CYBATHLON – Moving People and Technology!

CYBATHLON, a not-for-profit project of ETH Zurich, is a platform that challenges teams worldwide to develop assistive technologies suitable for everyday use with and for people with disabilities. Through international competitions and other events, CYBATHLON cultivates and fosters a dialogue between technology developers, people with disabilities and the public for greater inclusion of people with disabilities in society.

CYBATHLON Projects

The CYBATHLON @school is a sub-project of the CYBATHLON at ETH Zurich offering teaching modules around the topics of inclusion and robotics in various subjects. The aim of the project is to sensitise teachers, children and young people to the everyday challenges of people with disabilities. Furthermore, the project aims to raise awareness of ethics, medicine, law, inclusion and sports among students as well as inspire enthusiasm in mathematics, computer science, natural sciences and technology (STEM subjects). The learning modules were accompanied by and developed with people with disabilities and are aligned with Curriculum 21 for Swiss schools.

CYBATHON Projects and Events – For a World Without Barriers!

CYBATHLON ETH Zurich organises international events in which people with physical disabilities (pilots) compete against each other to perform everyday tasks using state-of-the-art user-centred assistive technologies. To further promote its goals from an early stage.

- CYBATHLON Edition - The Edition is the main driver of CYBATHLON comprising an international competition, a symposium and dialogue with the public.
- CYBATHLON Experiences - The CYBATHLON Experience's objective is to increase public awareness of assistive technology and provide participants with a greater understanding of both its benefits and its drawbacks for people with disabilities. The format encourages audience involvement at exhibitions, conferences, or festivals.
- CYBATHLON Challenges - The CYBATHLON Challenges offer development teams the opportunity to involve people with disabilities in their technology development process from the very beginning and constantly test their assistance technologies in a competitive situation.
- CYBATHLON Series - The CYBATHLON Series drive the worldwide scientific exchange and promote the discussion about disabilities and assistive technologies. Each CYBATHLON Series focuses on one of the CYBATHLON disciplines and is organised in cooperation with universities and other partners.
- CYBATHLON Symposia - The CYBATHLON Symposium brings together leading experts and young researchers to present and discuss current technological advances in assistance systems in the disciplines of CYBATHLON.

CYBATHLON Disciplines – Overcoming Daily Challenges with Assistive Technology

CYBATHLON encourages the research, development, and use of inclusive, user-centric assistive technologies for people with disabilities (pilots). The pilots compete in a unique competition where they use cutting-edge assistive technologies to complete tasks that were inspired by difficulties they face on a daily basis. This forced "out-of-the-lab" use of technology at a certain time and under the strain of a competitive environment calls for robust, powerful, and user-friendly technology. The aspect of user-centred and inclusive design is of relevance to yield ergonomic and functional technology for the competition.

The teams can compete in eight different disciplines to present and test the latest assistive technologies:

ARM PROSTHESIS RACE

The Race consists of tasks that test various abilities of people with prosthetic arms, such as sensory feedback from the hand, the ability to rotate the palm upwards and downwards, or the ability to cope with objects of different sizes, shapes, and weights, as well as coordination of both hands.

LEG PROSTHESIS RACE

In this competition pilots with an amputation above the knee or a congenital disorder climb stairs and overcome rough terrain with a leg prosthesis, among others.

ASSISTANCE ROBOT RACE

Race consists of tasks that contain elements of human-robot interaction. Both pilots and robots recognize and manipulate various objects, avoid obstacles and react to some dynamic elements on the track.

VISION ASSISTANCE RACE

The Race includes elements of spatial orientation and personal mobility, such as boarding and leaving a public bus and react to some dynamic elements. Tasks are tackled under a time constraint. Pilots are to recognize the context of a task and avoid obstacles.

BRAIN-COMPUTER RACE

 In this competition pilots compete in a BCI-controlled computer game – drive a vehicle in an animated scenario. They command and control only via their thoughts.

EXOSKELETON RACE

 In this competition paraplegic individuals complete tasks such as walking on different terrains, carrying objects, ascending and descending stairs, and finding their way in a crowded or congested environment.

