

**ICANN**  
ANNUAL GENERAL

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**ABU DHABI**

28 October–3 November 2017

# CACHE-AWARE CONGESTION CONTROL IN WIRELESS SENSOR NETWORKS

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# INTERNET OF THINGS AND WIRELESS SENSOR NETWORKS

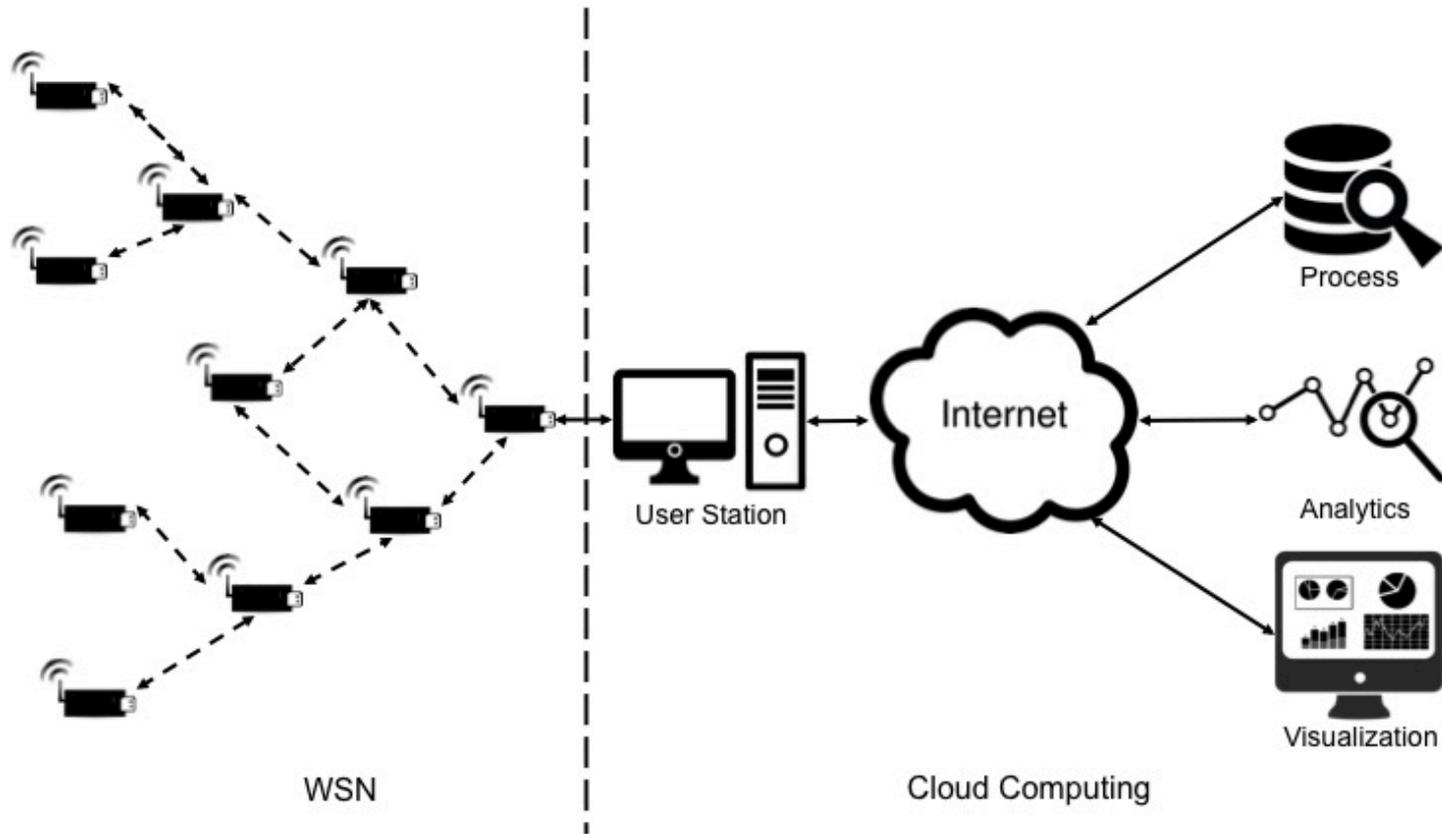


Figure 1: Internet of Things and Wireless Sensor Network Framework

# DATA RELIABILITY IN WSN

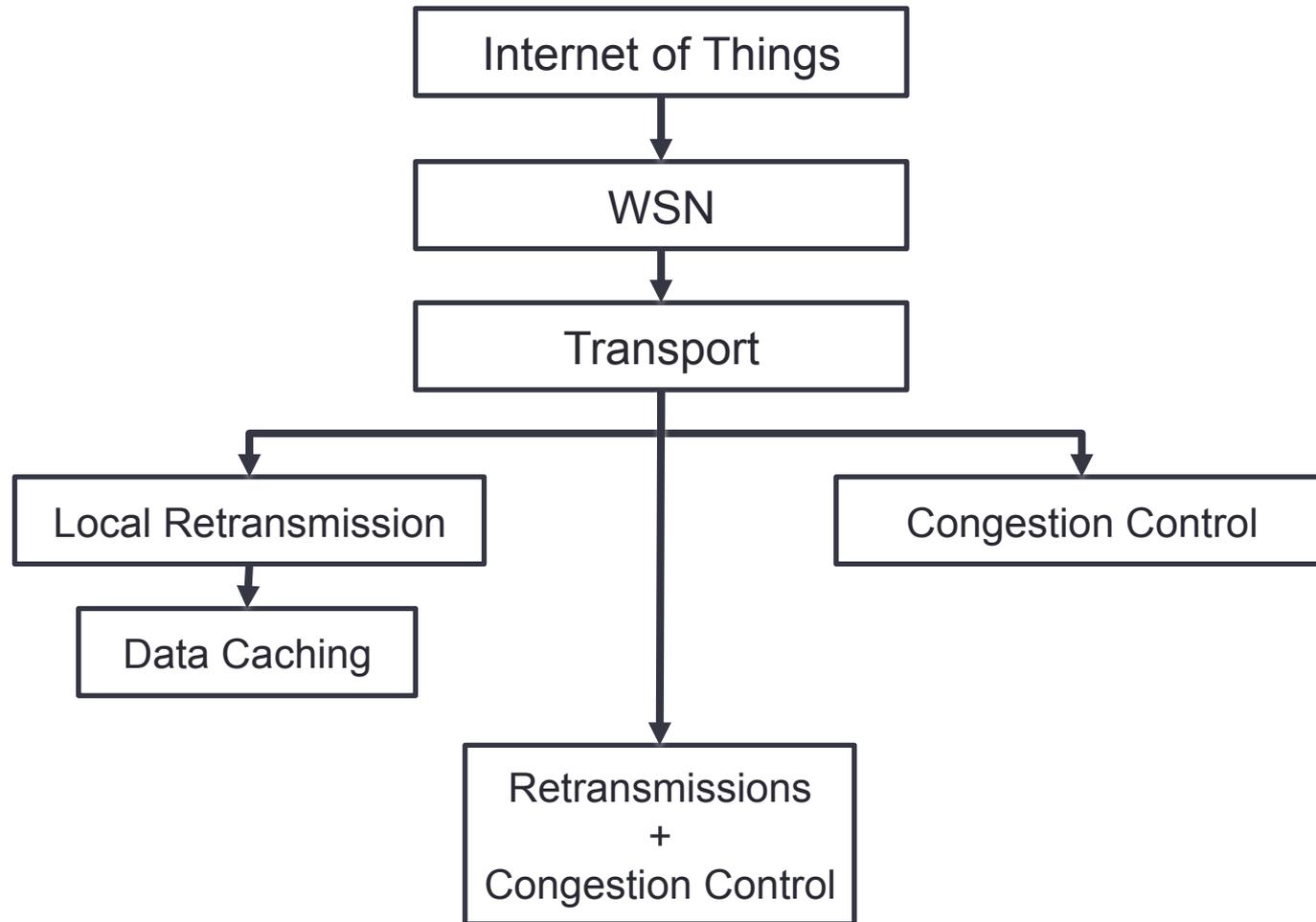


Figure 2: Improving Data Transport in Wireless Sensor Networks

