

# Safely E-Scooter European Traffic Education Seminar 2023

- Francesco Moledda – Program Officer at **Fondazione Unipolis**
- Paolo Fedele – Electrical engineer, graduating at **Politecnico di Milano**
- Roberto Desiderio – Mobility Engineer, graduating at **Politecnico di Milano**

# New technology = new problems and challenges to be addressed

- The project was born in 2021, which could be seen as the year of booming diffusion of electric scooters.
- Every new trend brings its pros and cons: here an undesired increasing of accidents involving teenagers.

- A quite strange witch hunt began in 2021, pushed by a diffused aversion against electric scooters mainly due to the proliferation of improper behaviors.
- This is the key point which has made the two authors Roberto Desiderio and Paolo Fedele to write down the complete training plan, we have the pleasure to present today.
- The following slides will contain a brief description of the four modules into which the training course is divided.

# Module 1 – e-scooter driving in practice and safety in mobility



THE EXPERTISE OF THE ITALIAN LIGHT-VEHICLE SHARING MOBILITY COMPANY **BIT MOBILITY IS** BROUGHT INSIDE. SCHOOLS.



NOT ONLY WELL-KNOWN TAGS AND RULES, IN FACT THEY ARE MIXED WITH **INSTRUCTIONS AND GOOD RULES FOR CORRECT USE OF ELECTRIC SCOOTERS**, SUPPORTED WITH A REAL VEHICLE.



**PRACTICAL SESSION OUTSIDE SCHOOL** BUILDING IS PROPOSED TO SPEEDILY USE THE LEARNT PRINCIPLES.



THE PARADIGM **LEARN-AND-PRACTICE** WILL BE ENCOUNTERED IN THE OTHER MODULES AS WELL; WE STRONGLY BELIEVE IN IT.

# Module 2 - e-scooters electrical and mechanical components



**AN OVERVIEW ON MAIN FUNCTIONAL AND CONSTRUCTIONAL COMPONENTS OF ELECTRIC SCOOTERS IS THE OBJECT OF THIS MODULE.**

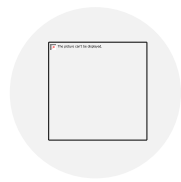


**DIFFICULT ARGUMENTS OF ENGINEERING NATURE ARE PROVIDED NOT ONLY TO TECHNICAL SCHOOLS, BUT ALSO TO SCHOOLS OF COMPLETELY DIFFERENT NATURE**



**THE RESPONSE HAS BEEN UNEXPECTED IN ALL THE INSTITUTES.**

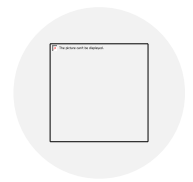
# Module 3 – e-scooter physics



THIS MODULE IS FOCALIZED ON **PHYSICS**. IT HAS SURELY BEEN THE MOST DIFFICULT SECTION TO FACE.



THE EXPERIENCE OF ROBERTO DESIDERIO, TOGETHER WITH HIS GREAT PASSION FOR MOBILITY, HAVE PRODUCED A **CONCENTRATED AND INTERESTING MODULE ABOUT THE PHYSICS** BEHIND AN ELECTRIC SCOOTER.



THE APPROACH LEARN AND PRACTICE IS FOLLOWED: STUDENTS ARE ASKED ATTENDED A FINAL PRACTICAL TIME SLOT (OF ABOUT TWO HOURS) ON PREVIOUSLY LEARNT PRINCIPLES, IN WHICH THEY TRY TO COMPLETE A DYNAMIC MODEL ON EXCEL

# Module 4 – mobility trends

HERE THE ATTENTION IS MOVED TO **ACTUAL AND FUTURE MOBILITY TRENDS.**

ONCE WELL-KNOWN PROBLEMS OF ACTUAL MOBILITY STATE OF ART ARE DISCUSSED, **SEVERAL FUTURISTIC SCENARIOS** TO **THE PROBLEMS** ARE PRESENTED

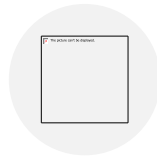
STUDENTS. A WORKING CHALLENGE IS PROPOSED, AS SIMPLE AS EFFECTIVE: **MAKE A GROUP OF 3 OR 4 WITH YOUR CLASSMATES AND TRY TO PROPOSE AN ORIGINAL SOLUTION TO A PROBLEM**

ANALYSIS OF THE REASONS WHY MOBILITY MUST CHANGE: **GROWING POPULATION OF METROPOLIS AND BIG CITIES AT THE EXPENSE OF SUBURBIA,...**

# Final practical exam



THE FINAL DAY IS PLANNED WITH **AN INITIAL QUIZ ON THEORETICAL MATERIAL** IN KAHOOT FORMAT, WHILE THE SECOND PART IS FOCUSED ON **THE PRACTICAL EXAM.**



GUYS HAD A LOT OF FUN AND WE HAVE REMAINED ASTONISHINGLY SURPRISED **BY THE RESPONSE AND SELF-CONFIDENCE** ACQUIRED BY THESE LITTLE PILOTS.



