QSI – Quantum-Safe-Internet

QSI aims at training a world-class cohort of doctoral candidates (DCs) capable of taking the next essential steps in the highly demanding area of cybersecurity. We aim to build strong lasting links between strategically selected industry and academic partners, in different disciplines, via the development of novel technologies for practical applications in data security. In parallel, we will also combine, via a collaborative long-term interdisciplinary approach, expertise in all relevant communities to address key fundamental problems in secure communications in the quantum era, and the important applications therein. The planned training network will provide research and training opportunities to a new generation of DCs, who, in the long-run, shall address the Grand Challenge of providing "Quantum-Safe Internet", i.e. a communication infrastructure that is secure against not only classical attacks but also those enabled by quantum technologies. Today's Internet security heavily relies on computational complexity assumptions, and as such is seriously threatened by advancements in quantum computing technologies. Indeed, we have recently witnessed a wave of key developments in this direction by a number of IT giants, e.g. Google, IBM, Microsoft, and Intel. This particularly jeopardizes applications that require long-term security. The number of such applications is continuously growing as more and more of our private information is stored and communicated in a digital way, e.g. electronic health records, which are now required by European legislation to remain secure for a long time. This requires us to urgently develop and implement new solutions, as we plan to do in this Doctoral Network (DN).

Coordinator: Universidad de Vigo

Beneficiary: Università degli Studi di Padova

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Department: Department of Information Engineering

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