space, especially in metropolitan areas, as well as the rethinking of supply chain networks and medium- and long-range connections. Not only the mobility of people, both public and private, is involved in this change, but also the mobility of goods and, in particular, last-mile urban logistics.

With MCE 4x4, born in 2016 on the initiative of Assolombarda and Chamber of Commerce of Milan Monza Brianza Lodi and with the support of the advisor Nuvolab, we have created an open innovation space in which new entrepreneurial realities capable of looking at the countless issues related to contemporary mobility in terms of innovation and corporate companies that have in their mission and core business the development of products and services related to mobility can meet, confront each other and “contaminate” each other.

Five years later, we felt the need to take stock of where mobility is going, what the current trends and future scenarios are, what risks to avoid and what opportunities to seize, after the shock of the pandemic. This guide is intended to be a sort of compass for companies and startups operating in this sector, in order to provide an organic approach to the subject that, without claiming to be exhaustive or scientific, can look at the complexity of the dynamics to direct energy towards objectives consistent with the concrete needs.

**Gioia Ghezzi, Vice President Infrastructure,
Mobility and Smart City Assolombarda**

Introduction

BY THE CHAMBER OF COMMERCE OF MILAN MONZA BRIANZA LODI

The theme of the mobility of the future, in its most technologically advanced forms and evolutions, from smart roads, to connected vehicles, self-driving cars, as well as innovations for the goods and logistics sector, is at the heart of the most recent debate on the prospects for intelligent and sustainable mobility. The City of Milan, aiming to position itself more and more among the European Smart Cities, lends itself to be a laboratory for important experiments.

As a Chamber of Commerce, at the side and at the service of businesses, we are aware and firmly convinced that the growth of the transport and infrastructure sector must go hand in hand with the improvement of the current environmental conditions and we are working to ensure that businesses, in general, increasingly take advantage of the new opportunities offered by technology to move towards more sustainable and circular business and development models.

In pursuit of this goal, we promote, as within the MCE 4x4, meetings between innovative startups and large companies with the conviction that these contaminations are very useful to the design and development of new products, services and processes with high technological value, such as ICT services that manage last mile fleets in an efficient and safe way or the birth of complementary services of

mobility on demand and/or sharing.

The contribution of the Chamber of Commerce within the mobility sector is made concrete by its partnership with the main players in the scientific, associative and institutional world, within research, training and awareness projects, as has historically been the case for the Mobility Conference and, in recent years, for MCE 4x4. Over the years, the consolidated partnership with Assolombarda has made it possible to create an event of increasing importance, within which the commitment to promoting and supporting new business initiatives on the theme of mobility has been strengthened.

We firmly believe that also this Guide can be an operational support to companies belonging to the world of mobility, and not only, to remind the main current trends and illustrate the growth prospects for the future years.

**Carlo Sangalli, President of the Chamber of
Commerce of Milan Monza Brianza Lodi**

01

MCE 4x4 Mobility Conference Exhibition: objectives and results

Since its inception in 2016, the main objective of MCE 4x4 has been to give impetus, visibility and dissemination to innovation in the mobility sector through the involvement of companies and startups, in order to provide a substantial contribution to the growth of an increasingly cutting-edge mobility market, able to propose concrete solutions to the problems of moving goods and people. The main moment, the heart of MCE 4x4, is the *Call for startup*, a *call for idea* addressed to innovative startups in the mobility sector, a moment functional to the realization of meeting opportunities aimed at the contamination of ideas and the creation of partnerships between companies and startups. The *call for idea* is structured on four thematic areas considered able to cover the areas of innovation in mobility:



- **SuperINTERACTION:** means of transport and/or technological infrastructure for the city of the future;
- **SuperCLEANTECH:** technologies for environmentally friendly mobility;
- **SuperSERVICES:** services to support people and their mobility;
- **SuperENTERPRISE:** products and services to support company logistics.

In order to effectively achieve this goal, MCE 4x4 was structured around four main moments of interaction between companies and startups:

- 1 - FUTURE STORMING:** traditional business models talk to innovative ones through an open dialogue during dedicated round tables. The world of institutions and companies operating in the field of mobility meet and discuss with the most *disruptive* realities to understand current scenarios and future *trends* in mobility.
- 2 - EXHIBITION:** in a single exhibition fair are gathered cutting-edge technologies, futuristic projects, IoT applications and innovative products from startups destined to change the future of mobility.



- 3 - BUSINESS SPEED DATE:** startups meet the corporate world in quick one-to-one meetings to get to know each other and evaluate possible areas of collaboration.
- 4 - TANDEM MEETING:** startups and companies among them can deepen their knowledge of each other in order to foster the birth of partnerships and new business opportunities.

From this format, which brings the four main areas of mobility innovation to confront each other in four different ways on the future of their sector, the concept of “**4x4**” was born; a way, moreover, to help companies move between the present and the future with an “**all-wheel drive**” between companies that are leaders of the present and those that develop technologies for the future.

Over the years, the work of MCE 4x4 in bringing together *corporate* players and startups has generally shown a propulsive effect not only on the vertical growth of small innovative companies and the scalability of their *business models*, but also on the entrepreneurial development of *corporate companies*, which have started a significant technological renewal that has cascaded along the entire supply chain, bringing innovation and growth to the country. To confirm the quality of **the 80 startups participating in MCE 4x4, 21 have raised funds** (equity or grant) **and 14 have been acquired or have completed industrial joint ventures**, confirming that startups are an excellent tool for *open innovation* for companies in the sector.

It should also be pointed out that MCE 4X4 is a unique format of its kind on the national scene, both in terms of its history and its focus on innovation in mobility, an area whose importance emerges even more strongly in the post-pandemic era and where innovation plays a crucial role in both the short and long term. For this reason, although the initiative is desired, conceived, organized and promoted by Assolombarda and the Chamber of Commerce of Milan Monza Brianza Lodi, its value is national. In fact, mobility is something that concerns everyone, that allows you to connect people and territories,

that applies both in its urban and long-range declination and that is why over the years companies and startups from all over the country have participated in MCE 4X4. Over time other formats have emerged both in Italy and abroad on these topics, but every year MCE 4x4 confirms the leadership on these issues, which has been strengthened over time thanks to the collaboration with some enablers of the mobility system such as Lombardy Cluster Of Mobility, E-Novia, Mobility-Up, Elis Open Italy, Innovability, Supernova Hub.

The success of MCE 4x4 is also visible in the numbers. The 5 editions carried out from 2016 to 2020 saw more than 1000 total participants. Specifically, there were 191 *corporate* companies that took part in the Business Speed Dates, 80 startups presented, almost 400 *one-to-one meetings (tandem meetings)* organized between companies and startups and between companies



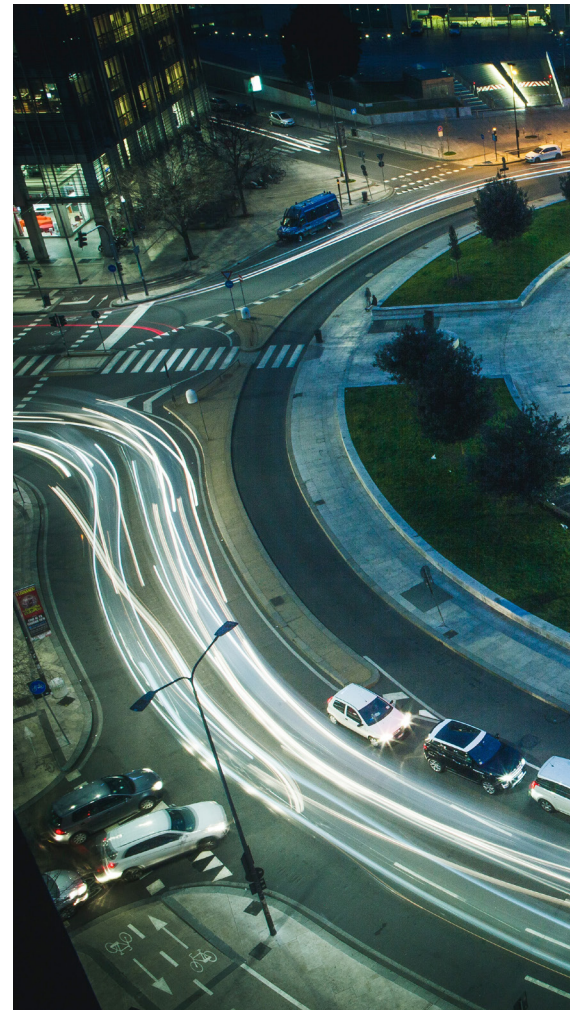
among themselves. A total of 561 startups took part in the five *calls for ideas* launched. Of these, 37% belonged to the SuperSERVICES category, 29% to the SuperINTERACTION category, 18% to the SuperENTERPRISE category and 16% to the SuperCLEANTECH category. It is worth noting that the representativeness in the SuperSERVICES category went from 42% in 2016 to 32% in 2020, while the SuperCLEANTECH category went from 8% in 2016 to 15% in 2020, reflecting the growing interest in environmental sustainability issues by startups as well.



02

Scenario

Mobility tech is the definition given to everything that concerns the phenomenon that brings together transport and technology. It is an articulated definition that concerns transport in all its forms: that of people and that of goods, that of short-range and long-range, urban and extra-urban, private and public. In particular, the technological push comes as a result of the increasingly pressing need to combine freedom of movement with its social and environmental impact. This is the main voice that drives mobility to seek new solutions, to design new scenarios and models, to leverage technological research to make these solutions and models concrete. It is easy to think of electric propulsion or autonomous driving, which not only represent an evolution of the private transport model itself, but also give rise to a real paradigm shift that takes the form of the construction of entirely new infrastructures, new ways of using them and entirely new management systems (see, for example, the concept of *range anxiety*¹, which still determines whether or not users should choose an electric vehicle). With the advent of autonomous driving, we will move from a paradigm in which many vehicles move little (each of us, if we own a car, knows that most of the time this vehicle spends it parked somewhere occupying space) to a few vehicles that move almost non-stop (robotaxis): the concept of car sharing is the embryonic demonstration of the model but, with autonomous driving, we can significantly reduce the number of vehicles circulating in a city without impacting on the comfort and freedom of movement of each person. We move from the concept of ownership to the concept of use, we move from the concept of a personal vehicle



¹ Range Anxiety: users' concern/uncertainty about the durability of EV batteries before a destination or suitable charging point is reached.



as an expression of one's economic status or passion to the concept of a personal time vehicle whose transport function prevails over any other consideration.

In this scenario, made even more complex and challenging by the **pandemic crisis** - which has had and will continue to have a long-term impact on models, strategies, technologies, innovation - both large **companies** and emerging **startups** are involved: there are those who manage the large urban and long-range communication networks, those who are working to rethink their use and their interaction with the structures that guarantee short and medium-range travel, think for example of the great return of night trains that in Europe are experiencing a new

season of growth with methods that make them a valid alternative to travel by plane. France, for example, has decided to abolish air routes where the train is a convenient alternative, the European Commission has declared 2021 as the European Year of Railways. There are those who work on the concept of sharing: vehicle sharing services of all kinds are now common in many European cities and not only, there are also services that allow you to share vehicles between private individuals, others that allow you to rent vehicles for periods of up to a month or more, others that allow you to rent vehicles of various types depending on the specific needs of the moment with a single subscription: all this is made possible by digital technology and the fact that each of us now has a terminal, typically a smartphone, with which to manage reservations, activate the service and pay for it. There are those who are working to solve the still insufficient infrastructure of refueling points for electric vehicles, those who are working to lower the costs of production and sale of these vehicles, those who are focusing on the transport of goods and *delivery* in urban areas, those who - looking even more ambitious - are building the paradigm of flying urban vehicles.

