

2020



THE HIGHWAY OF THE FUTURE

White Paper by Walle Mobility



TABLE OF CONTENTS

Executive Summary
Context
The challenge
Our Solution
Advantages
Potential routes
Conclusion
Contacts



EXECUTIVE SUMMARY

The Walle team offers a specific perspective on the opportunities arising from the future development of urban mobility.

About us

Walle mobility is an Italian startup founded by experts coming from different backgrounds and competence areas: aerospace, technical, and management. After analyzing the current mobility context and how — based on our predictions — it will evolve within the economically developed countries, we focused on the main challenges that cities will face in the near future and on the solutions available. We developed two potential routes based on the **Urban Air Mobility (UAM)** technology. Our aim is also to raise awareness about Urban Air Mobility throughout Italy and Europe and show how it will change the future mobility.



CONTEXT

Urban traffic is a global issue and massively time-consuming for billions of people every day. The incoming and outgoing congestions around the most urbanized areas have increased exponentially in recent times. This is mainly due to the growth of the world population: according to ONU forecasts, by 2050 it will reach **9.7 billion** people and 2/3 of them will live in urban centers.



In order to transport people and goods in a more efficient way, it will be necessary to develop a new approach, looking at new technologies to find smart solutions. All around the world, innovative solutions are emerging for future transportation. Two main examples are **The Boring Company** owned by Elon Musk and the **Hyperloop** project. We have to re-think urban mobility, imagining a new organization and structure of towns and cities. According to some studies, for example, by 2050 cars will disappear from urban centers. This is the reason we have founded Walle Mobility. We aim to change radically **goods** and **people transportation** for short routes (about 50 km).

THE CHALLENGE

Congested traffic presents many challenges that we want to tackle: **high pollution, slower trips, stress, and urban decay**. According to the ISPRA — Higher Institute for Environmental Protection and Research (Informative Inventory Report 2019) 46% of NOx (nitrogen oxides) emissions are due to transportation. In Italy, according to a survey by Life PREPAIR project (a study about the Po Basin, a highly congested area), this figure reaches 50% (in particular, 54% considering the region of Lombardy — INEMAR data — and up to 70% regarding the city of Milan).

Traffic pollution is caused by gases emitted by cars not equipped with a diesel particulate filter (in reduction) and by the emissions due to brakes, wheels, and asphalt degradation.

In Milan, for example, diesel emissions reach about 21% of the total PM10, while 22% is due to wear emissions. As shown in the chart below, traffic congestions cause huge financial losses every year (Source: INRIX 2017 Traffic Scorecard).

Countries	Loss (US\$ bn)
USA	305.0
New York	33.7
Los Angeles	19.2
San Francisco	10.6
Atlanta	7.1
UK	52.0
Manila	18.6
Bangladesh	11.4
Jakarta	5.0
Dhaka	4.5



OUR SOLUTION

In our vision, traveling by air will become as easy as it is now on the ground. Walle wants to offer its mobility service using **VTOL (Vertical Take-Off and Landing)**, commonly called **"Taxi-drone"**: Blade Runner, before 2049.



Walle's goal is specifically to cover interurban routes within 50 km in 10 minutes on average. We do not consider roads, railways, or bridges, because they are unnecessary.

All we need are two points **A** and **B**, with a **Take-Off and Landing area**.

We want to exploit the only path for short/medium commercial routes that is still unused: **the sky**.

The Urban Air Mobility market is estimated globally to reach a value of **1.5 trillion dollars by 2040** (Source: Morgan Stanley). The Walle services (and UAM in general) will be mainly three: **leisure & sightseeing, human transportation, goods logistics**. Walle will cover strategic points that nowadays can be reached only by regional trains or ferry boats, in the best scenario.

ADVANTAGES

The advantages of our solution are:

1. **Time-saving:** in a world where speed is crucial, trips will need to be faster and always on time;
2. **Safety and reliability:** statistically speaking, air travels are the safest ones;
3. **Sustainability:** Walle service has a sustainable approach and respects the environment, as the drones will be using electricity instead of fossil fuels to be charged.

