

In touch with science – the Internet reloaded

Thanks to our partnership with ETH Zurich, SIX is benefiting from the latest research findings on information security. One example being high-security Internet communication.

Pressing ahead with joint research, then putting the findings into practice at SIX: that is the idea behind the year-old partnership between SIX and the Zurich Information Security and Privacy Center (ZISC) at ETH Zurich – a renowned and internationally recognized university. ZISC conducts research into information security – an important field for SIX. Christoph Bösch, who is the link between SIX and ETH ZISC, says: "The security and reliability of systems, networks and data are essential to SIX. Our partnership with ZISC gives SIX access to innovative concepts and state-of-the-art technologies in this field, while ETH

turned into a global success story is now being continued in Zurich: the next-generation Internet. Professor Adrian Perrig and his team are conducting research into a more secure and reliable Internet architecture that will prevent hacker attacks and unauthorized access. Bear in mind that the existing architecture is old – it has hardly changed since the 1990s and is no longer able to cope with current demands. Previous measures amounted to little more than dealing with symptoms, by adding protocols, for example. Yet the fundamental problems remained. SCION offers a completely new approach. The ETH team has redesigned the Internet architecture from scratch. The basic idea is to create isolation domains, such as countries or companies, which will act autonomously. Perrig: "We started by concentrating on the Border Gateway Protocol, or BGP for short." BGP defined the paths and nodes through which data is routed. With SCION, the sender and recipient of the data packet specify the outward and return paths. In other words, a data path can avoid certain providers or countries, if the sender so wishes.

Learning about SCION

SCION now contains a whole set of components. "You can think of it like the different blades on a Swiss army knife – different modules can be used as needed," says Perrig. Plus, SCION does not require a global big bang. The system can be rolled out gradually. A number of financial institutions, universities and Internet service providers are already using SCION. SCION makes few demands in terms of hardware – a special router is all that is needed. Nevertheless, network administrators still need to



Christoph Bösch, Head Security Business Partner DPS/DFI, acts as the link between SIX and ETH ZISC.

learn how to utilize the SCION components correctly. SIX and Zürcher Kantonalbank are working with ETH ZISC to test practical potential applications. Fritz Steinmann, Head Network & Security Engineering, says: "In my opinion, SCION is a winner. SIX uses leased lines for some services in order to meet demanding requirements in terms of speed, security and availability. With SCION, it would be possible to abandon those lines in the medium term, because standard SCION Internet connections are becoming much more reliable and secure. That's why we will be including SCION when we update our access platforms in 2018."



Professor Adrian Perrig discusses new findings with team member Benjamin Rothenberger.

can learn a great deal about the problems and challenges faced by the industry."

Revolutionizing the Internet

One research topic is already bearing fruit: SCION (scalability, control and isolation on next-generation networks). Something that started in the US Department of Defense in the 1960s and



The ETH team has now founded a startup that will offer solutions based on SCION technology for commercial purposes: <https://www.anapaya.net/>



Text: Simone Kobel, Corporate Communications