All this technological and innovative drive is now

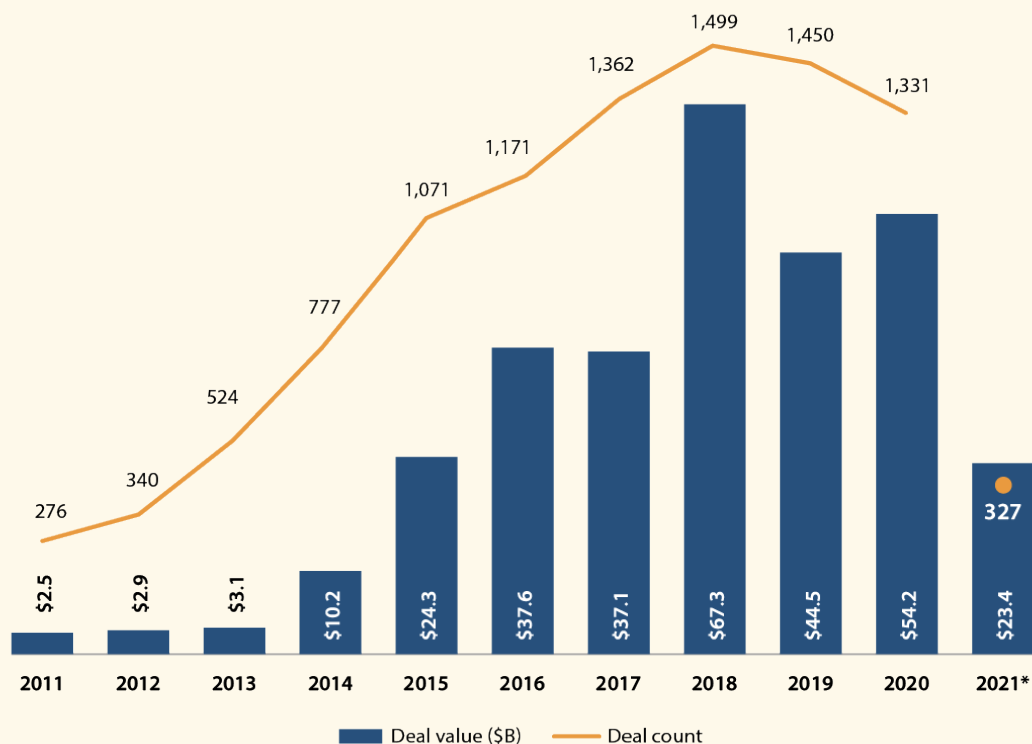


accelerated by the increasingly evident need to decisively implement the **decarbonisation** process and the need to make **cities increasingly liveable and interconnected**. This need is also reflected in the **exponential growth of government programs and availability of funds to support investments in this direction**, a need that is reflected in the increasingly decisive push towards research and technological and paradigmatic development and in the attention paid to these issues by private industries in the sector - think, for example, of car manufacturers and those who invest in venture capital.

According to data from research firm PitchBook², venture capitalists have committed **more than \$23 billion** globally **to startups developing mobility tech solutions** in the period including the first quarter of 2021. Record high.

² Pitchbook is one of the leading international organizations to produce timely analysis on issues related to business innovation. This dossier contains the key data from Pitchbook's report entitled Mobility Tech and updated to the first quarter of 2021.

FIGURE 1.
VOLUME OF VENTURE CAPITAL INVESTMENTS
IN MOBILITY TECH



Source: Pitchbook, Global Venture Capital Investment Volume in Mobility Tech, March 31, 2021

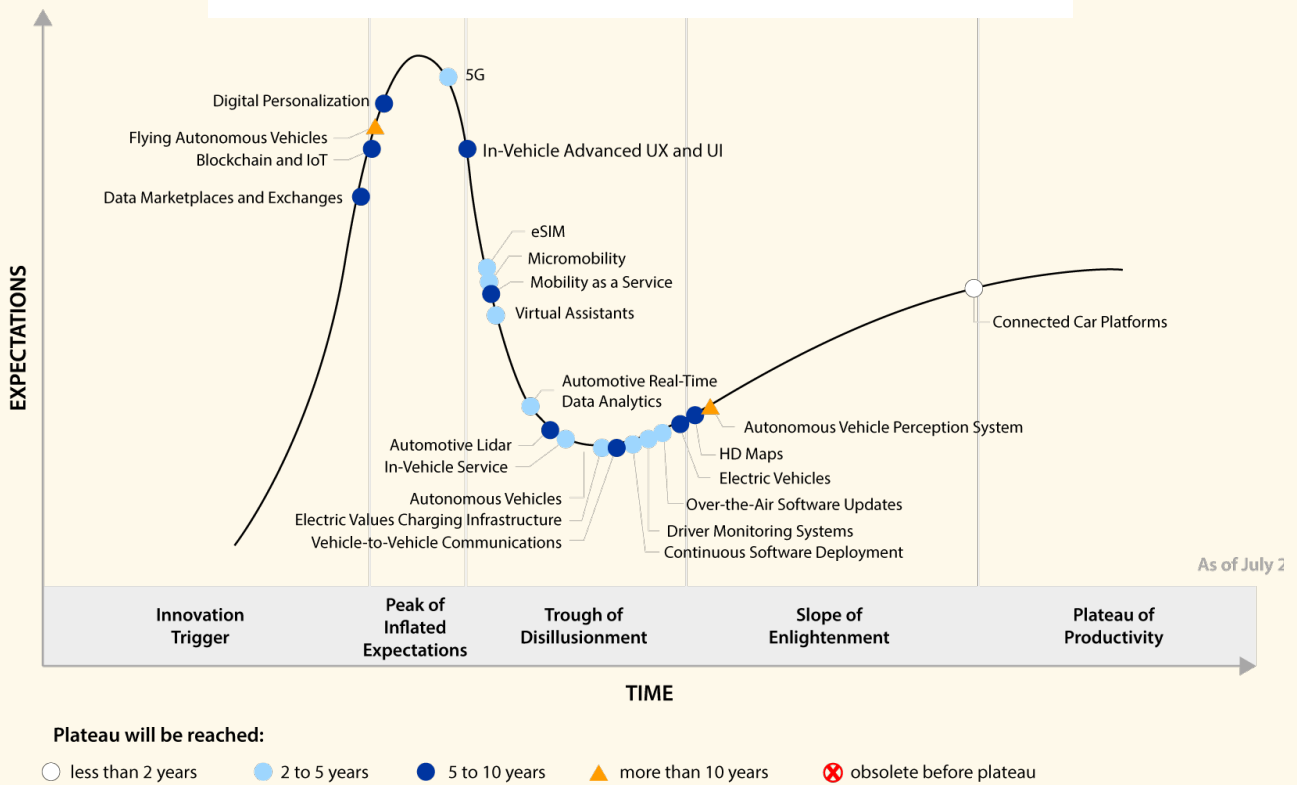


03

Technology trends

What emerges is the great variety of technologies already available today, each of which is capable of bringing about innovation, without it being possible to identify one that will prevail over the others. Each of these technologies has its own *supply chain* and applications and, perhaps, the real challenge will be to systemise and give coherence to this great range of possibilities and opportunities. In the medium term, therefore, the transition in mobility will be articulated very much in relation to the different functions of use and types of clientele for which the services are intended, taking into account the **current level of development of the various technologies that enable the world of mobility**, well summarized by the relative Gartner Hype Cycle shown here.

FIGURE 2.
LIFE CYCLE OF CONNECTED VEHICLES AND SMART MOBILITY



Source: Gartner, Connected vehicle lifecycle and smart mobility, July 2020

Net of the vision on the maturity levels of the technologies enabling mobility tech, below we have outlined some of the main **technology trends in place for the future**.

3.1

Electric and hydrogen vehicles

The design of electric vehicle platforms requires a complete rethinking of the process that prioritizes manufacturing cost and total cost of ownership. The vast majority of current EV platforms suffer from **both product and related service design processes and associated business models** that are still tied to the traditional internal combustion engine vehicle development paradigm. Industrial transition is a key element if the availability of electric vehicles is to be increasing and cost competitive. The large car manufacturers must rethink their processes and define completely new production models, they must

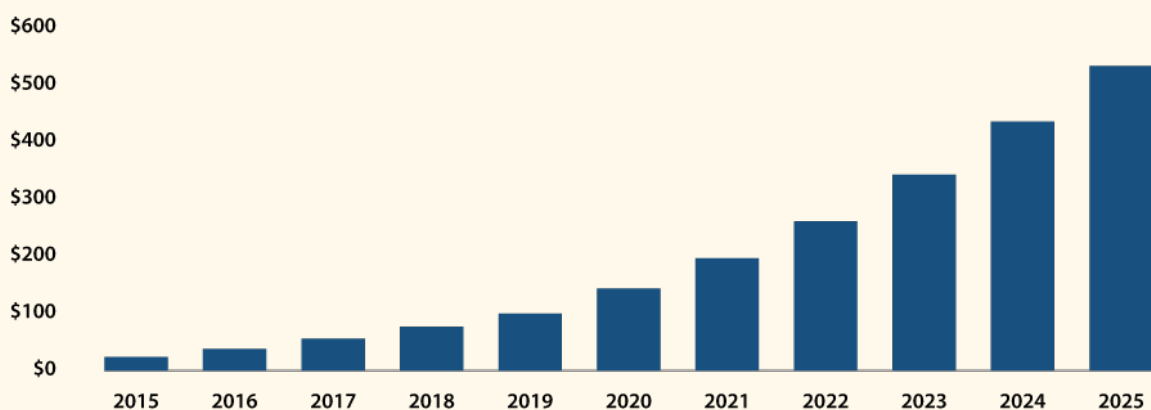
rethink their sales and customer service networks, and they must come to terms with the availability of the raw materials needed to produce batteries, electric motors and the electronics that populate new-generation vehicles - which are increasingly more like computers than cars and equipped with tools capable of providing services directly related to driving (such as assisted driving technologies), passenger comfort and interconnection to ensure ever greater safety and comfort (e.g. the integration of payment systems in the vehicle that allow interaction with recharging stations, parking lots, toll booths, service areas, etc.). Here the connections between mobility and financial services are evident through their integration within the various applications (*embedded finance*¹). The opportunity for a paradigm shift, triggered by the need for greener systems, can also

be used to make roads safer.

