**Development and Test with the DSN: A Case-Study**

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**Case Study: Wireless Fire Detection and Alarm System developed at Siemens Building Technologies**

**Requirements**

- 100+ nodes wireless multi-hop sensor network
- Lifetime > 5 years with 2xAA
- Detection of link and node failures < 300 sec
- Alarm notification < 10sec
- Bidirectional communication (alarm indication)

**Development Approach**

1. Protocol evaluation using simulation
2. Characterization using prototype implementations
3. Semi-automatic testing and verification of prototypes using a Deployment-Support Network
4. Live field testing in different configurations/locations

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**Why DSN (and not cable-based testing, or over-engineered fire-detectors with debugging capability)?**

- wireless & battery operated: -> allows for realistic placement of nodes
- no modification of target hardware
- no implementation of debugging services on the target
- easy setup & deployment

**How to set up the DSN?**

1. Connect Target Nodes to DSN Nodes
2. Deploy Target-/DSN-Node Pairs
3. Server and Client Setup

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**Automated Test-Case Generation and Evaluation**

**Test Example:**

- Measurement of channel quality between different pairs of deployed nodes.
- Quality difference between day and night?
- High-resolution measurements but also long term average.

**Test Automation and Evaluation:** Java Tool with integrated views as a client to the DSN Server

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