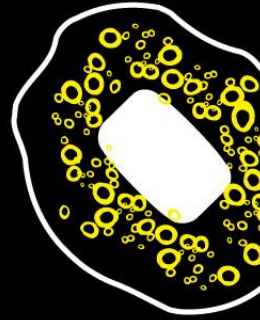


UNIVERSITY OF TWENTE.

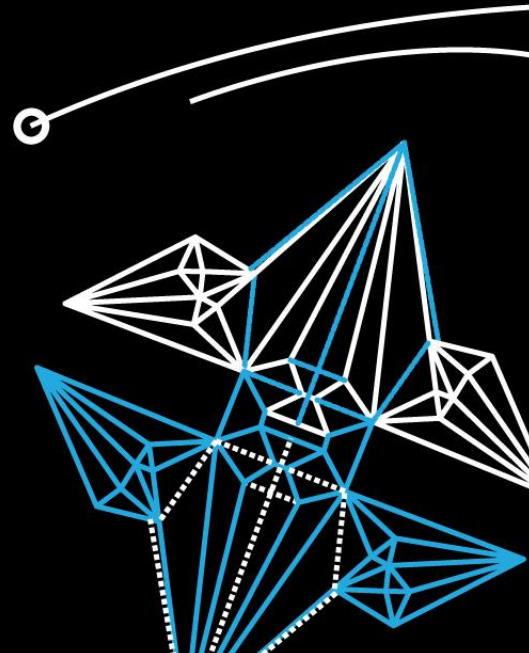


WiSE

Faculty of Electrical Engineering, Mathematics, and Computer Science

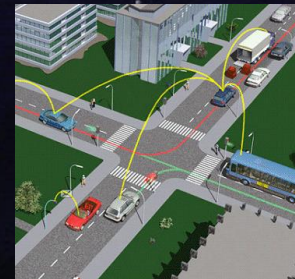
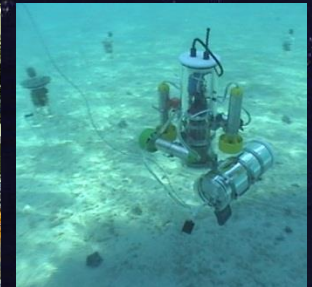


Centre for Wireless and Sensor Systems



Wireless and Sensor Systems

- “Everything” is networked
 - Even very small things like sensors and actuators
 - Explosion in the number of connected end devices
- In-network processing
 - Scalability and reliability
 - Process data in network end devices
 - Decentralized and localized control
 - Services executing inside the network