In the field of energy carriers with low environmental impact, electric and hybrid drive vehicles are not and will not be the only alternatives to diesel and petrol. An example and an absolute novelty within the international panorama is represented by the hydrogen supply chain, today a rapidly growing reality as a flexible vector to different types of vehicles for the mobility of goods and people and which shows concrete and interesting prospects, in particular in the field of heavy vehicles (transport by truck, ship and train). The availability of infrastructure, as well as the construction of an efficient and economically sustainable *supply chain*, represents a fundamental element in the decarbonisation of the transport system.

¹ Embedded Finance: this refers to the possibility that a non-financial service provider also offers the possibility to use financial services (e.g. a mobility retailer that integrates payment processing management or the provision of insurance)

FIGURE 3.
ELECTRIC VEHICLE MARKET SIZE IN MILLIONS OF DOLLARS



Fonte: Pitchbook, Electric vehicle market size in millions of dollars, March 31, 2021

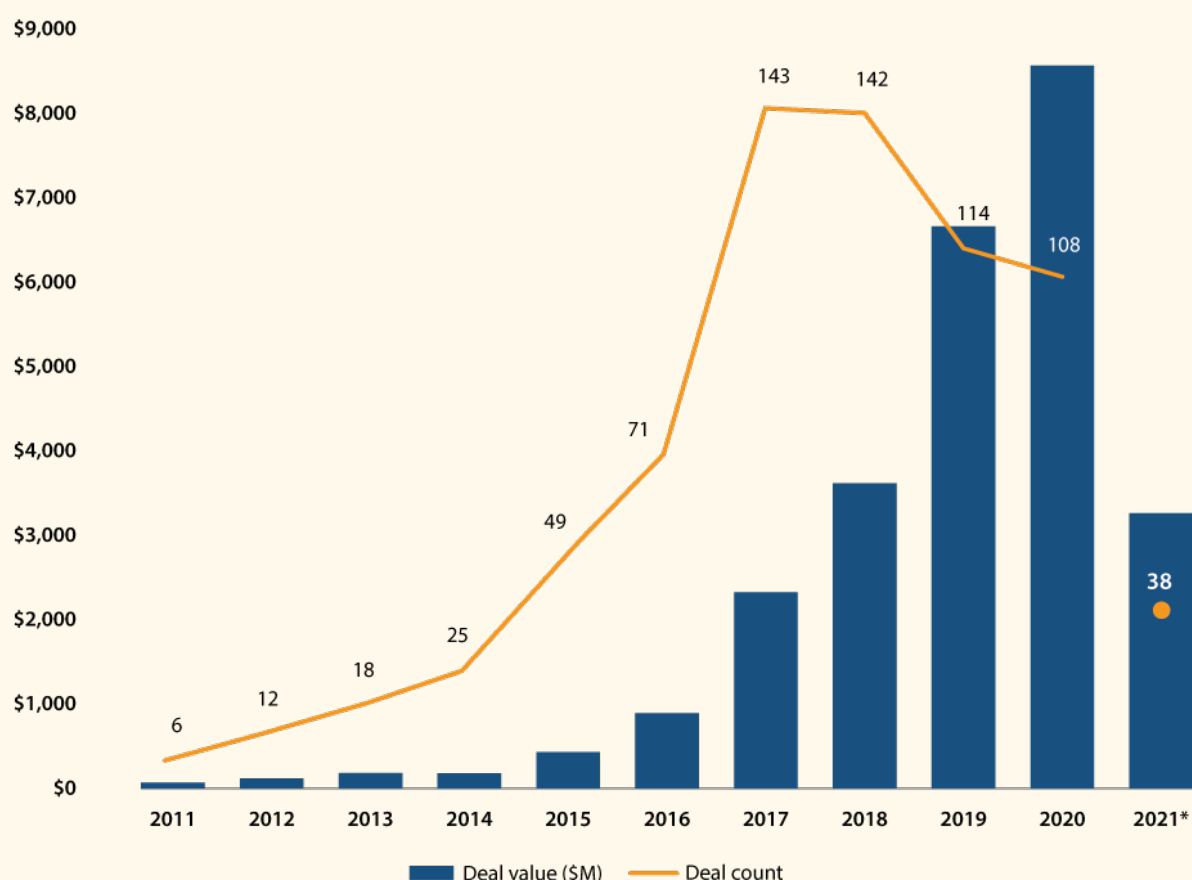
3.2

Autonomous driving

Autonomous driving systems represent the most demanding **technological** challenge today. Building robots with wheels capable of interacting flawlessly with a complex and unpredictable environment is certainly not an easy task. The progress made to date tells us that it is, however, a challenge that is certainly not impossible to win: technological evolution has made enormous strides forward and the advent of LIDAR¹ systems has given new impetus to research that was previously based only on sensors and cameras. Similarly, the development of 5G networks, which ensure the interconnection between

¹ LIDAR systems: acronym for Laser Imaging Detection and Ranging, are active remote sensing systems that allow you to determine the shape and distance of an object, or a surface, using a laser pulse.

FIGURE 4.
VOLUME OF VENTURE CAPITAL INVESTMENTS
IN AUTONOMOUS DRIVING



Source: Pitchbook, Global Venture Capital Investment Volume in Autonomous Driving, March 31, 2021

vehicles and the various infrastructure management systems, will be fundamental. It's a challenge that has not yet been won, there are still many variables to be resolved and not only technological but also **ethical**. In fact, it's fundamental to foresee how the autonomous driving systems must behave in even extreme cases where the choice is often not without consequences as, for example, demonstrated by the experiment called Moral Machine of the Massachusetts Institute of Technology (<https://www.moralmachine.net/>).

Moreover, as already stated in the scenario analysis, the advent of robotaxis thanks to autonomous driving systems will lead to a strong revision of **business models** related to the world of mobility.

3.3

Urban Air Mobility

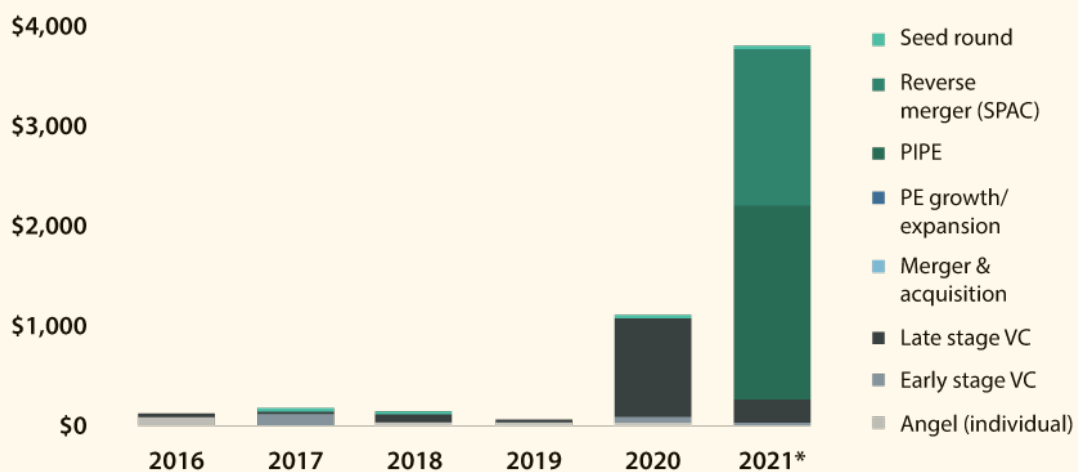
Urban air mobility vehicles based on the concept of **VTOL**, which stands for vertical take off and landing, represent a future that is certainly more distant than other technologies, but not so remote. There are several challenges to overcome before this type of service can become a reality: there are the **vehicles** whose development is quite advanced, there are the necessary **infrastructures**, the so-called vertiports, to be built in urban centers from where VTOL aircraft can take off and arrive, there are the **safety** issues that arise when there are aircraft flying over urban centers, there are the **costs** and the **way of providing the services** that must be established both at economic and regulatory level. It's envisaged that initially this type of service will cover specific routes such as linking urban centres with airports, stations and other logistical interchanges, while in some cities they will be able to link specific points that would otherwise be difficult to reach (think, for example, of links with smaller islands). In addition, there is also the option of developing autonomous driving, although it's expected that initially urban air taxi services will be operated with human-guided aircraft.

According to PitchBook, this particular market will begin to develop around 2025 when it is expected to be worth around \$1.5 billion globally and then continue to grow to a value of over \$150 billion by 2035. Also according to the research firm, in the first half of 2021, almost \$4 billion was invested in startups working in this area, which is three times the entire amount of investment found throughout 2020.

Again, this is a paradigm shift that will structurally change the way people move around cities. The development of special VTOL vehicles is fundamental because, compared to current vertical take-off vehicles, helicopters typically guarantee two aspects considered fundamental for the success of the service: a low noise level that makes them suitable for services near residential areas, and electric propulsion that makes them suitable for strategies to reduce emissions. The choice of adopting electric or hybrid propulsion allows not only to reduce noise and emissions, but also to increase safety thanks to multiple engines and redundancy of systems, and to reduce costs and thus make the service affordable

to an increasing number of potential users (it is estimated that the cost of flight per nautical mile of a helicopter is about 8 euros, while the cost of an electric VTOL aircraft should drop to about 2 euros per nautical mile).

FIGURE 5.
VOLUME OF INVESTMENT IN PASSENGER AIR TAXI (EVTOL)
IN MILLIONS OF DOLLARS



Source: Pitchbook, Global Investment Volume in Passenger Air Taxi (eVTOL) in millions of dollars,
31 March 2021

