PROJECT REPORT

E-TRIKE

ÉGALITÉ SMART MOBILITY ECOSYSTEM

INCLUSIVE URBAN MOBILITY SOLUTIONS: É-TR, É-GT, AND É-WE

WISE

WORKABLE IDEAS & INITIATIVES for a SUSTAINABLE ECONOMY

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INCLUSIVE URBAN MOBILITY SOLUTIONS:

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THE PROJECT CHALLENGE:

For over 100 million people globally, the wheelchair is the only means of locomotion, yet standard manual models often confine users to limited physical ranges or rely heavily on the strength of the user's arms or an assistant. While electric wheelchairs exist, they are frequently heavy, bulky, and difficult to transport in standard vehicles. The challenge was to create a modular, lightweight, and high-performance system that could transform a manual wheelchair into an electric vehicle without sacrificing portability or comfort, specifically addressing urban barriers and the risk of spinal trauma from vibrations.

OUR CONTRIBUTION:

WIISE acted as the technical and legal coordinator for the non-profit organization **Égalité**, managing the development of a modular mobility ecosystem. We bridged the gap between industrial design, medical device regulations, and social advocacy. Our team provided the framework for a "No-Profit Patent" model to ensure that these life-changing technologies remain accessible and affordable.

WIISE's contribution focused on:

- **Technical-Legal Coordination:** Navigating the complex Medical Device Regulations (MDR) to ensure that the modular components—the **É-TR** (electric trike), **É-GT** (smart chair), and **É-WE** (cargo/passenger platform)—meet safety and quality standards for urban use.
- **Inclusive Design Advocacy:** Identifying critical user needs, such as the requirement for lightweight titanium frames and vibration-damping systems to prevent secondary injuries in wheelchair users.
- **Strategic Partnership Building:** Connecting the project with industrial designers and production partners capable of working with high-end materials like titanium to ensure stability and durability.
- **Policy & Social Outreach:** Promoting the project as a blueprint for **Sustainable Development Goals (SDGs)**, specifically focusing on Urban Accessibility and Reduced Inequalities.

THE OUTCOME:

The initiative has resulted in a fully developed industrial project for the **É-TR (Electric Trike)** and the **É-GT (Smart Chair)**. The proof of concept demonstrates that a standard wheelchair can be transformed into a modular electric vehicle that is easy to hitch/unhitch, stable in all circumstances (using 20" wheels), and light enough for car transport. By moving the project from an idea to a production-ready industrial plan, WIISE has created a pathway for a new generation of "Smart Mobility" that prioritizes the dignity and autonomy of the individual.

WHY PARTNER WITH WIISE?

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Our coordination of the Smart Mobility Ecosystem demonstrates that WIISE is the ideal partner for social innovation and "Inclusive Cities" consortia requiring:

- **MDR & Compliance Expertise:** Specialized knowledge in navigating Medical Device Regulations and safety standards for mobility aids and assistive technologies.
- **Social Impact Mastery:** Proven ability to manage non-profit industrial projects and "social patents," ensuring that innovation delivers maximum value to vulnerable groups.
- **Multi-Stakeholder Mediation:** Experience in aligning the goals of non-profits, high-end industrial manufacturers, and urban planners to create holistic accessibility solutions.
- **Visibility:** Direct access to the **Égalité** networks to advocate for fundamental rights and inclusive urban policies on an international stage.

DIRECT CONTACT FOR PARTNERSHIPS:

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DETAILS ON THE É-TR, É-GT, AND É-WE

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I. FACT SHEET

Full Project Title (Acronym): The Égalité Smart Mobility Ecosystem (É-TR, É-GT, É-WE)

Project Description: A modular and inclusive urban mobility ecosystem designed to transform the autonomy of wheelchair users. The system consists of three integrated components: the **É-TR** (a lightweight electric front-wheel trike for rapid transformation of manual wheelchairs), the **É-GT** (an "intelligent" manual wheelchair made of titanium with advanced vibration-damping systems), and the **É-WE** (a rear platform for transporting cargo or passengers). The project prioritizes "Smart Mobility" by focusing on lightness, ease of car transport, and the prevention of spinal trauma, all while utilizing a "No-Profit Patent" model to ensure social accessibility.

Funding: * **Égalité Onlus** (Non-profit initiative)

- **WIISE S.r.l. Benefit Company** (Technical-legal sponsorship and R&D support)
- **Private Donations & Crowdfunding**

Project Budget: Social Investment / Non-profit R&D.

