Wireless Sensor Networks in Logistics

5-Slides-Talk

Dipl.-Wirtsch.-Inform. Sebastian Zöller
Sebastian.Zoeller@KOM.tu-darmstadt.de
Tel.+49 6151 166103

Sources: www.deeds.informatik.tu-darmstadt.de; mindbend.in; www.swisscom.com; www.sembiyan.com; www.bmvbs.de

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Position within KOM Research

- Logistics & Public Transportation
  - Network Infrastructure
  - Smart Spaces / Ambient Intelligence

- Sensor Networks
  - Mobile Communication Technologies
  - Network Security

- ADiWa (Allianz Digitaler Warenfluss)

Results - Impact

Seamless Multimedia Communications

Foundations of Research
Improving Information Availability and Reaction Times

Damage or loss of goods during transport or delay of transport due to environmental influences

- Early information essential to initiate appropriate reactions
- Event detection and communication with wireless sensor network technology

Wireless sensor networks enable customers, forwarders and carriers to take adequate measures in time and adapt their business processes accordingly.
Reducing the Gap

- Readout at point of destination
- Readout at transshipment site
- Real-time data from wireless sensors

Actual Situation vs. Vision

Supply Chain

Event Occurrence

Event Detection

Time $\Delta$

Event Occurrence

Event Detection

Time $\Delta$

Event Occurrence

Event Detection

Time $\Delta \to 0$

Time
Wireless Sensor Networks in Logistics – Scope

- **Wireless Sensor Networks**
  - Communication
  - Security
  - Infrastructure

- **Logistics**
  - Tracking & Tracing
  - Supply Chain Management
  - Supply Chain Event Management
  - Mobile Supply Chain Event Management

- **Internet of Things**
  - Smart Loading Equipment
  - Smart Goods

- **Complex Events**
  - Event Detection
  - Event Processing
  - Event Notification

- **Business Process Management**
  - Business Process Improvement
  - Business Process Adaptation

- **RFID**
  - Integration Wireless Sensor Networks & RFID
Wireless Sensor Networks in Logistics – Challenges

Selected challenges
- Real-time data of critical parameters and events
- Communication in heterogeneous environment
- Security
- Different means of transport
- Influences from loading equipment and freight
- Mobile environment
- Measurement flexibility

Significant resource constraints of wireless sensor networks and need to minimize costs within the logistics domain

Balancing trade-off effects essential
Thank you for your attention. Questions?

Dipl.-Wirtsch.-Inform. Sebastian Zöller

Sebastian.Zoeller@KOM.tu-darmstadt.de
Merckstr. 25
64283 Darmstadt
Germany

Phone +49 (0) 6151/166103
Fax +49 (0) 6151/166152
www.kom.tu-darmstadt.de