POTENTIAL ROUTES

Walle is focused on **regional routes** (50 km on average) or interurban routes to link strategic points.

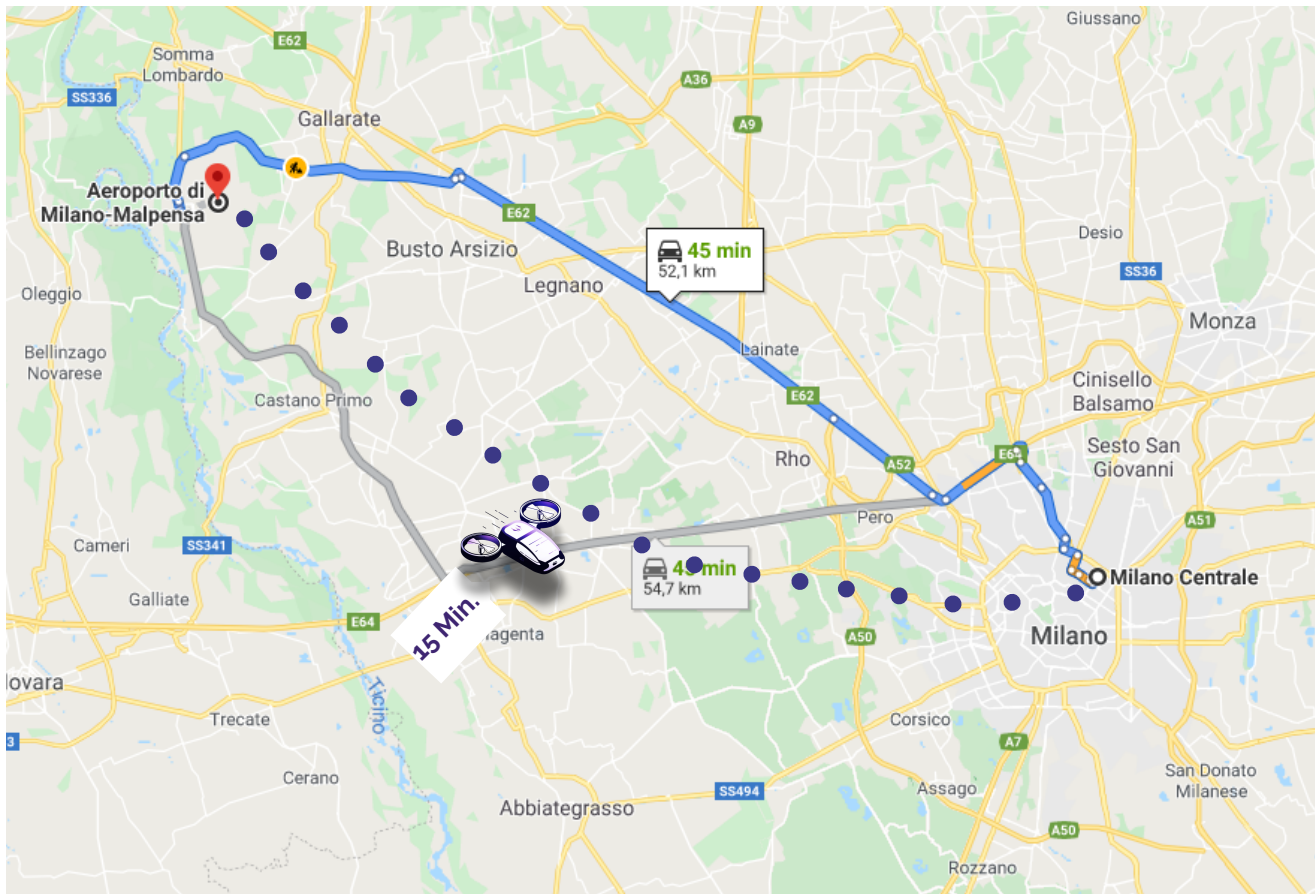
We have more than **800** islands that could represent potential destinations for our routes in Italy. Our country presents a high potential for UAM!

The charts below show the two pilot routes we studied during the past months.



POTENTIAL ROUTES

- Milan — Milan Airport Malpensa



- Naples Port — Capri island