3.4

Micromobility

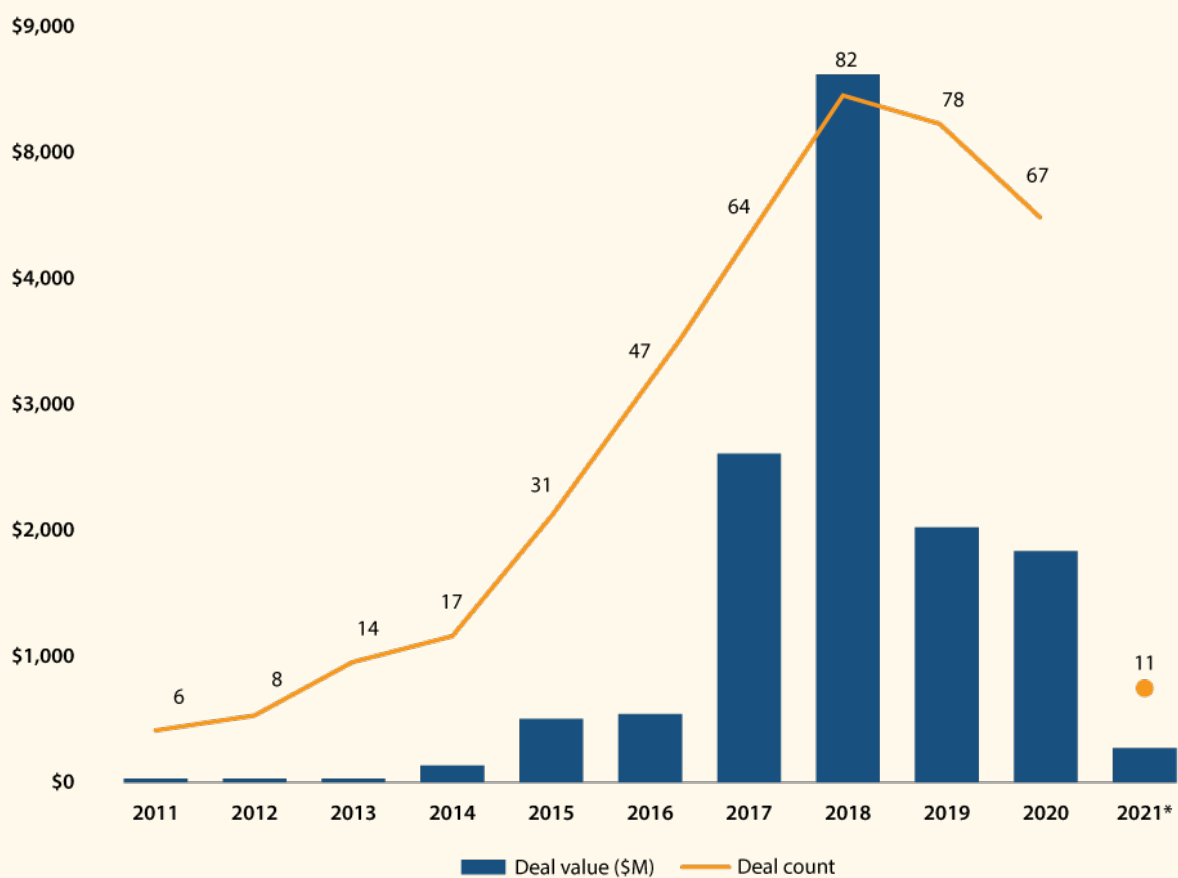
In the case of micro-mobility, i.e. mobility related to short routes and distances mainly in the city and characterized by the use of means of transport that are less heavy and bulky and potentially less polluting than traditional ones (e.g. scooters, skateboards, electric scooters, pedal-assisted bicycles), unlike what happens for autonomous driving and urban air mobility, the challenge is not so much technological as it's to define **efficient business models that are functional and compatible** with the needs of urban users, capable of progressively reducing costs and increasing comfort and flexibility.

Micro-mobility is already an established reality in many cities around the world, there has been a process that has led to the integration of urban micro-vehicle sharing services, a process that has also gone through user education both in terms of adoption of the service and in terms of respect for the shared micro-vehicles. We all remember stories of services that have failed because users treated vehicles such as bicycles or scooters badly, just as we know the safety risks that such vehicles have when moving in urban contexts and how even a single vehicle abandoned on a sidewalk

can represent an obstacle, a threat, a risk to other citizens.

It is therefore a sector that must continue to evolve, both in the development of increasingly efficient, safe and economical vehicles, and in the creation of infrastructures capable of giving micro-mobility a central role in the context of urban travel. This **evolution must take place in concert with local public administrations**, which on the one hand have the task of assigning authorizations to operate to those companies that prove to be

FIGURE 6.
VOLUME OF VENTURE CAPITAL INVESTMENTS
IN MICROMOBILITY



Source: Pitchbook, Global Venture Capital Investment Volume in Micromobility, 31 March 2021

well organized, and on the other hand of collaborating in the creation of infrastructures, such as bike paths, special parking lots, and recharging stations to make the service a true alternative to private and polluting vehicles.

What is needed, therefore, is a revival of this sector, which has experienced exponential growth both in terms of users and in terms of geographic expansion, and which is now going through a period of consolidation and search for efficiency, something that investors have also understood, whose interest has cooled towards companies in this sector; in fact, investments in micromobility have declined with a drop of about 10% between 2019 and 2020 after peaking at almost \$6 billion in 2018 (source: Pitchbook).

From a regulatory point of view, **different choices have been made by cities all over the world**: in the US, for example, some cities have banned scooters altogether while in Europe the choice has been made to limit licenses to a few operators, which is proving to be the best approach at the moment because it makes services more integrated, avoids chaos while maintaining a good level of competition and allows for coordinated management of deployment strategies. This choice has also allowed operators to increase their economies of scale, become profitable and invest more and more in both service and vehicle development.

Micromobility also plays a key role in emerging markets where private vehicle purchase is often out of reach for the majority of the population, where there will be an increasing concentration on large urban centres, where public transport networks are often neither efficient nor extensive, and where it is essential to control environmental impact. In these contexts, micro-mobility *sharing*, or *ride-hailing* services (those driven by a driver), will play a key role, bringing the value of this sector globally to over \$105 billion by 2030 (source: Pitchbook). Finally, it should be kept in mind that micro-mobility is also driving sales of light electric vehicles, typically two-wheelers, whose adoption is growing at almost ten times the rate of adoption of electric-powered cars.

3.5

Hyperloop, supersonic aircraft, space technology

There are three other items worth mentioning: hyperloop technology, the new generation of supersonic aircraft and space-tech. These are **three technological trends** that could have an impact on long-range mobility, even if their implementation is currently **to be considered in the long term**. **Hyperloop technology** has gained headlines especially because big companies are working on it but its actual

availability seems to be still far away. So far this type of technology has somewhat disappointed the optimists who hoped for its effective implementation in a short time, but it's always likely an acceleration as a result of research and prototypes that have been produced so far.

Next-generation **supersonic airplanes** represent another interesting challenge: there are now some startups working on them, and some of them have also received funding from major airlines; here the challenge is to develop aircraft that, while travelling at supersonic speeds, are able to keep operating costs and environmental impact low. In recent decades, civil aviation has made great strides in developing safer, cheaper, less polluting and less noisy aircraft, but there has been no evolution in terms of speed, apart from the experience of Concorde, which was retired because it was considered inefficient and highly polluting. The two major aircraft manufacturers, Airbus and Boeing, have focused on different priorities with respect

to speed, but there are some startups that are pursuing this goal even if, again, we will have to wait a long time before we can travel at supersonic speed on a commercial airplane. Last but not least, the *space-tech*, or better the **new space economy**: here too we are facing a paradigm shift that sees space becoming a field of development not only for public and governmental organizations but also for private ones. We are all witnesses of the exponential evolution of companies such as Space-x, Blue Origin and Virgin Galactic, but also that of startups that are developing innovative technologies to make space accessible to everyone and a territory capable of offering new business opportunities. A lot of time still has to pass from here to the possibility of using space as a route for long-range mobility, within everyone's reach, but the opportunities are there, the technologies are there, and so are the big investments.



04

Business trends

The **number of electric vehicles sold is growing exponentially** and, according to estimates by Acea (<https://www.acea.auto/fuel-pc/fuel-types-of-new-cars-battery-electric-7-5-hybrid-19-3-petrol-41-8-market-share-in-q2-2021/>), the European association of vehicle manufacturers, in the second quarter of 2021 the market saw electric vehicles gain a share of 7.5% (3.5% in the same period last year), hybrids stood at 27.7% while the remaining 64.8% is still the prerogative of vehicles with combustion engines. These are promising figures, which are even higher if we consider not only cars but also two-wheelers and commercial vehicles. The business for manufacturers is therefore clear: to encourage the transition and sell ever higher quotas of low-emission vehicles. But for the transition to take place, manufacturers alone are not enough, they also need, for example, companies that install **charging points**, which **today represent the last real remaining obstacle to the widespread adoption of vehicles with electric motors**. This is an industry, as confirmed by an analysis made by Bloomberg at the end of April 2021 (<https://www.bloomberg.com/news/articles/2021-04-30/ev-charging-industry-is-doing-everything-except-showing-a-profit>) that needs time and critical mass to be able to point to some profit. It's a bit of a cat-and-mouse game: until charging points are widespread, numerous and efficient, the propensity to buy an electric car will have a barrier, and until there are lots of electric car users filling up at charging points, there won't be enough economic margin. So **large upfront investments** are needed for the networks to be ubiquitous with long term profit prospects. This is a bit of a *trade-off* at the

moment, as we wait for more new technologies to emerge that will ensure longer battery life and cut charging times. Then there are hybrid solutions with startups that offer on-demand charging, at home for example. Electric vehicles are one of the main and most current business sectors of the new mobility, but every area, including those that are still in the development phase, requires large investments.

Investments that are both public (see the chapter on regulations and the role of PNRR) and private and, when they are private, there are investments of large companies, there are *open innovation* initiatives, there are venture capital investing in startups, all formulas that together contribute to energize the mobility-tech sector. Here, however, we want to add an element: the so-called Spac (*Special purpose acquisition company*) dedicated to mobility and in particular to invest in those who work in the field of electric vehicles (Spac Ev). Generally speaking, SPACs are companies that are set up with the aim of making an acquisition, they are listed on the Stock Exchange and therefore raise capital from both institutional and private investors and rarely communicate in advance the name of the company they are going to acquire, which occurs on average within two years. This formula makes it possible to democratise investment without triggering forms of speculation by investors with “broader shoulders”, as happens with traditional takeover bids. Furthermore, it puts investors in a position to express their approval or not of the acquisition once the target company is known, as well as guaranteeing them a return in the period between the birth of the SPAC and the conclusion of the acquisition. While SPACs are very common in the U.S., they are also growing in Europe and are active in a variety of sectors, but PitchBook found

that SPACs that focus on mobility innovation are showing above-average financial performance: in the period from Q2 2020 to Q1 2021, these financial vehicles were found to generate a 59.4% return, which has given a significant boost to private market investment in mobility tech startups. In Q1 2021, mobility-tech startups raised \$23.4 billion, up 65.5% from the same period a year earlier and 150.8% year-on-year.

This financial euphoria also has the effect of increasing valuations of startups operating in the sector, which have increased on average by around 150% in the case of *early stage* startups¹ and 170% in the case of *later stage* startups², considering the comparison between Q1 2021 and Q1 2020. This trend is predicted to continue in the coming quarters, which translates into substantial financial availability for those doing innovation in mobility. As a result, we can expect an acceleration in the development of both technologies and business models.

