

ICT IS NOT AN END IN ITSELF; IT MUST SUPPORT REAL-WORLD SOLUTIONS

Prof. Dr. Ina Schieferdecker was appointed Director of Fraunhofer FOKUS institute on 1 January 2015. We talked to her about what it means to work for FOKUS, how digitization is making our cities smarter, and why we must strengthen the defenses of some of our key infrastructures.

Together with Prof. Hauswirth, you have been head of the Fraunhofer Institute for Open Communication Systems since 1 January 2015. What are your plans?

To make the institute even stronger and more successful! As the digitization of our economy and our society advances, it is creating a need for an entire raft of information and communication technologies. These include, for example, technologies for the systematic and secure management of data and information resources, along with applications to help us do this. This means developing basic technologies for use in areas such as data preparation, data analysis and quality assurance and deploying them in practical applications. Typical application areas would be, for example, the city of the future, public safety and security, and industrial automation.

You are not a newcomer at FOKUS. Since 1997, you have been heading up a number of the institute's competence centers. What is it, in your opinion, that makes FOKUS different?

Those of us who work here identify very closely with the institute. FOKUS is a very creative, dynamic and innovative environment, where everyone knows that the work they produce is not going to be consigned to the trash can. We have a motto, "demo or die", which was introduced back in the 1990s by the previous institute director, Prof. Popescu-Zeletin. It means that the research findings at FOKUS are developed and applied in the real world, that is, we are always working on practical solutions. To demonstrate this, we carry out pilot projects. We send prototypes or pre-products to our industry partners or to spin-offs. The institute has now established 15 spin-off companies. In addition to enjoying close ties with industry, we have very good links

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with the city's universities and its public administration, and these are useful in preparing and establishing the appropriate organizational and legal framework for the new solutions. It is this unique mix of expertise that makes FOKUS different.

What in your view is the most important aspect of the FOKUS competence centers?

Our competence centers are managed and run as independent business units. By that I mean that Fraunhofer-Gesellschaft performance indicators are applied to each individual competence center. Because each center is required to operate successfully in the research market, it must also be allowed an appropriate degree of autonomy and freedom of action. At the same time, the competence centers need a strong institute capable of publicizing individual research findings, bundling them into attractive, larger solutions and integrating them into the value chain. There is certainly some potential for improvement in the way we do this.

What changed for you when you became head of the institute?

I used to have to concern myself with just one FOKUS competence center: Now I have to consider all of FOKUS. In terms of issues, there are two main topics that have made me look well beyond the confines of the competence centers for some time. One is the interdisciplinary issue of smart cities, which we have been working on for the past five years. It has proved to be very successful for us and we have participated in some major European projects like OUTSMART, iCity and now Triangulum. Within the context of the smart city, open data has become a very successful field for us. First, we worked with daten.berlin.de to create Germany's first open data portal in Berlin. Then we built the GovData.de portal for the whole of Germany, and we have now been commissioned with our partners to set up the European open data portal. The other topic that I am passionate about is the quality assurance of software-based systems: functionality, scalability, safety, IT security and along that the quality and security of critical infrastructures. These have also become dependent on ICT now and their long-term quality and security are therefore important.

What are you looking for from the staff at FOKUS?

I would like to see us present ourselves even better as FOKUS employees. We need synergies that extend beyond the boundaries of the competence centers. I would therefore like to see a general broadening of horizons. Over the past 20 years, we have succeeded in developing ICT as a topic of its own. But in the meantime, ICT has become an integrated discipline that is becoming increasingly important for other application areas.

What issues should FOKUS be more involved with in the future?

With the issue of resilience – the resilience of critical infrastructures. This is a highly relevant issue for our society – and not just for smart cities but also for Industry 4.0. I also believe that we have to take the Internet of Things more seriously. With the M2M, the preparations for 5G and our plans for data analytics, we have carried out our first successful work at the institute in this area. And our work will continue to support businesses. In addition to the success of Industry 4.0,

BIOGRAPHY

Prof. Dr. Ina Schieferdecker studied mathematical computer science at the Humboldt University of Berlin and gained her doctorate in 1994 at the Technische Universität Berlin. She has worked at FOKUS, the Fraunhofer Institute for Open Communication Systems, since 1993 and holds the chair for Model-based Development and Quality Assurance of Software-based Systems at the Freie Universität Berlin. At FOKUS, she was responsible for establishing the Testing, Interoperability and Performance (TIP), Modeling and Testing (MOTION) competence centers and the System Quality Center (SQC). She is also Vice-President of the Software Quality and Training Research Group (ASQF) and a member of the German Academy of Science and Engineering (acatech).

the technologies for energy and supply grids and urban infrastructures in general are enjoying a boom period.

Where will you set your research priorities?

Also in the resilience of critical infrastructures. At the moment, we have an in-depth knowledge of quality assurance as it relates to individual components. When these components are part of a network, or when we are dealing with open systems, it starts to get more difficult. But when you need to ensure that systems of systems in distributed, dynamic environments will operate safely and reliably, it starts getting really complicated. This applies in principle to all the critical infrastructures in an urban environment. A lot of research and practical work still needs to be done before we can consider these infrastructures adequately resilient.

You are closely associated with the topic of smart cities.**What does it mean exactly?**

"Smart cities" means the digitization of a city with the aim of improving the quality of life of its citizens. It means improving the environment and mobility, as well as delivering the increased transparency needed to allow citizens to play an active part in political and social processes. A smart city should create new business opportunities because it is all about urban spaces changing and evolving. ICT-based solutions can provide a significant boost to this process.

Do we really want smart cities?

Of course we want smart cities. But we must retain a sense of proportion: We don't want a city packed with technology, but one that gives priority to the needs of the people who live there. For example, Berlin currently has a serious problem with private transportation. I myself live on the outskirts of the city and have limited access to public transport. A multi-modal transport would be really helpful for me, but I am unable to obtain the necessary information in time. It would be much more efficient, I believe, if the transport operators were to supply live data to allow added value providers to integrate the various services and so offer an easy and trouble-free system for getting around the city. We should not view the data needed to do this merely as a

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business resource but as common property, because it would be in the public interest to make the data available. In order to use it, however, you would first have to deal with the issue of how to enable the "owner" of the data to retain ownership. You would also have to provide a way of accessing the data as flexibly as possible, maintaining data quality and protecting the data itself. Suitable technical solutions can be found within the organizational and legal framework. By combining these with the work on data processing and analysis, as that advocated by Prof. Hauswirth, it would be possible to come up with innovative scenarios to improve our cities.

Is Berlin a smart city?

Berlin has great potential, but the practicalities still need improvement. There are certainly some wonderful reference projects like STREETLIFE and some specific solutions like KATWARN. The federal character of the city is something of a barrier, as are the procurement procedures, which tend to favor the cheapest solution rather than the more innovative ones that are likely to prove more effective in the medium term. This is making it difficult for the city to benefit from the latest research findings. I certainly would not call that very smart.

You were born in Berlin. What is life all about for you here?

Berlin is "the" city in Germany – "the" place to be. The city's creativity, diversity and agility are very important to me in both my professional and personal life.

