INVITED TALK

Urban Traffic System, Computer Networks and PowerGrids: Different Systems – Same Solutions?

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Abstract: In the last decade, technical and logistic systems became more and more specialised, complex and in most cases globally distributed. Already today, it is not possible to oversee or control them from any centralised instance.

Nevertheless, from the modelling point of view and their mathematical background those networks seem to have a lot in common. The author gives a comparison of urban traffic systems, peer-to-peer computer networks and power grids. In a set of examples will be shown, how an interdisciplinary application of methods and principles from one system may contribute to the progress of other ones.

Last but not least, it is intended to show that self-organisation will be the key issue to guarantee the efficient work of those systems in the future. We argue that self-organisation not only come along with structure building but also demonstrate that a suitable structure building may support the emergence of work division and cooperation.

Biography: Prof. Dr.-Ing. habil. Herwig Unger received his PhD with a work on Petri Net transformation in 1991 from the Technical University of Ilmenau/Germany and his habilitation with a work on large distributed systems from the University of Rostock/Germany in 2000. Since 2006 he is a full professor at the FernUniversität in Hagen and the head of the Chair for Communication Networks.

His research interests are in self-organization, adaptive and learning systems, Internet algorithms and simulation systems.