1 Early stage startup: at the beginning of its life, where the idea still needs to be refined

2 Later Stage: companies that are already established in the markets and that present tested and fast-growing business models

05

Social and environmental trends

The environmental and social impact factors have already been touched upon in part in the previous chapter where it was highlighted how the development of new technologies and innovation translates into new paradigmatic models. At a social level there is therefore a need to change perspective: the **shift from the purchase of a private vehicle to the use of integrated transport systems**, which guarantee a comfort similar to that of private transport but significantly reducing costs and environmental impact; the overcoming of the concept of ownership of one's own vehicle to reach the recognition that vehicles are only a "means" to achieve a purpose, i.e. moving from a starting point to a finishing point, arriving at a more widespread sensitivity towards the concept of **(shared) use of the same means** and the related implications at the level of sharing economy; the adoption of **different solutions** depending on the context, since mobility for those who live in cities with high urban density is very different from that of those who live in suburban contexts and not only for a question of infrastructure but above all for a question of potential market density; the growth of sensitivity to **environmental issues**, a fundamental driver not only from the point of view of the technological push and investment but also and above all for the acceleration in the adoption of new environmentally sustainable mobility solutions by users, is such that the choice of polluting where there are alternatives with low environmental impact



is less and less acceptable. The pandemic period, through the forced necessity to reduce to zero individual movements, with consequent reduction of road congestion and contraction of the emissions of particular polluting agents, has provided a general evidence of the negative effects of mobility on the environment and on the quality of life. Of course, the emergency condition is not sustainable because freedom of movement, and therefore the mobility that guarantees it, are fundamental needs and rights for each of us, but the *lockdown* period has made clear the extent of the impact that mobility has, especially urban mobility, and this has generated a greater sense of urgency in addressing the issue with a view to future choices for sustainability. At the same time, also as a result of the pandemic, the rules of the game have changed: we have discovered that for many, moving from home to work is no longer a necessary daily routine, for some, it is no longer a priority even to live in cities or to live in a single place throughout the year. Globally, the phenomenon of so-called “**digital nomadism**,” which already existed for some types of workers, has seen significant growth during the *lockdown* period: those who do a job that does not require physical presence in a specific place - think of software developers, writers, journalists, artists, creatives - increasingly choose to live where the quality of life is better and choose to move to multiple locations throughout the year, developing living and consumption habits that deeply revolutionize more traditional ones; these people are unlikely to buy a house, furniture, and especially unlikely to buy a vehicle for their daily commute. Finally, it's always appropriate to look at the **new generations**, as it is easier for them to adopt the new paradigms: with the smartphone they do everything, everything that revolves around the smartphone becomes possible and above all they have a greater sensitivity to issues related to environmental protection.



06

Regulatory trends

As we have seen, the regulatory aspect plays a fundamental role: the experience of micro-mobility services in cities is a clear example and, for each of the services to come, both in the short and long term, an evolution of the regulatory context will be essential, an evolution that must however be capable of providing rapid responses and not become an obstacle to technological evolution and innovation. The relationship between makers, those who make, and *shapers*, those who regulate, must be synergic and must have a broad approach both geographically and temporally. It is not the case here to analyse every single item, but we would like to take a look at the tool that, more than any other today, integrates actions, including financial ones, to support mobility and the ecological and digital transition: the **PNRR**, the National Recovery and Resilience

Plan, which is the pivot of what Italy intends to do with the financial support of the European Union and with the aim of relaunching the economy and society tried by the pandemic crisis. This is an unrepeatable opportunity that should and must be used to the best advantage and, in this best, there are naturally many items, including mobility. In particular, the PNRR dedicates to mobility the part of mission two entitled “**Renewable energy, hydrogen, network and sustainable mobility**” and mission three “**Infrastructure for sustainable mobility**”, divided in turn into two chapters entitled “**Investments in the railway network**” and “Intermodality and integrated logistics”. The entire text of the PNRR is of course public and available (<https://www.governo.it/sites/governo.it/files/PNRR.pdf>), so we will limit ourselves here to a summary of what it says about mobility.

The chapter dedicated to “Renewable energy, hydrogen, network and sustainable mobility” of mission two, which allocates almost EUR 24 billion, devotes EUR 8.58 billion to the development of sustainable local transport, EUR 230 million to experimentation with hydrogen for road transport and EUR 300 million to experimentation with hydrogen for rail transport. Of the EUR 8.58 billion, EUR 600 million is for cycling, EUR 3.6 billion for the development of rapid mass transport, EUR 740 million for the development of infrastructure for electric recharging and EUR 3.64 billion for the renewal of environmentally friendly bus and train fleets.

Here the comment to be made is certainly that of the focus on hydrogen, which represents a very valid potential alternative to electric propulsion systems. In this case, too, it is necessary to take steps forward in terms of research, but it is a field that is already in a phase close to maturity that could bring this source of energy to be effectively

available for vehicle propulsion.

In addition, in this section the PNRR dedicates another two billion euros to items related to mobility divided into: one billion euros to batteries, 450 million to hydrogen, 300 million to electric buses and 250 million euros to support startups and venture capital active in innovation related to the ecological transition, all with a view to investing in establishing international industrial and research and development leadership in the main transition sectors.

On the other hand, mission 3 “Infrastructures for sustainable mobility” has a total budget of 25.4 billion Euros, of which 24.77 billion Euros for investments on the railway network and the remaining 630 million Euros for intermodality and integrated logistics. As the numbers show, the main objective is to intervene and give impetus to the national railway system, acting in such a way as to make the network increasingly widespread and connect the maximum number of citizens through high-speed systems, thereby reducing the gap between north and south of the country. Interventions are also planned for regional rail networks, to improve both rail and road safety, to make rail links with the rest of Europe more efficient, and to collaborate in the development of the so-called ERTMS, the European system for the management, control and protection of rail transport. The funds for intermodality will support the ecological and digital development of infrastructures such as ports and airport systems with a view to developing integrated networks for the transport of goods that make increasing use of means with the lowest possible environmental impact.

07

Testimonials from companies and startups

To complete the picture of the vision of innovative mobility, this dossier has been compiled with considerations from nine *corporate* companies and thirteen startups that have participated in the editions of MCE 4X4 to date.¹

The reading of the collected testimonies leads us to define some main evidences.

First of all, companies and startups emphasize the importance of the interaction between infrastructure and services as a driver able to generate innovation. The enablers of innovation can be summarized in

¹ We would like to thank the following for their testimonials: a2a E-Mobility; ARGO Vision; ATM; Blink; Blubrake; Busforfun; DriWe; E-Gap; E-Novia; e-Shock; E-Vai; Gruppo Ferrovie dello Stato Italiane; Gruppo FNM; LeasePlan; MiMoto; Next; OpenMove; Sealence; TiAssisto24; UPS; Yape; Y.Share.

three main categories: **intelligent transport systems in which mechanics**, mechatronics and artificial intelligence come together to improve transport services; **mobility as a service** (i.e. integration between different services) and **mobility as a community** (tools to bring together and systematize demand and supply of mobility) to meet new mobility needs; the **use of renewable energy** and **diversification of energy carriers**, with a view to environmental sustainability. “The future of mobility is directed along three main lines that have emerged as a response to the important changes, structural and otherwise, that are affecting the main evolved societies: sustainability, changes dictated by the pandemic emergency and the push towards the digitalisation of processes and activities”, underlines Ferrovie dello Stato, echoed by FNM: “The post-covid context reflects significant changes in the use of mobility services, requiring the introduction of new models and new technologies, also from an energy and environmental point of view”, and Next: “The world of mobility is today experiencing a paradigm shift, an epochal reset based on sustainability that creates new spaces and opportunities for startups capable of driving this global change together with the big players in the sector”.

According to companies and startups, one **risk to be avoided in the ongoing transformations in mobility is that of a race to the bottom**, turning the transport of people and goods into a commodity with competition based solely on price. The alternative path, which leads to the success of many initiatives, leads instead to the **quality of the service**. From this point of view, with a view to optimising costs and offering flexible and personalised services, business

models are and will be increasingly oriented towards greater efficiency of operating processes and a strong drive towards technological innovation. “If moving is our primary need, the task of technology is to help us do it easily, safely and efficiently. We must create the conditions for a mobility in which the person remains at the centre”, says e-Novia, which is in line with what ATM also says: “The pandemic has upset the urban mobility system, undermining consolidated paradigms. In order to restart, it’s necessary to re-imagine the public transport business model, implementing a very precise focus on the customer experience and aiming for even greater operational efficiency. The service will have to return to being economically and financially sustainable through a more flexible and personalized offer. An objective that can be pursued by improving the efficiency of operational processes and through a strong impulse to technological innovation, already triggered by the pandemic, in order to make the use of local public transport even more attractive and effective”.

A fundamental prerequisite for quality mobility that meets the needs of users is, however, the ability to **manage data in an integrated manner** through collaboration between the various operators, both public and private, which is still in progress. “The experience of the past year has shown us how people are now looking for increasingly personalized and flexible mobility that can meet their daily needs. Responding to such a clear demand, implies introducing innovative contents in our own services offer, reasoning more and more in an integrated system perspective, based on the cardinal principle of intermodality”, says E-Vai and confirms DriWe: “This 2021 will mark a further and decisive step towards sustainable

mobility. The emergence of new models of low-emission vehicles and long-distance, together with new solutions on the market for daily travel, such as electric car sharing, are two of the factors to be taken into account in this evolutionary scenario,” and emphasizes MiMoto: “The urban mobility sector has been one of the most affected by the lockdown, and not only during the crisis: the repercussions on the habits of citizens and transport methods are and will be important even during the recovery.

The companies and startups also point out another aspect to keep in mind, which is the possible **cultural obstacles** that slow down the diffusion of some innovations, but the new generations of digital natives are more accustomed to the use of complex systems that work in an integrated way and therefore more ready to receive the benefits of light mobility, to move in an agile way, to live the city in a smart way. “The opportunities generated by the industrial partnership, as well as the corporate partnership, has kick-started what is considered a process of evolution of the mobility of the future, which will involve communities through further innovations,” BusForFun explains, citing the partnership with FNM that arose precisely as a result of participation in MCE 4X4.

The case of the so-called *range anxiety* is different. For both companies and start-ups, it represents one of the main obstacles to the development of electric mobility, connected to the need to better equip the territory with recharging stations and the need for the State to define certain and effective programming and rules. However, even in this case, the attention paid to environmental sustainability issues by citizens, businesses and public institutions, together with the availability of

new vehicle models, the improved performance of batteries and recharging systems and investments in recharging infrastructures by the companies providing the services, are contributing to the growth of electric mobility. Without forgetting the growing role of hydrogen as an energy vector, also driven by the various experiments underway. For example, says LeasePlan: “The latest results of LeasePlan’s EV Readiness Index 2021, show that Europe is more ready than ever for the electric revolution, but Italy remains behind, improving slightly in the ranking, from 17th to 15th position. In 2020, almost 750 thousand electric cars were registered in Europe, rising from 360,164 units in 2019 to 745,684 last year, a growth of 107%. In Italy there were 32 thousand consumers who chose a battery car, three times more than the previous year (+204%) when 10,685 were registered.” For a2a it is important to bear in mind that: “For some time now, the mobility and energy sectors have been undergoing a transformation that is changing the way they are accessed and used, according to a trend that, predictably, will continue in the years to come. A silent revolution, which is part of this panorama of change, is the shift towards an increasingly green and sustainable mobility, in compliance with the European policy aimed at decarbonisation and the increasingly restrictive regulations on the circulation of polluting vehicles”. All this also applies to logistics: “On the eve of post-Covid reconstruction and in view of this year’s Cop26 appointment, logistics operators must put sustainability at the forefront of all growth strategies”, emphasizes Ups. “The automotive world has moved towards a process of electrification. The gradual spread of electric mobility has led many operators in the sector to update, so they can approach these cars with more ease. In these years we have been able to

collaborate with important car manufacturers who have further confirmed the direction of travel of the electric mobility sector,” adds E-Gap.

The aspect of **experimentation** is fundamental and one of the most successful strategies is that of testing different solutions, collecting data and evaluating the best alternatives in terms of both environmental and business sustainability.

