



Press release of Geneva State Chancellery

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Geneva is counting on Quantum Cryptography as it counts its Votes

The Swiss national elections on October 21 will mark a world first for Geneva as the canton employs quantum cryptography to protect the dedicated line used for counting its ballots. This unbreakable data code was conceived by the University of Geneva and developed industrially by its spin-off, *id Quantique*. With this project, the first real-world application of quantum cryptography, Geneva assumes a pioneering role. It is the initial phase of a wide-ranging plan for technological experimentation involving several partners from the Lake Geneva region. Eventually, this operation will lead to the creation of a pilot quantum communications network in Geneva similar to the nascent Internet network in the United States back in the 1970s.

On Thursday, October 11, the State of Geneva announced its intention to use quantum cryptography to secure the network linking its ballot data entry center to the government repository where the votes are stored. The main goal of this initiative, a world first, is to guarantee the integrity of the data as they are processed.

Protecting the Information

For Robert Hensler, the Geneva State Chancellor, this operation aims to alleviate the concerns raised by the security and preservation of data integrity since online voting began in the canton in 2001. *“We would like to provide optimal security conditions for the work of counting the ballots,”* he explained. *“In this context, the value added by quantum cryptography concerns not so much protection from outside attempts to interfere as the ability to verify that the data have not been corrupted in transit between entry and storage.”*

Chancellor Hensler also stressed the fact that the use of cutting-edge technology such as quantum cryptography is directly related to the information's importance to the State. *“Information is the raw material of the State, which it uses to create added value. Whether in the context of a political decision, a police investigation or hospital care, the State is both a regulator of information exchange and a provider of information-based services.”*

Into the Real World

Quantum cryptography was developed at the University of Geneva by Professor Nicolas Gisin and his team in the mid 1990s. In 2001, it gave rise to a spin-off company called *id*

Quantique, which along with Geneva's Information Technologies Center ensured that October 21 would become a reality. According to Professor Gisin, "protection of the federal elections is of historical importance in the sense that, after several years of development and experimentation, this will be the first use of a 1 GHz quantum encrypter, which is transparent for the user, and an ordinary fiber-optic line to send data endowed with relevance and purpose. So this occasion marks quantum technology's real-world début."

SwissQuantum

Moreover, this first secured line is only the seed of a future network that its creators would like to develop along with other partners. In this respect, the federal elections mark the beginning of the *SwissQuantum* project. Managed by Professor Gisin, with support from the National Center of Competence in Quantum Photonics Research, *SwissQuantum* aims to set up a pilot communications network in Geneva, like the first Internet network in the San Francisco area in the 1970s, to provide a platform for testing and validating the quantum technologies that will be called upon to play a starring role in protecting the communications networks of the future.

Grégoire Ribordy, the Director of *id Quantique*, says that "one of the medium-term goals is to provide the community with a platform on which the validity of quantum telecommunications can be tested and demonstrated." The ITU Telecom World 2009 event to be held in Geneva on October 5-9, 2009, which will be attended by all of the telecommunications industry's major players, will be the high point in this demonstration. "SwissQuantum will showcase Geneva and the Lake Geneva region as the unchallenged digital security capital of the world," added Mr. Ribordy.

New Quantum Horizons

Finally, this project apparently has aspirations that go beyond the Lake Geneva region. Since it is now possible to protect any public fiber-optic network, why not consider expanding the system throughout the country and beyond? Some core industries of the economy would naturally lend themselves to the use of such technology: banks, insurance companies, high-tech businesses—in short, any company whose data are sufficiently sensitive that their inviolable protection needs to be ensured. In this regard, the *SwissQuantum* name ought to be the best guarantee for reassuring potential clients of the soundness of this scientific innovation and the expertise of its originators.

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