



# PIONEERS

INNOVATION FOR RIDER SAFETY



## PIONEERS SUMMARY



1. **Vision**
2. Pillars
3. Objectives
4. Scope
5. Results Expected
6. Methodology
7. Timing
8. Partners

# VISION

**PIONEERS (Protective Innovations of New Equipment for Enhanced Rider Safety)** aims to reduce the number of Powered Two Wheeler fatalities and severely injured by increasing the safety, performance, comfort and usage rate of Personal Protective Equipment and the development of new on-board safety devices.



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1. Vision
2. **Pillars**
3. Objectives
4. Scope
5. Results Expected
6. Methodology
7. Timing
8. Partners

# Pillars

The main pillars of PIONEERS are:

- ① To achieve a deep understanding of the injuries sustained by the riders
- ② To increase the performance of safety systems
- ③ To develop better test and assessment methods
- ④ To increase the usage rate of PPE.





1. Vision
2. Pillars
3. **Objectives**
4. Scope
5. Results Expected
6. Methodology
7. Timing
8. Partners

# Objectives

**The main goal of the PIONEERS project is to improve the safety of PTWs by providing an integrated approach to rider protection considering on-rider (PPE) and on-board systems. Therefore, this project will** investigate and assess the direct contribution to the reduction of fatalities and severity of injuries, as well as the number of injured PTW users by developing new PPEs and on-board safety systems, improving the validation and assessment methods and increasing the usage rate of such devices.

In order to fully exploit the capabilities of forward-looking safety equipment for PTW users, PIONEERS aims have a short-term impact on their safety by:

- OBJ 1. Prioritizing the most safety-critical accident scenarios and developing methods to identify relevant future safety issues.
- OBJ 2. Developing improved injury criteria to assess the injury risk on the most critical body regions.
- OBJ 3. Designing field-effectiveness driven test methods (virtual and physical) with a high degree of reliability and repeatability to assess current and future safety systems under realistic impact conditions and to provide input to the standardisation groups (e.g. CEN).
- OBJ 4. Defining the system requirements of the PPEs and on-board safety systems of the future for optimal rider protection.
- OBJ 5. Developing the new generation of PPEs and on-board safety systems (prototypes).
- OBJ 6. Developing advanced design tools and improved products by establishing minimum performance requirements to better inform the final user and to differentiate high-quality European products from products that offer a lower level of protection.



1. Vision
2. Pillars
3. Objectives
4. **Scope**
5. Results Expected
6. Methodology
7. Timing
8. Partners

# Scope

Developing a new generation of PPEs

to optimize performance and comfort from protective clothing

Developing new test methods

Considering specific body structures

New testing methods

Fully integrated systems

Integrated assessment Methods

Adding also on-board safety systems

New guidelines for future standards



1. Vision
2. Pillars
3. Objectives
4. Scope
5. **Results Expected**
6. Methodology
7. Timing
8. Partners

# Results Expected

The main results of PIONEERS will be:

- higher understanding of how to prevent injuries to PTW users
- better testing methods enabling better performance assessment
- better products (PPEs and onboard systems) from European manufacturers, achieving an increased safety level of PTW users and improving European competitiveness.

Finally, the implementation of the PIONEERS' main results will contribute to reducing PTW fatalities up to 25% in 2025 and injuries by defining test methods to develop protective systems and on-board systems to reduce impact severity. The development of new testing methods and products will strengthen European leadership in the PTW industry.





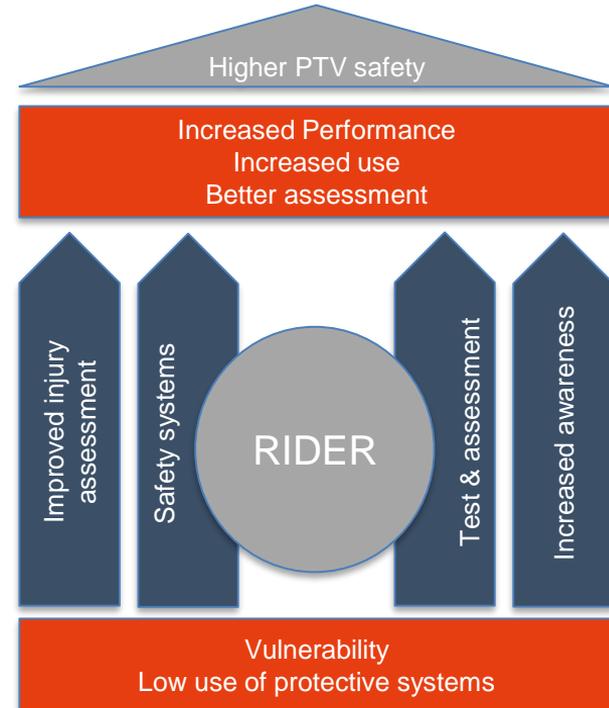
1. Vision
2. Pillars
3. Objectives
4. Scope
5. Results Expected
6. **Methodology**
7. Timing
8. Partners

# Methodology (putting the rider at the centre)

A dedicated project on PTW safety is needed to tackle the issue, involving a representative sample of stakeholders: from research specialists, dedicated test facilities and expertise and the related industry (both PTW manufacturers and protective equipment suppliers).

PIONEERS bring all those together in a community dedicated to increasing PTW safety putting the user (rider) at the centre.

Four main pillars are built around the figure of the PTW user with the objective of enhancing the four most critical areas in PTW safety: improved injury assessment, safety system performance (both PPEs and on-board systems), reliable test and assessment and use of PPEs, and increased awareness



# Methodology (Considers 8 Work Packages)

## **WP1: Accident scenarios and rider needs.**

To identify the most common accident scenarios and injuries This data will be weighted in order to identify the highest priority accident scenarios.