Smart objects





Smart objects



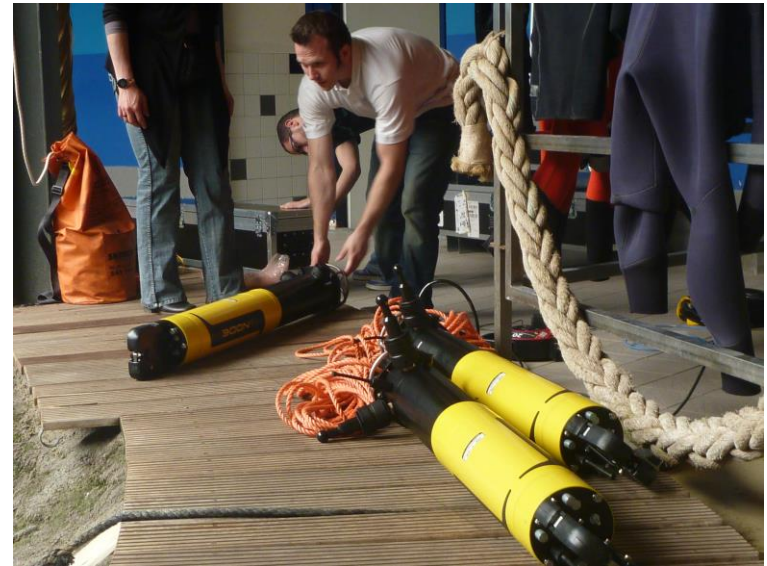


Opportunistic Sensing

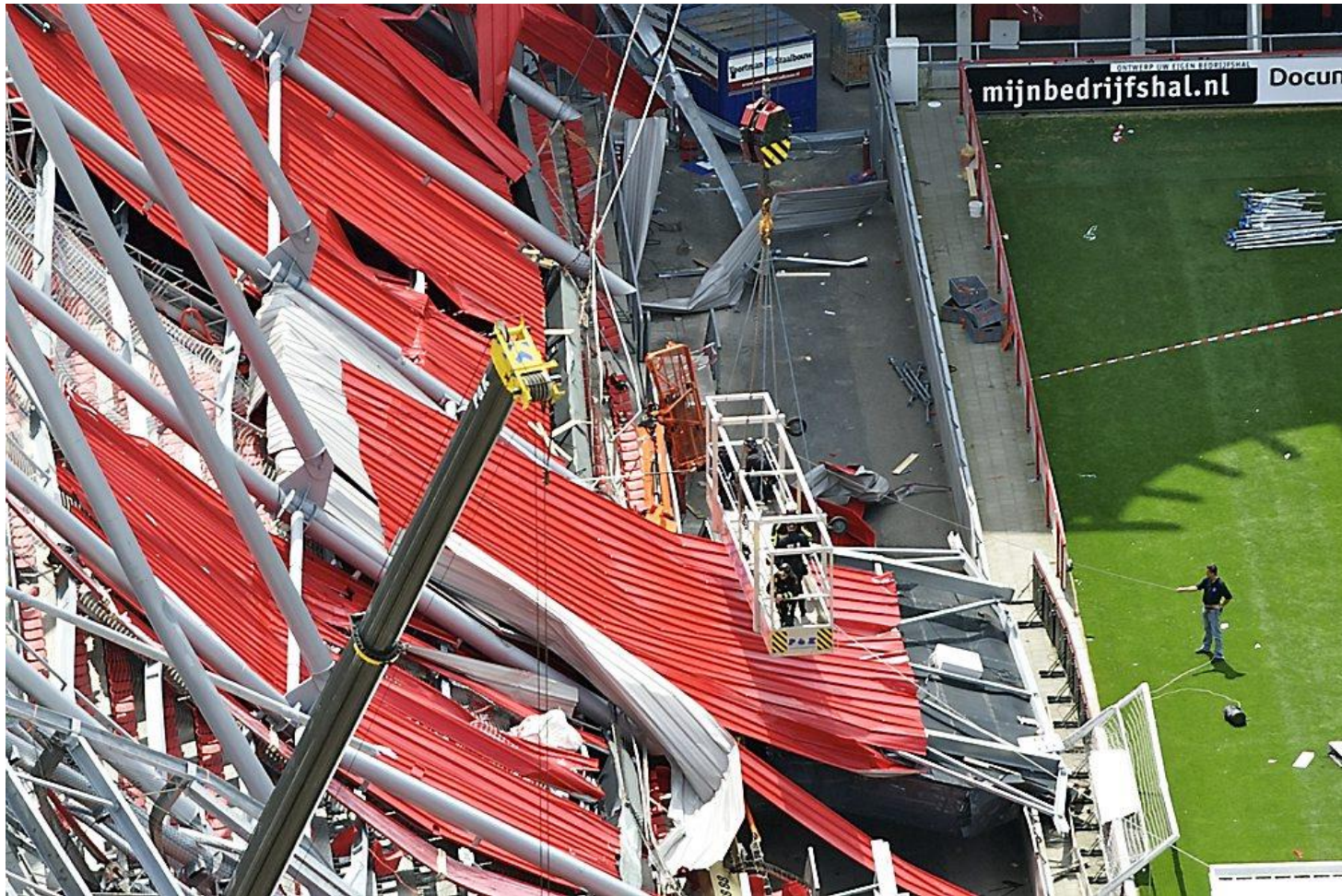
- Use the technology and people around us to observe, discover, and act on the patterns that shape our lives.
 - Smart phones
 - Sensor networks
 - Available infrastructure
 - Ad hoc communication
- A new approach that empowers all of us to illuminate and change the world around us.