Startups, in particular, emphasize the importance of the **efficient and effective collection of feedback from the market** in order to evaluate the degree of feasibility of their idea, the ability to **combine research and development with effective marketing strategies**, and the possibility of **collaborating with and gaining the trust of corporate companies**. The opportunities generated by industrial partnerships have, in many cases, triggered a process of evolution of the startups and subsequent processes of entry into the share capital, with the consequent possibility of growth and expansion into international markets. This is the case of Blink, for example, which states: “In the world of e-commerce, giants like Amazon are setting the bar higher and higher. The challenge has shifted from having a quality product to offering a quality service and this is closely linked to delivery and return conditions. The good news is that there is ample room for growth, in fact the penetration of product e-commerce in Italy is only about 10%” and OpenMove: “The big challenge that we are engaged in since last year is a process of internationalization more structured, with a network of country managers to preside over the markets for us more interesting in perspective, or USA, UK, Russia, Middle East and Balkans. Companies that develop software, which bring an

intrinsic scalability as a dowry, must necessarily aspire to the global market”.

Access to startup accelerators is also a driver of development for startups as they enable them not only to activate initial investments, but also facilitate the attention of other international investors and, consequently, fuel the expansion of their business. Internationalization represents in fact the main challenge for startups to consolidate their scalability processes, as it happens for example for Y.Share that already works with a2a: “Also Amsa (a2a Group) has digitized its fleet of professional vehicles thanks to Y.Share in order to better manage the street cleaning service in the city of Milan, with a view to constant maintenance and reduction of fuel costs”, and Yape that underlines: “The acceleration process that in recent years has involved the delivery sector travels along the same line of development of e-commerce. The crucial role that the latter has played, especially in the last year, has highlighted the multiple benefits deriving from the use of online channels, with a consequent surge in the adoption curve by companies and citizens all over the world”. E-Shock and Bluebrake also underline how we are facing a paradigm shift: “Mechatronic solutions for autonomous driving control, smart sensors and robotic driving platforms are radically transforming mobility. The benefits for society, the economy and the planet range from a reduction in the cost of transport per kilometre to a reduction in traffic flows and land allocated to vehicular use, from a reduction in accidents to the gradual conversion of 50% of commuting hours into valuable time,” says the former. “The e-bike market is exploding and is in great ferment: today, innovation in the world of two-wheelers is concentrated precisely in this segment and

forecasts say that growth will not stop. In 2020, three and a half million e-bikes were sold in Europe, in 2030 there will be seventeen million," adds the latter.

An aspect that should not be overlooked is the **attraction of talent**. Having people who are enthusiastic, capable of bringing in new ideas but also persevering, determined and not afraid of obstacles are fundamental qualities.

Finally, they all share the fact that if on the one hand **COVID-19** has created significant commercial and business problems, on the other hand it has definitely **accelerated the digital transformation** of the Italian industrial fabric, facilitating the adoption of artificial intelligence in a faster and more transversal way: mobility in particular, which is no exception in this evolution, in the coming years will be full of new challenges and opportunities. An opinion shared by both companies and startups that have contributed to this dossier such as, in addition to those mentioned so far, also Tiassisto24 that underlines how: "The world of mobility is one of the most impressive markets in terms of value and numbers that is facing great changes, from electrification to new ownership models. The primary operators will increasingly be looking for smart solutions to integrate in order to innovate their offer but with a focus on time to market"; Sealence which aims to "become the reference point for the sustainable transition of mobility on water, and to lead the process of decarbonisation of the marine sector", and Argo Vision which in September 2020 was acquired by an industrial group thus becoming a further example of how collaboration between companies and startups is fundamental to accelerate growth and innovation and therefore

how events such as MCE 4X4 which encourage such collaboration, are important for the entire ecosystem.



08

A compass for the mobility of the future

From the analysis of the present scenario, from the vision of future trends and evolutions and from the testimonies collected from both large companies and innovative startups, we can put forward a **decatalogue** that provides useful ideas for all the players operating in the sector, whether startups, large companies, institutional players, investors or end users, in order to actively manage the evolution of the sector, anticipating the rapid changes underway to transform them into opportunities.

1. Environmental sustainability as a *driver* for innovation. Environmental sustainability is an essential element in the evolution of the sector and is at the basis of the changes that are affecting our societies; in this scenario mobility, both in terms of products and of networks and services, represents one of the sectors most called upon to provide rapid and concrete responses on this issue.

2. *Mobility as a service, mobility as community and integrated financial services* . If, on the one hand, the concept of use rather than possession is consolidating in mobility, also due to changes in the lifestyles of the new generations, on the other hand there is a lot of room to work on with regard to the integration of services (*mobility as a service and mobility as community*), where the ability to incorporate and integrate financial services will play a fundamental role.

3. New vehicles and new infrastructure networks. Innovation in mobility is concerning not only the availability of new services, but also new vehicles that are increasingly performing in terms of emissions, safety, and the ability to interact and connect with the driver and the surrounding environment, and in which a fundamental role is played by infrastructure networks.

4. From micro-mobility to the new frontiers of autonomous and superfast vehicles. If innovation in micro-mobility seems to have stabilized, the new frontiers - still partly unexplored - on which future challenges seem to focus concern urban air transport, superfast planes and trains, and autonomous driving.

5. Experiments with low environmental impact fuels and dedicated infrastructures. Electric mobility is now an irreversible process on which the greatest attention and investments, both public and private, are being focused, but interesting experiments are also being carried out on the use of hydrogen as a traction system for trains, planes, ships and heavy vehicles. In both cases, the infrastructure represents a fundamental element to be further developed to support the growth of these systems.

6. Dialogue between business and public administrations. Dialogue and collaboration between businesses and local public administrations is a key aspect in ensuring the efficiency and effectiveness of new urban transport systems and services, as both urban design and planning play a key role in their development.

7. Innovative regulations to support innovative mobility. The involvement of companies by legislative bodies is a fundamental step to intercept the technological changes taking place and to allow a rapid and shared adaptation of the regulatory framework that can accompany the growth of new mobility systems and services.

8. Collaborations and partnerships between companies and startups. The need to provide last-mile services that are increasingly capillary, customizable and flexible - also to meet the new demands of e-commerce and remote working - combined with the need to ensure the economic balance of companies, is leading to the creation of new

forms of collaboration between companies and startups and the birth of new investment companies (also in the form of Spac) dedicated to the innovative mobility sector.

9. Access to public funding. The initial availability of public resources is an essential condition for mobilizing private investment, for orienting innovation choices in mobility and for moving from experimentation to large-scale deployment. In this sense, European and national calls for proposals and partnerships between companies to access funds play a decisive role.

10. New generation mobility for new generations. As always, change in all sectors is also driven by global macro trends as well as sectoral ones, and one of the main macro trends is the demographic one. The new generations, much more open to the use of new technologies, to the culture of the sharing economy and much more sensitive to environmental issues, will be the key enablers and catalysts of the changes underway.

Conclusions and thanks

The mobility sector and the innovation perspectives offered by mobility tech are so relevant both for the impact on people and for the safeguard of the planet that they are one of the main areas of business for innovators and of disruption for the incumbents of the sector.

It is no coincidence that one of the leading contemporary entrepreneurs and innovators, **Elon Musk**, after his entrepreneurial beginnings and related “exits” (Zip2, software sector, sold to Compaq in 1999 and Paypal, fintech sector, sold to eBay in 2002), has focused in the last 20 years mainly in innovating the world of mobility with his initiatives: **SpaceX** (startup in space-tech, founded in 2002), **Tesla** (startup in electric mobility, founded in 2003), **Hyperloop** (reality inspired by Musk in 2013), **The Boring Company** (startup in underground transport infrastructure, founded in 2016).

This Guide has collected data and testimonials that confirm that Italy is also full of local Elon Musks who are doing their best to seize the opportunities given by the evolution of the mobility sector, both as startup *entrepreneurs* in innovative startups and as *intrapreneur* managers in large corporate companies that are innovating their sector. Compared to other countries, however, the limited size of individual companies, the reduced liquidity available to invest in the most innovative projects and a captive market demographically more limited than that of other countries makes it mandatory for startups and corporations to collaborate in order to co-innovate and remain competitive in the global mobility tech market.

In these first 5 years of MCE 4x4 the testimonies collected during the events and the examples of open innovation occurred between one

edition and another of the Mobility Conference Exhibition trace a clear path for the future of this sector that you can find summarized in this Guide.

We cannot end this Guide without thanking those who believed in MCE 4x4 from the very beginning, in particular Stefano Venturi, past Vice President of Assolombarda and current President and CEO of HPE Italia, and Alvise Biffi, member of the Board of the Chamber of Commerce of Milan Monza Brianza Lodi and Director of InnovUp. A special thanks also goes to Francesco Inguscio, Founder and CEO of Rainmakers, who has contributed in a decisive way to the realization of the MCE 4x4 format.

Finally, we would like to thank all the corporate companies, startups, ecosystem partners and media partners who have made a fundamental contribution to the success of the initiative over the years.

ATTACHMENTS

The 80 startups of MCE 4x4

Startup Name: Bircle

Website: www.bircle.co

Founder: Valeria Murru

Year of participation: 2016

Category: SuperSharing

Short description of the project: Bircle is a mobile and web application through which the motor disabled, or their companion, can buy, create, sell and share tourist guides specific to their needs.

Startup Name: Byxee

Website: www.byxee.com

Founder: Riccardo Ricci

Year of participation: 2016

Category: SuperVehicle

Short project description: Byxee is the first active safety device for two-wheelers. It scans the road, recognizes dangers, warns the driver in advance.

Startup Name: eVeryride

Website: www.everyride.it

Founder: Lorenzo Polentes

Year of participation: 2016

Category: SuperSharing

Short project description: eVeryride is a cross-platform application for iOS, Android and Windows Mobile; it allows users to check all available ride-sharing vehicles in a city of interest and book them directly.

Startup Name: FoodPony (ex PonyZero)

Website: www.ponyzero.com

Founder: Farhad Alessandro Mohammadi

Year of participation: 2016

Category: SuperEnterprise

Short project description: Pony Zero, a startup revolutionizing the last mile delivery market, provides the fastest and most efficient urban delivery service with zero environmental impact.

Startup Name: Bolt

Website: www.boltmotion.com

Founder: Lorenzo Cella

Year of participation: 2016

Category: SuperVehicle

Short project description: Bolt is the lightest electric skateboard in existence. It's the first truly portable ride that transports us and can be carried anywhere: on the train, at home, in the classroom or in the office. It's a fantastic means of transport small, light, easy to use, with a very low power consumption.

Startup Name: Cargopooling

Website: www.cargopooling.com

Founder: Andrea Zaza

Year of participation: 2016

Category: SuperEnterprise

Short description of the project: Connects in a simple, fast and secure way those who search and those who offer shipments, removals and transport of any kind and off dedicated channels for the resale of transport services dedicated to niche product categories.

Startup Name: EvWay (formerly Route220)

Website: www.evway.net

Founder: Franco Barbieri

Year of participation: 2016

Category: SuperEnergy

Brief description of the project: Digital technology platform integrated with charging systems for electric vehicles that enables innovative business models.