Duration: * **Launch Year:** 2019 (Project inception and early prototyping)

- **Status:** Industrial design finalized / Ready for production (Seeking manufacturing partners and scale-up funding)

Consortium:

- **Égalité Onlus** (Owner / Advocacy & Requirements)
- **WIISE S.r.l. Benefit Company** (Technical-Legal Coordination / International Outreach)
- **Alexander Hohenegger** (Industrial Design & Technical Concept)
- **Industrial Partners:** Specialist titanium and mechanical workshops (Prototyping)

Geographical Scope: * **Origin:** Italy

- **Potential Reach:** Global (Designed as an open, replicable model for urban accessibility and inclusive cities worldwide)

Application Areas: Urban and extra-urban mobility, medical device innovation, social inclusion, and sustainable transport for persons with motor disabilities.

II. MISSION AND OBJECTIVES

PROJECT SCOPE: To foster social inclusion and personal autonomy by providing a modular, high-performance, and affordable mobility ecosystem that overcomes urban barriers and improves the physical well-being of wheelchair users globally through non-profit technological innovation.

SPECIFIC OBJECTIVES:

- **Modular Autonomy:** Develop a versatile "hitch-and-unhitch" system (É-TR) that allows manual wheelchairs to be transformed into electric trikes in seconds, enabling long-distance travel without losing the portability of a manual chair.
- **Health-Centric Engineering:** Design a smart chair (É-GT) utilizing titanium frames and advanced vibration-damping systems specifically engineered to prevent spinal trauma and secondary injuries caused by architectural barriers.
- **Social Accessibility (No-Profit Patent):** Ensure that life-changing technology remains affordable for the 100 million global wheelchair users by utilizing a non-profit patent model that eliminates traditional commercial markups.
- **Urban Integration & Versatility:** Create a multi-purpose platform (É-WE) capable of transporting passengers (including children) or cargo, effectively turning a medical device into a sustainable micro-mobility vehicle for daily urban life.
- **Regulatory Validation:** Navigate the European Medical Device Regulation (MDR) to ensure the ecosystem meets the highest safety and quality standards, facilitating its legal distribution and recognition by health authorities.

III. PROJECT RESULTS AND IMPACT

KEY PROJECT OUTPUTS:

- **Award-Winning Industrial Prototypes for Smart Mobility:** Developed and road-tested prototypes for the **É-TR** (electric power add-on) and **É-GT** (titanium smart chair), which were awarded the prestigious international **#MakeToCare** prize at the European Maker Faire.
- **Medical Device Compliance Roadmap:** A technical-legal framework aligned with the **EU Medical Device Regulation (MDR)**, ensuring the safety, stability, and quality required for international distribution.
- **"No-Profit Patent" Model:** A social innovation framework that protects the technology while ensuring it remains an open and affordable resource for the global community.
- **Vibration-Damping & Ergonomic Standards:** Specific engineering protocols focused on titanium frame flexibility and shock absorption to prevent spinal trauma in long-term wheelchair users.
- **Interoperable Hitching System:** A standardized, universal mechanical interface that allows the electric trike to be easily attached to or detached from standard manual wheelchairs.
- **The "Invisible Line" Solution:** Implementation of a simple, integrated seat-lifting system that allows users to interact "face-to-face" at counters, bars, and public desks, overcoming the social and physical height barrier.
- **Open-Source & Bottom-Up Validation:** An R&D process entirely driven by the community, involving people with disabilities in every phase of design, testing, and validation to ensure the tech meets actual daily needs.

EXPECTED PROJECT OUTCOMES:

- **Individual Empowerment & Radical Autonomy in Urban Spaces:** Significantly expanding the range of motion for people with motor disabilities to independent urban and extra-urban travel without relying on bulky, non-portable electric wheelchairs. Enabling users to navigate slopes, bumpy sidewalks, and "sampietrini" (cobblestones) without risk or exhaustion.

- **Systemic Healthcare Savings:** Reduction in secondary hospitalizations and bone fractures by providing a stable, high-performance device that mitigates the risk of falls and spinal stress typical of standard wheelchairs.
- **Democratization of Assistive Tech:** Lowering the barrier to high-end mobility solutions by cutting commercial markups though the offer of high-tech titanium and electric solutions at prices close to production costs through a no-profit industrial model.
- **Social Integration & Human Dignity:** Closing the "height gap" in social interactions and promoting the right to independent movement, as recognized by the UN Convention on the Rights of Persons with Disabilities.
- **Inclusive City Advocacy:** Serving as a tangible proof-of-concept for policymakers to recognize electric wheelchair attachments as equivalent to e-bikes, fostering a more inclusive and sustainable urban micro-mobility legislation.
- **Urban Evolution:** Providing a scalable blueprint for "Smart Cities" to integrate diverse mobility needs, supporting the **Sustainable Development Goals (SDGs)** on reduced inequalities and sustainable communities.

