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Creating a Planetary Nervous System with the Internet of Things
A Major Challenge of the Second Machine Age

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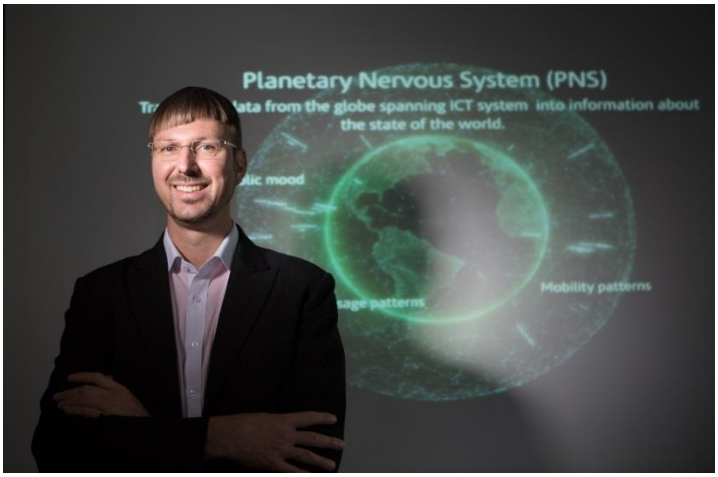
ABSTRACT & SHORT BIO

The goal of the Planetary Nervous System is to create an open, public, intelligent software layer on top of the "Internet of Things" as the basic information infrastructure for the emerging digital societies of the 21st century.

After the development of the Computer, Internet, the World Wide Web, Smartphones and Social Media, the evolution of our global information and communication systems will now be driven by the "Internet of Things" (IoT). Based on wirelessly connected sensors and actuators, it will connect "things" (such as machines, devices, gadgets, robots, sensors, and algorithms) with things, and things with people.

Already now, more things than people are connected to the Internet. In 10 years time, it is expected that something like 150 billion sensors will be connected to the IoT. Given such masses of sensors everywhere around us -- sensors in our coffee machine, our fridge, our tooth brush, our shoes, our fire alarm etc. -- the IoT could easily turn into a dystopian surveillance nightmare, if largely controlled by one company or by the state. For the IoT to be successful, people need to be able to trust the new information and communication system, and they need to be able to exert their right of informational self-determination, which also requires the possibility to protect privacy.

Most likely, the only way to establish such a trustable, privacy-respecting IoT is to build it as a Citizen Web. Citizens would deploy the sensors in their homes, gardens, and offices themselves, and they would decide themselves what sensor information to open up (i.e. decrypt), and for whom (and for how long). In other words, the citizens would be in control of the information streams. A software platform such as open Personal Data Store (openPDS) would allow everyone to manage the access to personal data produced by the IoT.



Dirk Helbing is Professor of Sociology, in particular of Modeling and Simulation, and member of the Computer Science Department at ETH Zurich. He earned a PhD in physics and was Managing Director of the Institute of Transport & Economics at Dresden University of Technology in Germany. He is internationally known for his work on pedestrian crowds, vehicle traffic, and agent-based models of social systems. Furthermore, he coordinates

the FuturICT Initiative (http://www.futurict.eu<http://www.futurict.eu/>), which focuses on the understanding of global techno-socio-economic systems, using Smart Data. His work is documented by hundreds of scientific articles, keynote lectures and media reports worldwide. Helbing is elected member of the German Academy of Sciences “Leopoldina” and was the co-founder of the Physics of Socio-Economic Systems Division of the German Physical Society and ETH Zurich’s Risk Center. In 2013, he became a board member of the Global Brain Institute in Brussels. Within the ERC Advanced Investigator Grant „Momentum,“ his team works on computer simulations of interacting cognitive agents to understand the emergence of social order and collective intelligence. Helbing's recent publication in Nature discusses globally networked risks and how to respond. With a publication in Science, he furthermore contributed to unveiling the hidden laws of global epidemic spreading. On January 10, 2014, he received a honorary PhD from the TU Delft jointly from the Faculty of Technology, Policy and Management and the Faculty of Civil Engineering and Geosciences.