Startup Name: GoodBuyAuto

Website: www.goodbuyauto.it

Founder: Carlo Salizzoni

Year of participation: 2016

Category: SuperSharing

Brief description of the project: GoodBuyAuto is the first peer-to-peer website in Italy that revolutionizes the buying and selling of used cars between individuals, transforming the process of selling and buying into a simple, safe and satisfying experience.

Startup Name: Green Spider
Website: www.greenspider.biz
Founder: Alessandro Cantore
Year of participation: 2016
Category: SuperVehicle
Short project description: Software suite for mobility: transport, logistics and fleet management.

Startup Name: MiMoto
Website: www.mimoto.it
Founder: Gianluca Iorio
Year of participation: 2016
Category: SuperSharing
Short project description: MiMoto is a totally sustainable electric scooter sharing service. Practical keyless scooters available 24 hours a day.

Startup Name: RiparAutOnline
Website: www.riparautonline.com
Founder: Aurelian Vacariuc
Year of participation: 2016
Category: SuperSharing
Short project description: Marketplace for the sale, purchase and installation of spare parts for vehicles.

Startup Name: Zehus
Website: www.zehus.it
Founder: Paolo Lisanti
Year of participation: 2016
Category: SuperEnergy
Short project description: Zehus has developed and markets the All In One system: it integrates batteries, motor, electronics and sensors in the rear wheel hub. This allows adaptability to any type of frame.

Startup Name: Mapadore
Website: www.mapadore.com/it/
Founder: Fabrizio Bosio
Year of participation: 2016
Category: SuperEnterprise
Short description of the project: Mapadore is a SaaS platform for Geo-Optimization: it transforms sales and technical assistance processes into industrial processes, in which the sales and technical assistance forces plan more visits to customers and interventions minimizing the kilometers traveled, and the management is able to monitor in real time all the KPIs.

Startup Name: OpenMove
Website: www.openmove.com
Founder: Lorenzo Modena
Year of participation: 2016
Category: SuperEnterprise
Short project description: OpenMove is a complete ticketing solution on smartphones in step with the times, with state-of-the-art technologies and in line with the technological confidence of digital users in Smart Cities.

Startup Name: Underground Power
Website: www.upgen.it
Founder: Andrea Pirisi
Year of participation: 2016
Category: SuperEnergy
Short project description: UNDERGROUND POWER (UP) is LYBRA's innovative home startup: an energy-harvesting device that absorbs the speed of vehicles to power a standard photovoltaic inverter, transforming roads into a source of energy and profit.

Startup Name: Zemove

Website: www.zemove.it

Founder: Giorgio Mele

Year of participation: 2016

Category: SuperEnergy

Short description of the project: ZEMOVE is the acronym for Zero Emissions Movement: an electric car sharing service that becomes a real social phenomenon thanks to gamification useful to instil greater awareness in urban mobility.

Startup Name: Fleetmatica

Website: www.fleetmatica.com

Founder: Michele Patella

Year of participation: 2017

Category: SuperEnterprise

Short description of the project: Fleetmatica supports companies and public administrations in understanding if their mobility needs are in line with the introduction of purely electrically powered vehicles.

Startup Name: Atooma

Website: www.atooma.com

Founder: Fabrizio Cialdea

Year of participation: 2017

Category: SuperInteraction

Short project description: Atooma has developed Resonance AI, a software platform designed to leverage the Internet of Things (IoT) and artificial intelligence to create contextual predictions and reactions based on the user's life, through real-time analysis of data from different devices.

Startup Name: Bermat

Website: www.bermat.it

Founder: Matteo Bertezzolo

Year of participation: 2017

Category: SuperInteraction

Short description of the project: He created the E.D.P. platform characterized by an innovative modular and adjustable chassis for sports cars (the TelaioMR), configurable through a special web configurator (the Car Creator), whose purpose is to allow the customer to buy a sports car customized in every aspect.

Startup Name: Bright Side Of Life

Website: www.solopattino.it

Founder: Giuseppe Gioda

Year of participation: 2017

Category: SuperInteraction

Short project description: Produces and markets an electric single-wheel personal transporter. Practical, safe, fun is perfect for urban travel and 100% ecological. It is the solopad.

Startup Name: Drive

Website: www.driveweb.eu

Founder: Joelle Galles

Year of participation: 2017

Category: SuperEnergy

Short project description: Drive is the first complete integrated platform for the management of electric mobility: from energy production to control software, from electric columns to the retrofit of traditional fuel vehicles.

Startup Name: Ecomission

Website: www.ecomission.it

Founder: Valter Pilloni

Year of participation: 2017

Category: SuperEnergy

Short description of the project: Introduced Ecojumbo, electric scooter made in Italy.

Startup Name: EnStack (ex Spi Consulting)

Website: www.enstack.tech

Founder: Emanuele Castioni

Year of participation: 2017

Category: SuperEnergy

Short description of the project: Spi Consulting has developed a technology that allows the transformation of renewable energy into hydrogen gas without the use of additional compressors. The idea of Spi Consulting is to equip electric cars with a kit that allows them to have a greater autonomy and to have very short charging times.

Startup Name: Smart Domotics

Website: www.smartdomotics.it

Founder: Raffaele Borgini

Year of participation: 2017

Category: SuperEnergy

Short description of the project: Electronic devices made in Italy for energy efficiency 4.0: smart metering, cloud big data for analysis, automation and rules for energy saving. Installable in every building in a simple and non-invasive way, manageable locally and remotely with app and site.

Startup Name: GoGoBus

Website: www.gogobus.it

Founder: Alessandro Zocca

Year of participation: 2017

Category: SuperSharing

Short description of the project: Mobility company that deals with bus-sharing in order to create trips for events and special destinations by sharing the bus among people who do not know each other.

Startup Name: YShare

Website: www.yshare.it

Founder: Stefano Bottelli

Year of participation: 2017

Category: SuperSharing

Short description of the project: Plug&Play solution that revolutionizes the world of car sharing, allowing the sharing of the vehicle with a simple method, accessible to all and efficient.

Startup Name: MobyPlanner

Website: www.mobyplanner.com

Founder: Marco Cadario

Year of participation: 2017

Category: SuperEnterprise

Brief description of the project: MobyPlanner Platform is a geospatial agenda that allows to aggregate appointments, locate them and assign them to itinerant staff according to predetermined planning rules, such as priorities of intervention, skills of the resource in the field and other KPIs.

Startup Name: ParkAgent

Website: www.parkagent.it

Founder: Federico Barbin

Year of participation: 2017

Category: SuperSharing

Short project description: ParkAgent is a mobility services software a professional booking system for Travel Agencies and aimed at the corporate and private world. The system is innovative in terms of both the booking software and the booking and usage system.

Startup Name: Quisque

Website: www.quisque.io

Founder: Alex Pallotti

Year of participation: 2017

Category: SuperInteraction

Short description of the project: Innovative SDK platform for digital management of accesses in car parks, real-time availability of parking spaces, certified rates, cashless payment and slot booking.

Startup Name: Sky4Apps

Website: www.sky4apps.com

Founder: Luca Brizzi

Year of participation: 2017

Category: SuperEnterprise

Short description of the project: Analysis of the viability through the use of drones and algorithms.

Startup Name: SpeedyPlan

Website: www.speedyplan.com

Founder: Dario Zamboni

Year of participation: 2017

Category: SuperEnterprise

Short project description: SpeedyPlan is a cloud and collaborative solution for the optimization and management of freight transport and logistics, providing significant savings both in terms of route optimization and in terms of dedicated resources.

Startup Name: Zego

Website: www.zegoapp.com

Founder: Davide Ghezzi

Year of participation: 2017

Category: SuperSharing

Short project description: Zego is an instant ride sharing service that connects individuals driving their own cars in real time with people who need a ride within a metropolitan area.

Startup Name: 2045 Tech By Floome

Website: www.floome.com

Founder: Fabio Penzo

Year of participation: 2018

Category: SuperServices

Short project description: Develop solutions for the consumer and professional markets for real-time monitoring of blood alcohol content. They provide useful analysis, data and information that enables fleet and insurance managers to control and reduce costs related to drunk driving.

Startup Name: Blubrake

Website: www.blubrake.it

Founder: Fabio Tedeschini

Year of participation: 2018

Category: SuperInteraction

Short project description: Blubrake has developed the world's first ABS for electric bikes that can be integrated inside the frame and is able to drastically increase safety on all types of e-bikes, from city bikes to mountain bikes.

Startup Name: Difly

Website: www.difly.it

Founder: Marco Pesci

Year of participation: 2018

Category: SuperInteraction

Brief description of the project: DIFLY has designed and patented in Italy ELYSIA, a convertiplane drone with a flight autonomy of 9 hours and a payload of 4 kg suitable for the transport of blood, organs and urgent medicines over long distances according to the law, thanks to the collaboration with ABZero.

Startup Name: IAT

Website: www.italutec.com

Founder: Rita D'Andreamatteo

Year of participation: 2018

Category: SuperCleantech

Short project description: "Smart mobility" products conceived with green design criteria; they transform waste and disused materials into innovative green products.

Startup Name: Argo Vision

Website: www.argo.vision

Founder: Alessandro Ferrari

Year of participation: 2018

Category: SuperInteraction

Short project description: ARGO Vision has developed a smart parking technology in IoT logic that allows to monitor the occupation of parking spaces through a device with very low energy consumption.

Startup Name: BusForFun

Website: www.busforfun.com

Founder: Davide Buscato

Year of participation: 2018

Category: SuperServices

Short project description: Busforfun is the young mobility company that travels in a sustainable, safe and low-cost way through Europe.

Startup Name: Hydep
Website: www.hydep.it
Founder: Fabrizio Giamminuti
Year of participation: 2018
Category: SuperCleantech
Short description of the project: Mini hydrogen refuelling station, modular, economical and adapted to the actual needs of the market and the customer.

Startup Name: MGH Systems
Website: www.mgh-systems.com
Founder: Marco Brivio
Year of participation: 2018
Category: SuperEnterprise
Short project description: Integrated SaaS mobile IoT platform that collects data and connects machines and humans in order to optimize processes.

Startup Name: MobiiX
Website: www.mobiiX.it
Founder: Walter Roffinoli
Year of participation: 2018
Category: SuperEnterprise
Short project description: Mobile solutions and technologies to optimize and simplify every process of traceability and data collection in Industry 4.0.

Startup Name: PausaViaggio.it
Website: www.pausaviaggio.it
Founder: Giovanni Inguscio
Year of participation: 2018
Category: SuperServices
Short description of the project: Pausaviaggio.it protects airline passengers who suffer inconvenience (delays, cancellations, lost luggage, etc.) by obtaining the right compensation. All at zero cost and through a special web platform.

Startup Name: Siwego
Website: www.siwego.com
Founder: Marcello Favalli
Year of participation: 2018
Category: SuperEnterprise
Short project description: Integrated SaaS mobile IoT platform that collects data and connects machines and humans in order to optimize processes.

Startup Name: Wash Out
Website: www.washout-app.com
Founder: Christian Padovan
Year of participation: 2018
Category: SuperServices
Short project description: Wash Out is an app-bookable home car wash service. Customers create their own virtual garage so that when they need a wash, they only need to indicate the location of the parking space and their preferred time. One of the Washers, the professionals in charge of performing the service, will take care of the vehicle by hand washing it with waterless products.