Underwater sensor networks



Structural health monitoring





Pont de la Poya Switzerland

WiBRATE Case Studies



High speed trains

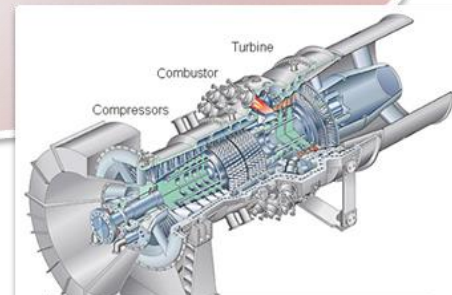


Automotive manufacturing

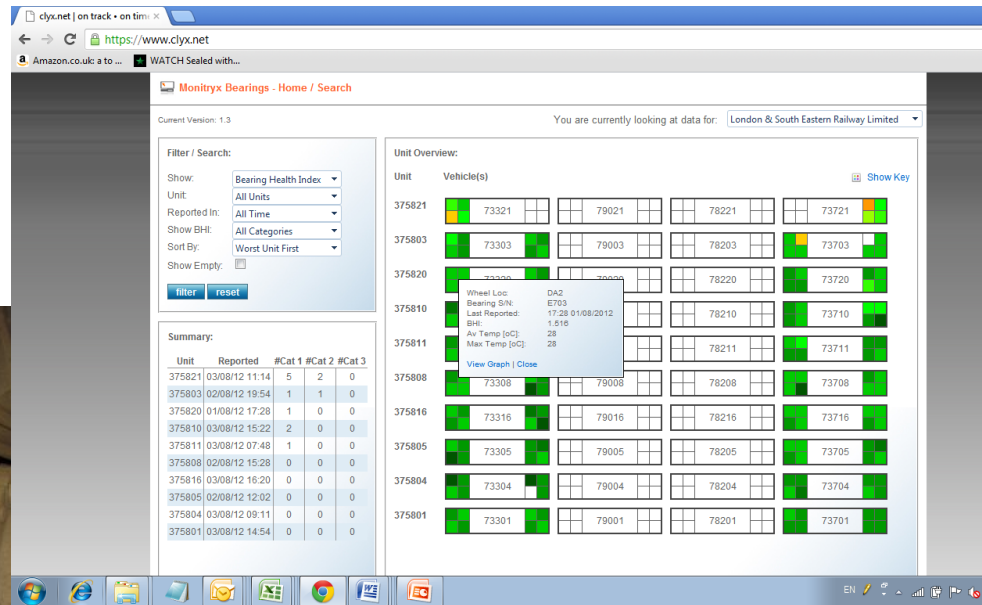
Fully automated condition-based
maintenance and control



