What is EuHIT

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EuHIT is a consortium that aims at integrating cutting-edge European facilities for turbulence research across national boundaries, in order to significantly advance the competitive edge of European turbulence research with special focus on providing the knowledge for technological innovation and for addressing grand societal challenges.

Who we are?

Current members of EuHIT include 25 research institutes and 2 industrial partners from 10 European countries. Total 14 cutting-edge turbulence research infrastructures, most of which are developed on national funds and are run by EuHIT member institutes, consist the material basis of EuHIT. These infrastructures, together with the knowledge developed upon them, are interconnected by a Networking program and Joint Research Activities within EuHIT. The present coordinator of EuHIT is Eberhard Bodenschatz (Max Planck Institute for Dynamics and Self-Organization, Göttingen, Germany), who is assisted by the Steering Committee and is overseen by the General Assembly.

What we do?

Very briefly, our activities within EuHIT may be summarized as: **Integration:** Not only the research activities at the infrastructures, but also the training programs, the sharing of data, and the interaction with numerical modelling and theoretical analyses, all will be integrated under EuHIT to facilitate access to the infrastructures and easy exchange of instruments, techniques, data, and new ideas. **Innovation:** New techniques, algorithms, and next generation instruments will be developed through Joint Research Activities (JRAs) to maintain the EuHIT infrastructures at the leading edge. **Dissemination:** New tools and procedures will be implemented to foster easy and open access to data and techniques developed from EuHIT, including the transfer of knowledge from academia to industries.

What are the goals of EuHIT?

As stated above, EuHIT is created to significantly advance the competitive edge of European turbulence research with special focus on providing the knowledge for technological innovation and for addressing grand societal challenges. To achieve these, we envision the following objectives To increase the relevance of world-class turbulence RIs to enable ground-breaking research and innovation, such as to foster access for researchers from academia and industry, and to bring the research infrastructures to the attention of users. Provide free access to the knowledgebase for turbulence data; ensure stable and higher quality service; provide knowledge support, optimal data use, download, and upload capabilities, ensure editorial process of the knowledge-base.

Provide a networking structure fostering a culture of co-op through science management, communication tools, dissemination of knowledge, good practice, training, human resource development; provide harmonized and enhanced interfaces. Innovate in enabling technologies and thorough integration; partnering with industry in instrument development; attract industry to the research infrastructures and the turbulence database; ensure advice by innovation leaders; connect to leading industries. Enable the evaluation of data quality; innovative instrumentation for the joint use at the research infrastructures, also portable to general R&D, implementation of controlled turbulence generation, develop a quality assessment for data and models; enabling instrumentation; opening new directions.

Why do we need EuHIT?

Advances in key economical and societal issues facing Europe, like ground-, air- and sea-transport, energy generation and delivery, processing in chemical industries, marine biosphere management, climate change impact, atmospheric and marine pollution prediction, and carbon capture and storage processes are obstructed by the lack of understanding of turbulence. The reason lies in the fact that turbulent flows underlie all macroscopic natural and technological flows as soon as mass transport is large. This has been realized by the European Research Commission (ERC), as reflected in its most recent Integrated Infrastructure Initiative call FP7-INFRASTRUCTURES-2012: INFRA-2012-1.1.20. Infrastructures for studying turbulence phenomena and applications. There is a need for detailed understanding of turbulence phenomena. A project under this topic should aim at bringing together key facilities addressing the turbulence phenomena in various areas of science and technology. A combination of modelling and experimental in situ testing is needed. In the past 10 years Europe has surpassed all other nations in research output and development of national infrastructures. However, due to a lack of European wide integration it has not reached its full potential for innovation in the sciences and technologies. EuHIT is thus born to overcome these limitations.

What are the expected impacts?

The creation of EuHIT itself represents an optimization in community actions. EuHIT will change the way turbulence research facilities operate, evolve and interact with each other and with users from academia and industry. EuHIT has the promise to optimize the research facilities for the future and it will have major impacts on innovation in European R&D in e.g., Energy, Environment, and Transportation.