Startup Name: Ne.m.e.sys.
Website: www.nemesysenergy.com
Founder: Marco Matteini
Year of participation: 2018
Category: SuperCleantech
Short project description: High-performance reversible hybrid fuel-cell with built-in hydrogen storage, also self-producible, at high recharge rate.

Startup Name: Phononic Vibes
Website: www.phononicvibes.com
Founder: Luca D'Alessandro
Year of participation: 2018
Category: SuperCleantech
Short project description: It drastically reduces mechanical vibrations and noise thanks to the use of innovative engineered modular micro-structures.

Startup Name: Smart Robots

Website: www.smartrobots.it

Founder: Roberto Rossi

Year of participation: 2018

Category: SuperEnterprise

Short project description: Smart Robots develops high-tech solutions to endow robots with advanced perceptive and cognitive capabilities with the aim of progressively transforming robotic machines into co-workers, i.e. intelligent actors able to cooperate and interact with humans.

Startup Name: Auting

Website: www.auting.it

Founder: Ludovico De Giudici

Year of participation: 2019

Category: SuperServices

Short project description: Auting is the first peer to peer car sharing service in Italy. Those who own a car that is little used (Owner) get in touch with those who are looking for one for one or more days (Driver). Through sharing, the Owner has the opportunity to reduce management costs by exploiting an otherwise unused asset.

Startup Name: Wriggle Solutions

Website: www.wrigglesolutions.com

Founder: Arash Gholamzadeh Nasrabadi

Year of participation: 2018

Category: SuperInteraction

Short project description: Wriggle Solutions S.R.L.S is an innovative startup created to develop SMART Tyre, an integrated system capable of measuring the state of wear and diagnosing possible damage to tyres. The system uses innovative sensors and real-time data analysis algorithms.

Startup Name: Diliium

Website: www.diliium.com

Founder: Donato De Leso

Year of participation: 2019

Category: SuperInteraction

Short description of the project: App that exploits A.I. and Big Data technologies to have your vehicle under control.

Startup Name: Acc

Website: www.accmobility.com

Founder: Giuseppe Maria Giovanni Giordano

Year of participation: 2019

Category: SuperCleantech

Short project description: They design and build the ZodiaC range of vehicles. Their e-bike cargo quadricycles allow the transport of loads up to 800kg and are fully customisable thanks to 2100litres of hold volume and a flat rear floor.

Startup Name: Gips Tech

Website: www.gipstech.com

Founder: Matteo Faggin

Year of participation: 2019

Category: SuperInteraction

Project Brief: Founded in 2014, GiPStech is a recognized global leader in sensor-fusion for indoor localization.

Startup Name: AirCnC

Website: www.aircnc.it

Founder: Elena Fagnani

Year of participation: 2019

Category: SuperEnterprise

Short project description: Aircnc is the first Italian B2B platform for sharing machine hours.

Startup Name: Brochesia

Website: www.brochesia.com

Founder: Christian Salvatori

Year of participation: 2019

Category: SuperEnterprise

Short project description: Brochesia develops professional software solutions, optimized to improve business efficiency through wearable devices and AR technologies.

Startup Name: Scuter

Website: www.scuter.co

Founder: Luca Ruggeri

Year of participation: 2019

Category: SuperCleantech

Short project description: Scuter realizes a scooter sharing service with free floating pay per use scheme. Basically, the model of Car2go and Enjoy but realized with an electric scooter, three wheels, designed and built specifically for sharing.

Startup Name: E-GAP

Website: www.e-gap.com

Founder: Francesco De Meo

Year of participation: 2019

Category: SuperCleantech

Short description of the project: E-GAP is the first mobile recharging service for electric vehicles, managed through an App and without the use of columns: thanks to geolocation, the position of the vehicle is provided and one of the E-GAP vans arrives for recharging.

Startup Name: Upooling

Website: www.upooling.com

Founder: Pasquale Salvatore

Year of participation: 2019

Category: SuperEnterprise

Short project description: The first mobile platform able to optimize the total cost of corporate mobility, thanks to a powerful artificial intelligence engine, the most advanced connected vehicle technology and a user experience as easy as making a phone call.

Startup Name: Go Volt

Website: www.govolt.it

Founder: Davide Foa

Year of participation: 2019

Category: SuperCleantech

Short project description: GoVolt is an innovative start-up company created to offer a scooter-sharing service with electric vehicles.

Startup Name: Wher

Website: www.w-her.com

Founder: Eleonora Gargiulo

Year of participation: 2019

Category: SuperServices

Short description of the project: Wher is an innovative startup with a social impact: through their app, female citizens can post reviews about streets and places from a purely female point of view, recommending to other women the best streets, their habits and the best times to get around.

Startup Name: Linky Innovation

Website: www.linkyinnovation.com

Founder: Paolo Pipponzi

Year of participation: 2019

Category: SuperInteraction

Short project description: Linky Innovation designs and manufactures innovative electric vehicles that fit into the last mile mobility market.

Startup Name: Movesion

Website: www.movesion.com

Founder: Claudio Petrocelli

Year of participation: 2019

Category: SuperEnterprise

Brief description of the project: The company deals with the development, production and marketing of innovative, high value technological products and services in the field of mobility of goods and people.

Startup Name: TiAssisto24

Website: www.tiassisto24.it

Founder: Michele Romagnoli

Year of participation: 2019

Category: SuperServices

Short description of the project: Tiassisto24 is a cloud-based platform of insurance, automotive and legal micro-services for motorists. It aims to make "smart" the management of all family vehicles, thanks to the latest technologies such as machine learning and Artificial Intelligence.

Startup Name: Veontime by Ectabyte

Website: www.ectabyte.com

Founder: Altin Braka

Year of participation: 2019

Category: SuperServices

Short description of the project: With the Veontime platform you can send documents and parcels using bus lines: you save time, you save money and you protect the environment.

Startup Name: WiseTown

Website: www.wise.town

Founder: Andrea Cruciani

Year of participation: 2019

Category: SuperInteraction

Short project description: WiseTown (Web Information Streams Enhancer for your Town) is an ecosystem of applications and tools to improve the quality of life of citizens in a collaborative environment.

Startup Name: 3D4Steel

Website: www.3d4steel.com

Founder: Fabrizio Mario Corsini

Year of participation: 2020

Category: SuperEnterprise

Brief description of the project: A group of companies specialising in the construction of automatic machines for the manufacturing industry for over 35 years. It is also the first Italian reality for capital and production that builds machines for metal additive manufacturing.

Startup Name: BusForFun

Website: www.busforfun.com

Founder: Davide Buscato

Year of participation: 2020

Category: SuperServices

Short project description: BusForFun (former winner in the past editions) presented an innovative corporate shuttle service designed to cope with the Covid-19 pandemic.

Startup Name: Foodlogica

Website: www.foodlogica.com

Founder: Francesca Miazzo

Year of participation: 2020

Category: SuperCleantech

Brief description of the project:

Foodlogica is the only sustainable fresh food logistics company that is a leader in B2B last-mile food, restaurant and e-commerce deliveries. By setting up all-electric operating hubs on the edge of the city, Foodlogica is able to minimize delivery times.

Startup Name: G-Move

Website: www.g-move.com

Founder: Marco Musumeci

Year of participation: 2020

Category: SuperEnterprise

Short project description: G-move optimizes the management of resources in people transport, analyzing people flows and user experience, through an open data analysis system.

Startup Name: Blink

Website: www.blinklastmile.com

Founder: Jacopo Berlusconi

Year of participation: 2020

Category: SuperEnterprise

Short project description: Blink delivers online purchases the same day they are ordered, using capacious vehicles outside the city and cargo bikes in urban areas.

Startup Name: Daze Technology

Website: www.dazetechnology.com

Founder: Lorenzo Ferrari

Year of participation: 2020

Category: SuperInteraction

Brief description of the project:

DazeTechnology has created DazePlug, the first automatic conductive charging system for electric vehicles, consisting of a ground system - the automatic charger - and an on-board system - the onboard module - installed underneath the electric vehicle.

Startup Name: Frieco

Website: www.frieco.it

Founder: Roberto Frisina

Year of participation: 2020

Category: SuperCleantech

Brief description of the project:

Frieco, a benefit company, intends to optimize the management and recycling of waste by offering a more sustainable model in economic, social and environmental terms through a new device called Ecotrix that makes it possible to reduce the volume of inorganic waste by over 85%.

Startup Name: Instant Technologies

Website: www.instanttechnologies.com

Founder: Alessandro Paolini

Year of participation: 2020

Category: SuperEnterprise

Short description of the project: Company specialized in the field of AI, owner of 96 AI and semantic algorithms and tools developed with entirely proprietary technologies.

Startup Name: i-Tes

Website: www.i-tes.eu

Founder: Michele Santovito

Year of participation: 2020

Category: SuperCleantech

Brief description of the project:

They design and manufacture innovative thermal batteries for a more efficient use of energy, in line with the ongoing energy transition and the challenging targets set for 2030.

Startup Name: MegaRide

Website: www.megaride.eu

Founder: Flavio Farroni

Year of participation: 2020

Category: SuperInteraction

Short description of the project: MegaRide

is an academic spin-off of the University of Naples Federico II. MegaRide proposes itself as a software house, testing center and reference point in the development of advanced models for real-time simulation of vehicle dynamics.

Startup Name: Sealence

Website: www.sealence.it

Founder: Sara Sabatini

Year of participation: 2020

Category: SuperCleantech

Brief description of the project:

Sealence is an innovative startup formed in 2017 with the sole aim of developing the most efficient marine propulsion ever conceived; thus DeepSpeed jets were born - now patented worldwide.

Startup Name: Volvero

Website: www.volvero.com

Founder: Marco Filippi

Year of participation: 2020

Category: SuperServices

Short project description: Volvero is a sustainable mobility app for sharing vehicles that connects owners with people who need them, saving time and money.

Startup Name: Measy

Website: www.measy.it

Founder: Diego Anastasi

Year of participation: 2020

Category: SuperInteraction

Brief description of the project:

Measy develops and manufactures advanced electric cargo bikes equipped with patented technology to actively control the inertia of the transported box, ensuring that it is not jostled around and equipped with active temperature and humidity control technology to preserve and maintain food.

Startup Name: OpenMove

Website: www.openmove.com

Founder: Lorenzo Modena

Year of participation: 2020

Category: SuperServices

Short project description: OpenMove (former winner in the past editions) has developed an ecosystem of innovative mobility solutions revisited in the face of the Covid-19 pandemic.

Startup Name: Switch

Website: www.getswitch.io

Founder: Matteo Forte

Year of participation: 2020

Category: SuperServices

Short project description: Switch is a mobile app that connects those who are driving a carsharing vehicle with those in need, so drivers and those looking for a vehicle can swap cars “on the fly” and drivers can give a ride to those looking for a way to get around.

Startup Name: Walle Mobility

Website: www.wallemobility.com

Founder: Domenico Gagliardi

Year of participation: 2020

Category: SuperInteraction

Short description of the project: Walle allows short/medium range travel in half the time, through a simple, fast and safe air shuttle service.