**Addressing key IoT protocol performance challenges:
resource-efficiency, robustness and scalability**

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Abstract:

The Internet-of-Things requires reliable networking from a small scale (e.g. building automation) to a world-wide scale (e.g. energy system, air traffic system). Resource-efficiency, robustness and scalability are key performance requirements for the protocol design. The talk will highlight on-going research efforts regarding the model-based development and performance evaluation of future IoT-protocols in different application areas. One application area to be addressed in the talk is the convergence of energy system control protocols with embedded Web services to implement Cyber Physical Energy Systems. A concrete example is the on-going standardization effort in ISO/IEC 15118 on Electric Vehicle to Grid communications. Networked mobile robot systems are another challenging IoT area. In this context, new solutions for robust and resilient routing protocols have been proposed. Finally, innovative solutions -being currently developed in the research centre SFB 876- for battery lifetime extensions of distributed, autonomous IoT systems leveraging the features of next generation LTE-A networks such as carrier aggregation are presented.