FUNCTIONAL ELECTRICAL STIMULATION BIKE RACE

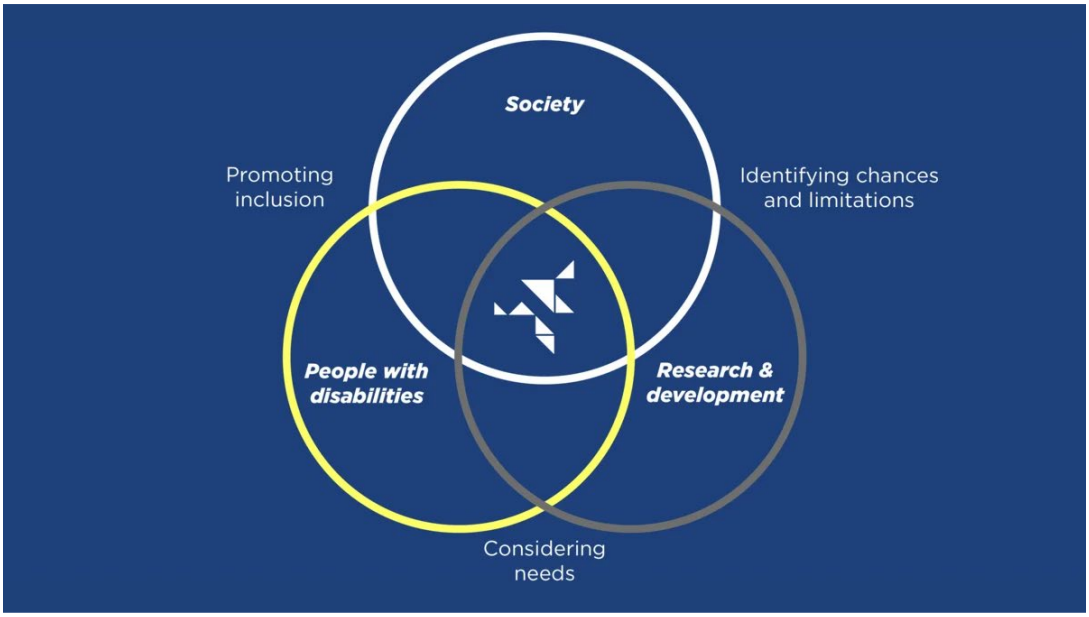
 The discipline consists of races where a pilot with a complete spinal cord lesion propels a cycling device using their own lower-limb power activated by electrical stimulation.

WHEELCHAIR RACE

 In this competition pilots who use powered wheelchairs manipulate objects that are related to personal mobility, such as opening and closing a door, overcoming uneven terrain and ascending and descending stairs with a wheelchair.

INNOVATION AND DIALOGUE AS THE GOALS

- Promoting research, development and implementation of assistive technologies for people with disabilities.
- Building a common platform for technology developers, people with disabilities and society.
- Enhancing awareness among the public and stimulating discussion on inclusion and equality of people with disabilities in everyday life.
- Removing barriers and obstacles between the technology developers, the users (people with disabilities), and the general public.



CYBATHLON – FACTS AND FIGURES

- In 2013, Robert Riener, Professor of Robotics at ETH Zurich, initiated the CYBATHLON as a platform for the development of assistive technologies suitable for everyday use.
- In 2016 the first CYBATHLON competition took place in the SWISS Arena in Zurich Kloten. 66 pilots from 25 nations competed in a sold-out stadium (4600 spectators)
- In 2020 the second CYBATHLON competition occurred in a federated and virtual format, and the teams competed in their home hubs in different time zones, due to the Covid-19 pandemic. 51 teams from 20 countries competed against each other.
- The events were broadcasted live on Swiss Television (SRF) and covered widely by many international media houses and news agencies.
- From 25 – 27 October 2024 the third edition of the CYBATHLON competition will take place. For the first time, this edition will include two new disciplines – Assistance Robot Race and Vision Assistance Race.