IV. PROJECT ACTIVITIES

Activity	Description
Analysis	Regulatory mapping of the **EU Medical Device Regulation (MDR)** to define safety requirements; gap-analysis of user needs regarding urban barriers and spinal trauma prevention; identification of accessibility KPIs based on the UN Convention on the Rights of Persons with Disabilities.
R&D	Technical coordination of the industrial design phase; oversight of the integration between the **É-TR** electric drive unit and the **É-GT** titanium frame; preliminary development of the "No-Profit Patent" legal framework.
Implementation	Technical-legal advice on the certification pathway for the smart chair as a Class I Medical Device; coordination with specialized mechanical workshops for the creation of high-precision titanium jigs and carbon fiber components.
Engagement	Awareness-raising through **Égalité** website to advocate for "Universal Design" in urban mobility; organization of crowdfunding initiatives and social media campaigns to involve the community in the prototyping phase.
Evaluation	Comparative safety testing of the vibration-damping elastomers against standard rigid frames; assessment of the hitching system’s stability and performance (20" wheel vs. standard small wheels) in diverse urban environments.
Exploitation Pilot	Development of an industrial "scale-up" plan for non-profit production; testing of the modular system in real-world urban scenarios to validate the "face-to-face" social integration features and ease of car transport.

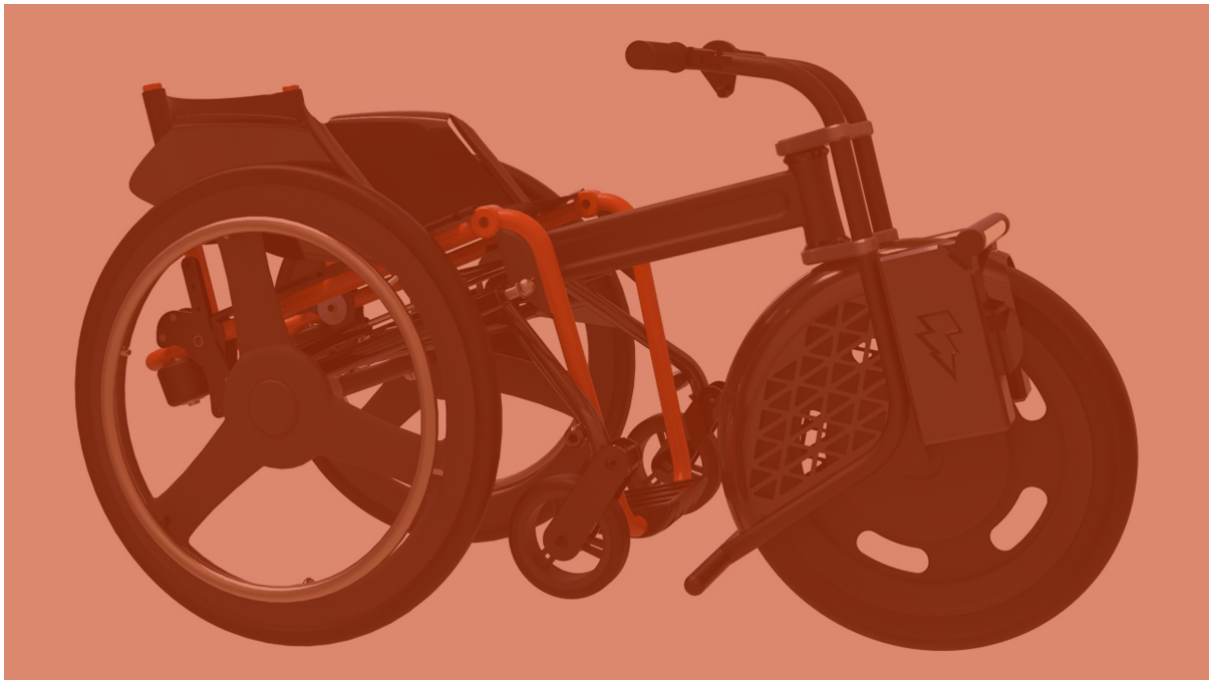
V. OPPORTUNITIES CREATED AND POTENTIAL VALUE FOR FUTURE PROJECTS

- **Applications:**

  Provided a scalable blueprint for **Inclusive Cities** and **Smart Mobility** initiatives within Horizon Europe and the EU Mission on "Climate-Neutral and Smart Cities." The project proves that WIISE can deliver the technical-legal coordination required to transform non-profit social concepts into industrial realities that meet the stringent **Medical Device Regulation (MDR)** standards.

- **Value Proposition:**

  WIISE is a unique partner capable of bridging the gap between **High-End Industrial Engineering** (titanium/carbon-fiber mechanics) and **Social Impact Law**. By integrating "No-Profit Patent" strategies with rigorous safety certifications, we ensure that assistive technologies are not only scientifically innovative but also ethically distributed and legally recognized by international health systems.



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