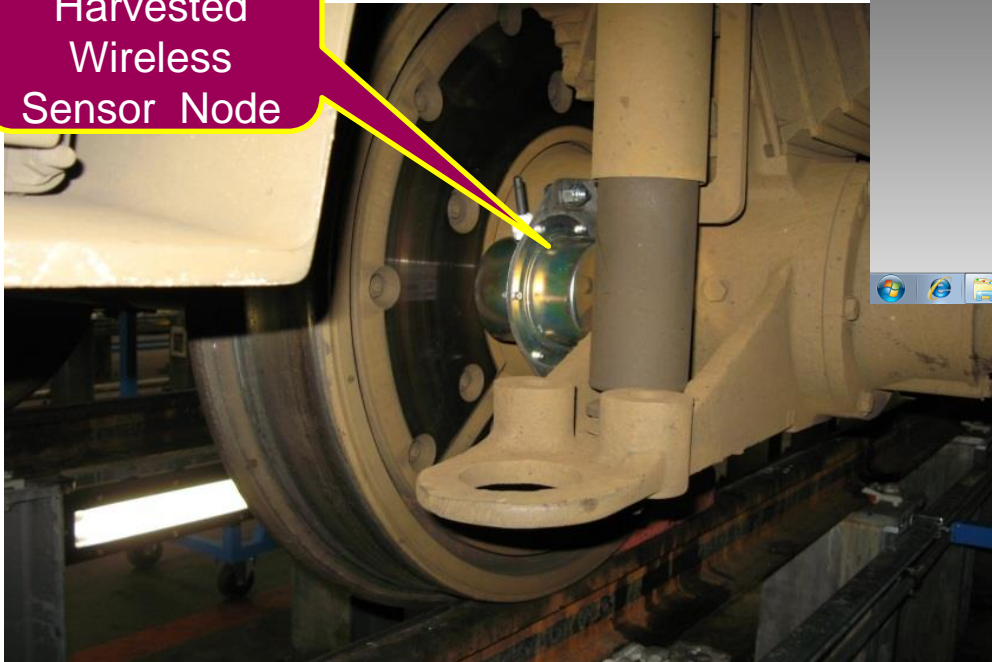
Rotor blade monitoring
& control



Gas turbine monitoring
& control

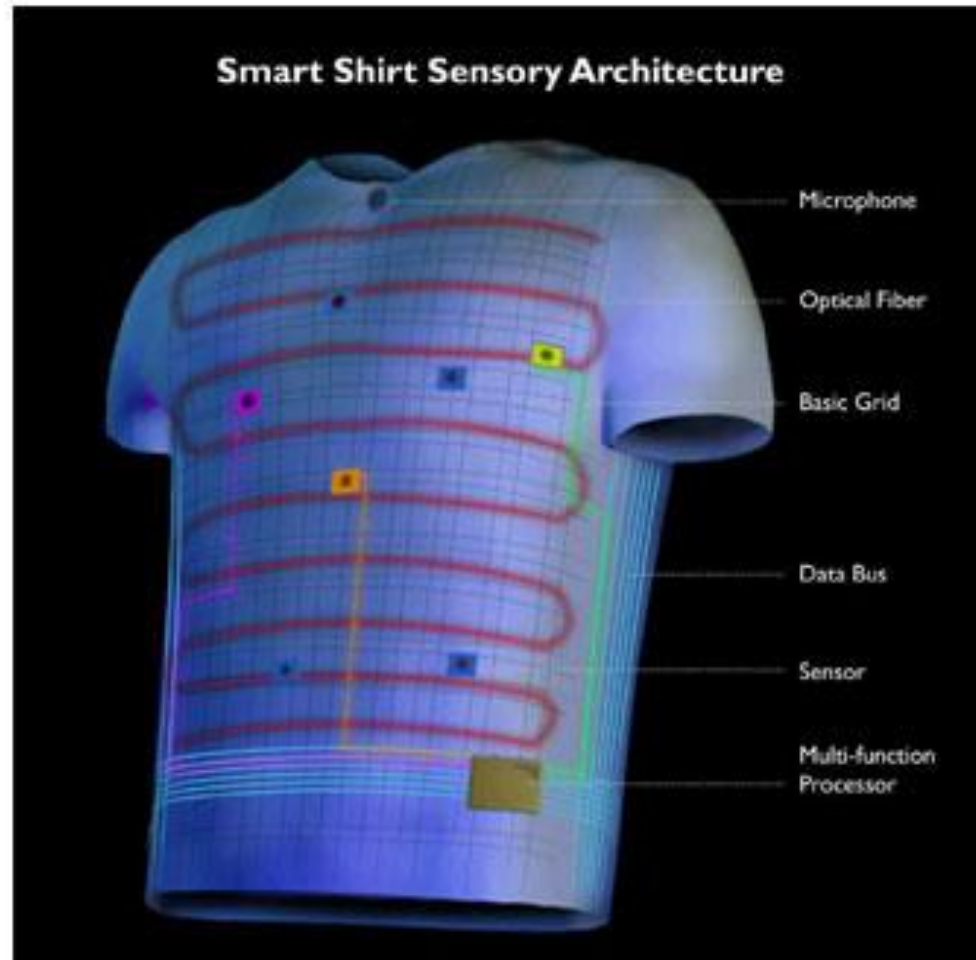


Energy
Harvested
Wireless
Sensor Node



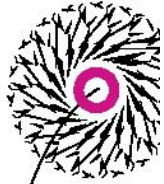
Wireless, Self-Powered Vibration Monitoring
and Control for Complex Industrial Systems

Smart textile





Smart Grid



- The problem
 - Energy and comfort in houses and public buildings
 - climate, environment, prices, comfort
- Opportunities
 - smart appliances, distributed power
 - smart grid.





“Dutch Panda”

