

COMPUTER SCIENCE RESEARCH SEMINAR

Dependable Industrial Wireless Sensor-Actuator Networks

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Abstract: Industrial Internet of Things (IoT), underlying the Fourth Industrial Revolution (or Industry 4.0), promises one of the largest potential economic effects of IoT - up to \$47 trillion in added value globally by 2025. Industrial networks, the underlying support of Industrial IoT, typically connect hundreds or thousands of sensors and actuators in industrial facilities, such as manufacturing plants, steel mills, oil refineries, and infrastructures implementing complex monitoring and control processes. IEEE 802.15.4-based wireless sensor-actuator networks (WSANs) operate at low-power and can be manufactured inexpensively, which makes them ideal for industrial networks where energy consumption and costs are important. The current approach to implementing WSANs has poor scalability and error-prone configuration, posing prohibitive barriers to the use of WSANs. To enhance the network scalability, we propose to replace the centralized network architecture with a hierarchically distributed architecture combined with novel cross-s poor scalability12 72 r 4*(ion)-272((Cs)hiac q8((t,(ti)-04 ref*EMC 04 levd)5