# Observations and critics by the students: what could be improved?



Matteo from Marconi Lyceum:

“I liked that the course was held by undergraduate students”



Matteo from Varalli Lyceum:

“I appreciated detailed explanations from the experts.”



Soufian from I.S.S. A.Fossati – M.Da Passano:

“The lessons must be more connected to subjects taught inside schools.



Caterina from Marconi Lyceum :

“It was interesting to discover new technologies [...]. I would simplify physics module since it was too complicated to be understood in one lesson.”



Emma from Varalli Lyceum:

“I appreciated the presence of slides and animations to catch the attention [...]. As an improvement, lessons could be shorter and more practical.”



Sian from I.S.S. G.Capellini – N.Sauro:

“I have appreciated practical lessons; in fact, I would suggest to enhance them. Who fears electric scooters needs several practice and less theory! ”



Francesca from Marconi Lyceum:

“The practical test was the most interesting activity!”



Francesca from Marconi Lyceum:

“I liked to work as a group with my classmates and to interact with the lecturers during all classes.”



Emanuele from I.S.S. G. Capellini – N. Sauro:

“I have not found any difficulties in understanding the lessons.”

# Observations and critics by the students: what could be improved?



Sofia from I.S.S. V.Cardarelli:  
"I would suggest to make them free."



Chiara from I.S.S. G. Capellini – N. Sauro:  
"Let us put the electric scooters in more specific areas"



Matteo from I.S.S. V.Cardarelli:  
"The maximum speed and size of the wheels must be increased."

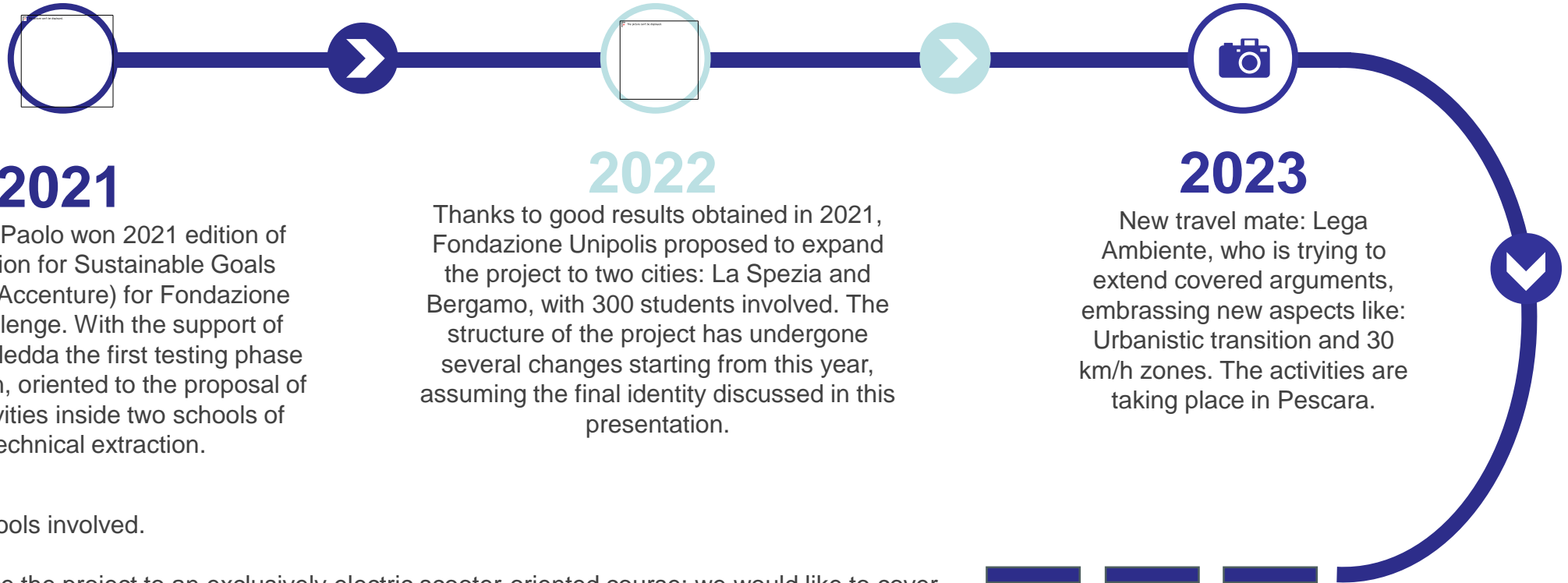


Samuel from I.S.S. A.Fossati – M.Da Passano:  
"I would suggest to increase maximum speed and to put a seat to have more safety."



Elia from I.S.S. V.Cardarelli:  
"What about inserting hydraulic brakes as a substitute for wire brakes?"

# Achieved Milestones and future plans



- More schools involved.
- Not reduce the project to an exclusively electric scooter-oriented course; we would like to cover many arguments.
- In general, we would like to build a practical laboratory about reality of transport, without prejudices and blinders.
- We hope that Fondazione Unipolis continue to believe in our vision, but also to be sufficiently attractive to other investors.