

# Measuring the most complex system ever built

May 30 2013

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"Few people realize how dependent we have become in such a short time on the most complex technical system ever built by man, the internet. Without it there would be no more cashpoints, no water from the tap and no more food from the supermarket." This warning is given by Dr Aiko

Pras of the University of Twente's Design and Analysis of Communication Systems (DACS) group.

Dr Pras explains: "DACS is concerned not only with [communication](#) over the internet but also communication on what are known as 'SCADA systems', which are responsible for monitoring and coordinating critical infrastructures such as gas and water networks and the [power grid](#). We're also working on car-to-car communication, which in future will enable cars to communicate with one another, making the roads much safer."

Aiko Pras: "In spite of the vital importance of the internet to society there are few researchers working on [internet use](#) and misuse. There are still lots of technical challenges we need to overcome for our research: the amounts of data being sent over the internet are gigantic, making it impossible to store and analyse all of it. Smart measuring techniques that enable conclusions to be drawn based on only a small part of the data are badly needed, therefore. You can compare measuring the internet with measuring the universe: that too involves enormous quantities of data and you can't measure the things you would like to. Black holes, for instance, are detected using indirect methods such as measuring colour shifts."

## Cybercrime

Dr Pras goes on: "The field of information technology is and will remain exciting because it is constantly developing. Take cybercrime, for example: criminals will increasingly be using the internet. A nice research project that we are currently working on is mapping 'bad neighbourhoods' on the Internet, examining whether the attacks come from. And are there particular [internet providers](#) or areas where [criminals](#) are concentrated? Another interesting development is the cloud: everyone stores all sorts of documents there, but no-one considers that all these files eventually end up in the United States. You can

depend on it that the American authorities – and soon the Chinese – will be reading them."

## **The rest of the world**

About himself Aiko Pras says: "Besides my work at the University of Twente I am very active on the international stage, for instance in the International Federation for Information Processing (IFIP), where I chair the committee dealing with [Communication Systems](#) (TC6). One of the things I promote there is open access to scientific and academic publications: everyone should be able to access our publications. In addition to my work at the IFIP I coordinate a European Network of Excellence (Flamingo) and chair the EU Future Internet Cluster. I think scientists in the Netherlands sometimes focus too much on their own country; often more can be achieved in Europe and the rest of the world."

Provided by University of Twente

Citation: Measuring the most complex system ever built (2013, May 30) retrieved 11 May 2024 from <https://phys.org/news/2013-05-complex-built.html>

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