

On behalf of Vincent Naessens and his staff, technical committee 11 and myself, I welcome you (very) heartily to SEC 2016 in Ghent.

I will not scare you off with a long talk. After all, a conference and in particular a reception is meant to be a networking event. But I would like to share just a few thoughts with you.

The events of the last few months, in Paris, Brussels and elsewhere, have shown us how fragile our current open society has become and how important security and safety are. However, many measures taken since then, not only proved to be ineffective and had a lot of negative side effects, but some of them also constitute a risk for our privacy. How much are we willing to offer in exchange for a perhaps imaginary but certainly highly appreciated increased sense of safety. Terrorism is certainly not the only challenge we will need to deal with.

Indeed, another challenge is the almost insatiable yearning of companies and service providers to collect as much information about their customers as possible, partly because they claim that with that data they can optimize the customers' experience, but also because customer data is valuable and can be sold to whomever is willing to pay for it. The social media have proven that monetizing customer data is highly profitable and we probably do not want to know what others are learning about us by executing sophisticated data mining algorithms on our personal data. More of this data is also being stored in the Cloud, and it is becoming unclear who is still in control of it. We close our eyes for or pretend not to know that some or maybe a large portion of that data is also sent to foreign intelligence agencies who use it to profile us and label us as friend or foe.

Certainly, we need stricter rules about what data can be collected and processed and the EU should and will help us with its new Privacy Regulation. However, this will not suffice.

We also need better techniques that prevent massive collection and processing, but this is quite a challenge, since we leave so many traces when we move around in both the virtual and physical world, which seem to blend more and more, and it becomes increasingly difficult to tell them apart. We are literally spied upon by an ever growing number of sensors and cameras, which can be made so small that they become unnoticeable, and they can even be mounted on drones that secretly follow our movements. Scary or exiting? Probably both!

This morning we were told that even perfect and formally verified software is susceptible to abuse, through sophisticated but clever attacks. It feels as if the few principles we were convinced of that they would protect us, are evaporating. We have

to return to the drawing table and clearly do a better job, ... start thinking out-of-the-box.

To add insult to injury, the fourth industrial revolution is already approaching very quickly. We will soon see a tsunami of data that will be flooding all local and Cloud storage, coming from billions or should I say zillions of IoT devices. It is obvious that these devices will have a major impact on our lives and it is hard to imagine how big this impact will be. Tens, maybe hundreds of wearable sensors will continuously monitor how fit we are, how we feel, whether we urgently need assistance or a preventive dose of a particular medicine. We will probably control everything in our environment through our thoughts, captured by IoT brain readers which convert these thoughts into appropriate messages that steer other devices. The security and privacy challenges are enormous. How do we shield our IoT devices against external manipulation? How can we prevent intrusions in our privacy? Optimists might think, "Hah, our privacy is safe again, for in this tsunami of data, it will be difficult if not impossible to identify a particular individual". But pessimists will reply that we already have very efficient algorithms that can quickly classify data and hence, select an appropriate but much smaller subset from that abundance of data. Our current techniques will not suffice, we have to do a lot better and that is good news for you!

Very recently, the European Commission announced that it will launch a 1 billion EUR project to boost the development of a quantum computer. That is great news, right? Many of our current security solutions are based on hard mathematical problems that will become easy to solve once the quantum computer exists. Yet more research for you, to find new solutions that can replace them once they have become obsolete.

I would like to end here with a few words to the young researchers present. A conference is, in the first place, a networking opportunity. Clearly, you are the networking generation. Each of you has on average more than 200 Facebook friends, so I do not need to convince you of the importance of a social network. However, a social network is even more important in your professional life. Why do certain people do so much better than others? No, they are usually not more brilliant than less successful people, but they have a better, more extensive network that provides them with more opportunities than they probably deserve. And that is why you are here tonight: start building your professional network! You should not leave here before you have met and spoken to at least a few people you do not know yet.

Enjoy the reception, the rest of the conference and hopefully there is some time left to discover the delights of this city.

Bart De Decker

*general chair SEC 2016*