

# Press

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Intersec Forum  
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## **3 + 1 brief questions about smart access to: Dr Christian Zenger, joint founder and CEO of PHYSEC GmbH**

Digitalisation of access to buildings and infrastructures requires new thinking and new systems. Learning from the internet of things means “make it secure and simple.” At the Intersec Forum 2018 Dr Christian Zenger will be speaking in the “Innovation dialogue on smart access” cluster about third-generation security solutions for the internet of things, based on the physical layer (PHY).

We spoke to the joint founder and CEO of PHYSEC, Dr Christian Zenger. PHYSEC was founded in April 2016. It is a spin-off from Europe’s leading Horst Görtz Institute for IT Security at the Ruhr University of Bochum and specialises in applied cryptography in the internet of things (IoT).

### **Smart access management: digital systems are replacing traditional mechatronic locking and control technology. Which technologies are principally involved when access gets smart?**

In my opinion, efficient cryptography and non-central key-management solutions are important. Secure and efficient (re-)authorisation mechanisms for users and on terminals are a central requirement if sustainable success is to be guaranteed. This comprises in particular a user-friendly initial key establishment.

### **Physical layers – what is the idea behind?**

Compared with classical cryptography, physical-layer security marks a fundamentally differentiable paradigm, which realises security aims by measuring characteristics of the electromagnetic spectrum and by using both the physical conditions provided and the surroundings of a terminal.

PHYSEC technology has made it possible to develop an efficient, post-quantum resistant IoT key-establishment solution, enabling even the smallest terminal (e.g. 8-bit  $\mu\text{C}$ ) to be equipped with individual keys and authorised through physical proximity. We have also created a non-cloneable verification mechanism which makes it possible for the first time to check the authenticity, integrity and physical state of a device.

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**What is your recommendation to manufacturers and operators of access-control systems?**

Secure solutions are always realised by a sort of cat-and-mouse game – which, for example, in the development of RSA\* required more than 30 iterations. It is not purposeful to realise these tasks (those of the attacker and those of the architects) through a single person.

**Which is your favourite gimmick or the electronic achievement which you personally would no longer like to do without?**

Software-defined radios\*\* are marvellous tools, which are becoming ever more performance-capable and cheaper.

**Which key statistic in your area of work is a particularly challenging one, and would you like to share it with us?**

Secrecy capacity and secret key rate: how much complexity and entropy can exist in an environment, and how much of it can we successfully extract? And, to take an entrepreneurial point of view: as a start-up, of course cashflow plays a major role. Particularly when we are involved in constantly enlarging our team. There are twenty-one of us now, including 18 engineers.

**Additional information at:**

[www.intersec-forum](http://www.intersec-forum)

[www.physec.de](http://www.physec.de)

[www.sicherungssysteme.net](http://www.sicherungssysteme.net)

[www.hgi.rub.de](http://www.hgi.rub.de)

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\* RSA is a cryptographic software which can be used both for encryption and for digital signing. It uses a dual key, consisting of a private key, which is used for decrypting or signing data, and an open key, by which you encrypt or check signatures. The private key is kept secret and can only be worked out from the open key with a very high degree of trouble.

\*\* Software-defined radios (SDR) combine the concepts for high-frequency transmitters and receivers, in which smaller or larger parts of the signal dissemination are carried out by software.



The portrait photo of Dr Christian Zenger (source: Marquard, Ruhr University Bochum, 2016) is available at: [www.intersec-forum.com/photos](http://www.intersec-forum.com/photos)

### **Intersec Forum**

Intersec Forum is held annually under the motto 'Security meets Smart Building: digitalisation and security in tomorrow's buildings' and concurrently with the leading international trade fairs, Light + Building and ISH. From 19 to 23 March 2018, Intersec Forum is being held in Hall 9.1 of Light + Building, the world's leading trade fair for lighting and building services technology. Further information at: [www.intersec-forum.com](http://www.intersec-forum.com), [www.intersec-forum.com/twitter](http://www.intersec-forum.com/twitter) and [www.light-building.com](http://www.light-building.com).

### **Safety, Security & Fire**

In the expanding international field of civil security, Messe Frankfurt belongs to the leading fair and congress organisers with ten events around the world. The events for the safety, security and fire sector are held in Europe, Asia, the Near and Middle East and South America, and offer optimum access to these dynamic growth markets. Further information at [www.safety-security.messefrankfurt.com](http://www.safety-security.messefrankfurt.com)

### **Background information on the Institute for Security Systems (ISS)**

The Institute for Security Systems (ISS) is an interdisciplinary research institute of the University of Wuppertal and based in Velbert. Its work revolves around fundamental technical and social issues relating to the protection of people and the infrastructure whereby the focus of the interdisciplinary research is on the evaluation of innovative security systems in terms of safety, security, reliability and efficiency.

Further information: [www.sicherungssysteme.net](http://www.sicherungssysteme.net)

### **Background information on the ZVEI**

The German Electrical and Electronic Manufacturers' Association (*Zentralverband Elektrotechnik- und Elektronikindustrie e.V. – ZVEI*) represents the interests of 1,600 companies of the electrical industry and associated service companies in Germany. The impulses for one in three innovations in the German processing industry originate in the electrical industry. The sector employs 853,000 people in Germany and more than 706,000

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abroad. Further information: [www.zvei.org](http://www.zvei.org)

**Background information on Messe Frankfurt**

Messe Frankfurt is the world's largest trade fair, congress and event organiser with its own exhibition grounds. With over 2,500 employees at some 30 locations, the company generates annual sales of around €661\* million. Thanks to its far-reaching ties with the relevant sectors and to its international sales network, the Group looks after the business interests of its customers effectively. A comprehensive range of services – both onsite and online – ensures that customers worldwide enjoy consistently high quality and flexibility when planning, organising and running their events. The wide range of services includes renting exhibition grounds, trade fair construction and marketing, personnel and food services.

With its headquarters in Frankfurt am Main, the company is owned by the City of Frankfurt (60 percent) and the State of Hesse (40 percent). \* preliminary figures for 2017

For more information, please visit our website at:

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