- 
- Wildlife monitoring





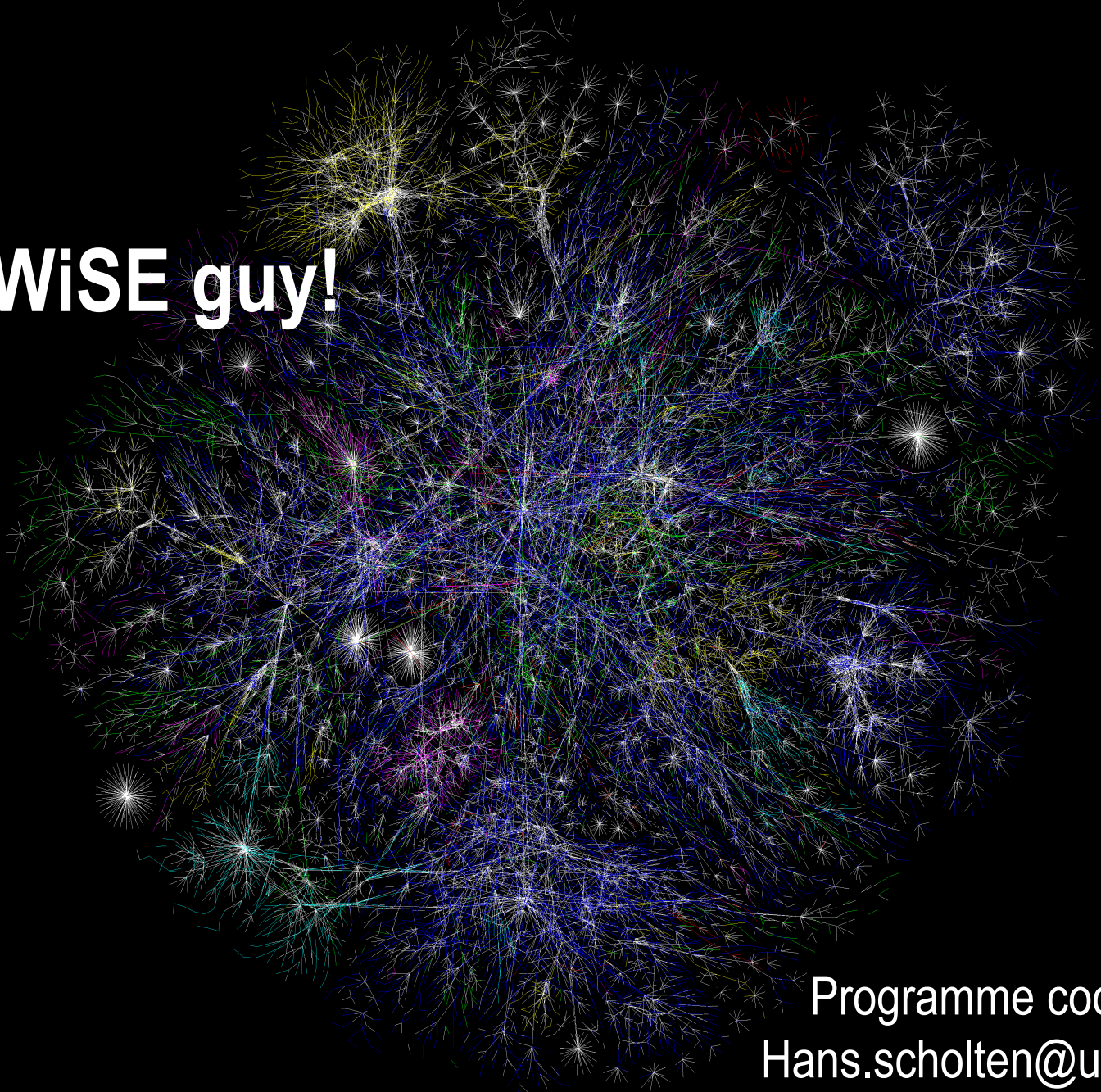
Research areas of WiSE

- **Platforms**
 - System on Chip, smart textiles, sensors, smart phones
- **Networked Embedded Systems**
 - System software, distributed processing, (real time) operating system
 - Self*, energy efficient, reliable, coexistence, cross-layered, ..
 - High density networks, heterogeneity, mobile networks, ..
- **Distributed services & data management**
 - Service management, privacy, resource management
 - Activity detection, event detection, sensor fusion, outlier detection, context awareness, distributed signal processing
 - Localization, time synchronization
- **Abstractions, mechanisms, and algorithms**
 - Virtual machines, business rules, opportunistic sensing
 - Neural networks, fuzzy logic, artificial intelligence
- **Development and deployment**
 - Reprogramability, debugging facilities, data dissemination, ...

Wise Groups

- Pervasive Systems (PS)
- Computer Architectures for Embedded Systems (CAES)
- Design and Analyses of Communication Systems (DACCS)
- Short Range Radio (TE/SRR)
- Integrated Circuit Design (ICD)
- Biomedical Signals and Systems (BSS)

Be a WiSE guy!



WiSE
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Hans.scholten@utwente.nl