## **WP2: Improved injury assessment.**

To define the most relevant biomechanical requirements for the selected body regions. This will allow the test methods and pass/fail criteria to assess rider protection of the safety solutions to be developed.

## **WP3: Advanced testing methods.**

The scenarios identified in WP1 and WP2 will serve as baseline to define an assessment for the protective systems which will result in a new test protocol for each of the selected body regions.

## **WP4: New generation of protective systems.**

Requirements identified in WP1 and WP2 will serve as the basis for the design of new system prototypes that will finally be validated using the new test methods developed in WP3.

## **WP5: On-board safety systems.**

WP5 intends to make use of the capabilities offered by the vehicle to provide an additional level of protection. The developments will be led by the use cases and accident characteristics identified in WP1.

## **WP6: Impact assessment and societal benefit.**

Define the impact evaluation methodology according to the use cases identified in WP1. This methodology will make use of the data from WP3, WP4 and WP5 to provide information to assess the potential safety benefit of the new systems but also of the new testing methods

# Methodology (Considers 8 Work Packages)

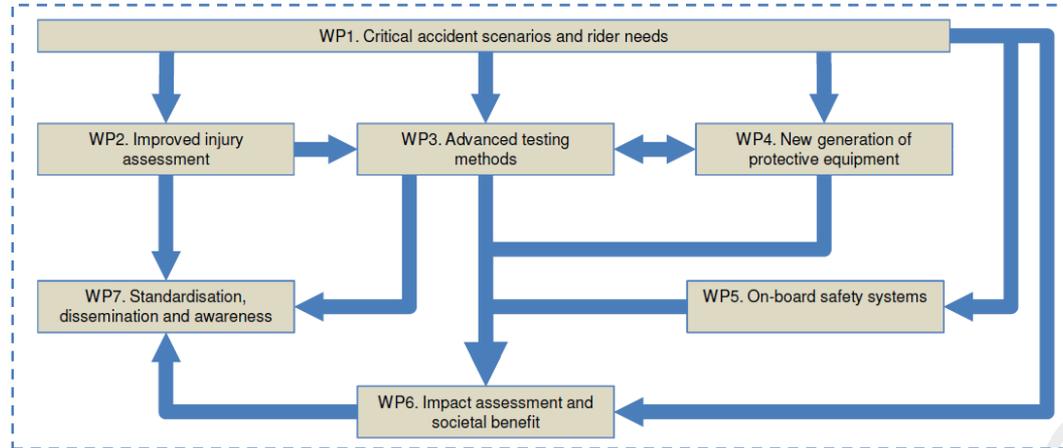
## **WP7: Standardisation, dissemination and awareness.**

The objective of this work package is three-fold: (i) technical dissemination to leverage scientific knowledge, (ii) provide input to standardisation groups and (iii) dissemination to end-users to increase the safety awareness.

## **WP8: Management**

*Deal with technical management and coordination.*

This diagram allows the visualization of the methodology:

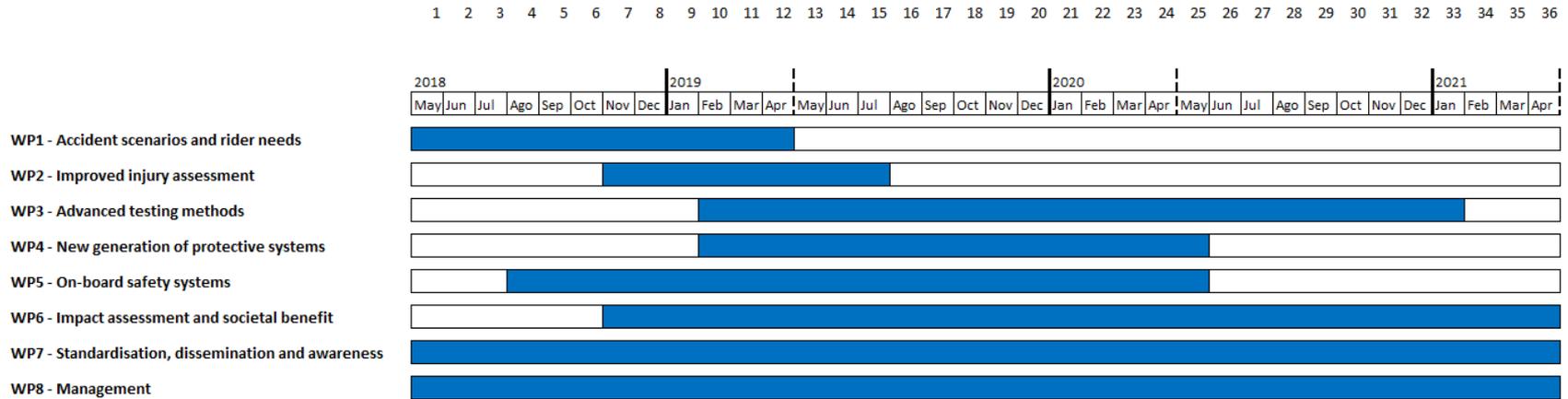




1. Vision
2. Pillars
3. Objectives
4. Scope
5. Results Expected
6. Methodology
7. **Timing**
8. Partners

# Timing

The project has a duration of 36 months:  
 (From May 2018 to April 2021)





1. Vision
2. Pillars
3. Objectives
4. Scope
5. Results Expected
6. Methodology
7. Timing
8. **Partners**

# Partners

The participants of the project are:



Several types of partners are involved in PIONEERS project:

- ✓ Universities and research institutes (7)
- ✓ Industrial partners (2)
- ✓ Protective equipment manufacturers (4)
- ✓ Motorcycle manufacturers (2)
- ✓ Automobile Club (1)