# DATA CACHING IN WIRELESS SENSOR NETWORKS – Smart Agriculture

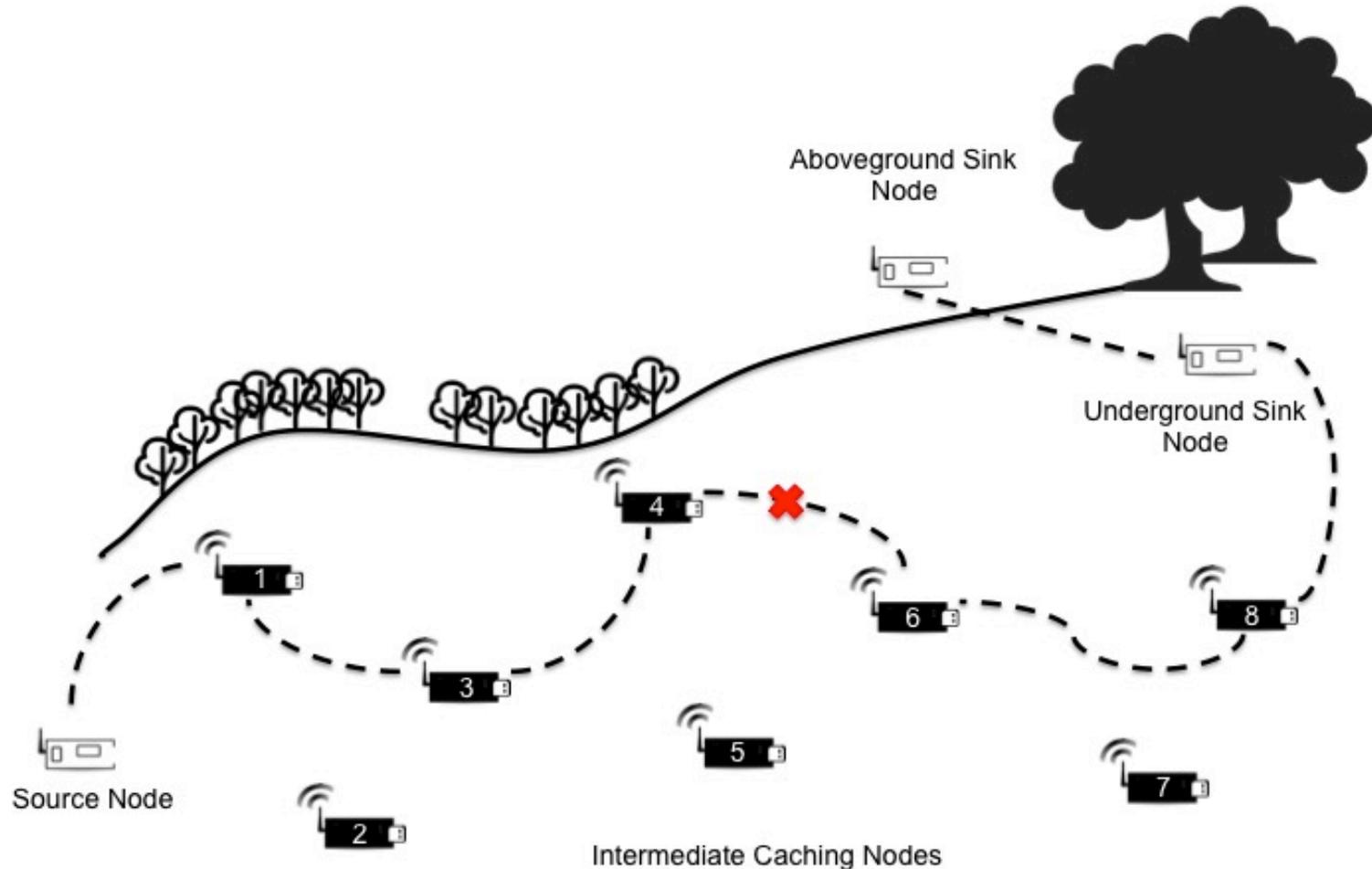


Figure 3: Data Transport in Wireless Sensor Networks for Smart Agriculture [1]

# DATA CACHING IN WIRELESS SENSOR NETWORKS – Smart Cities

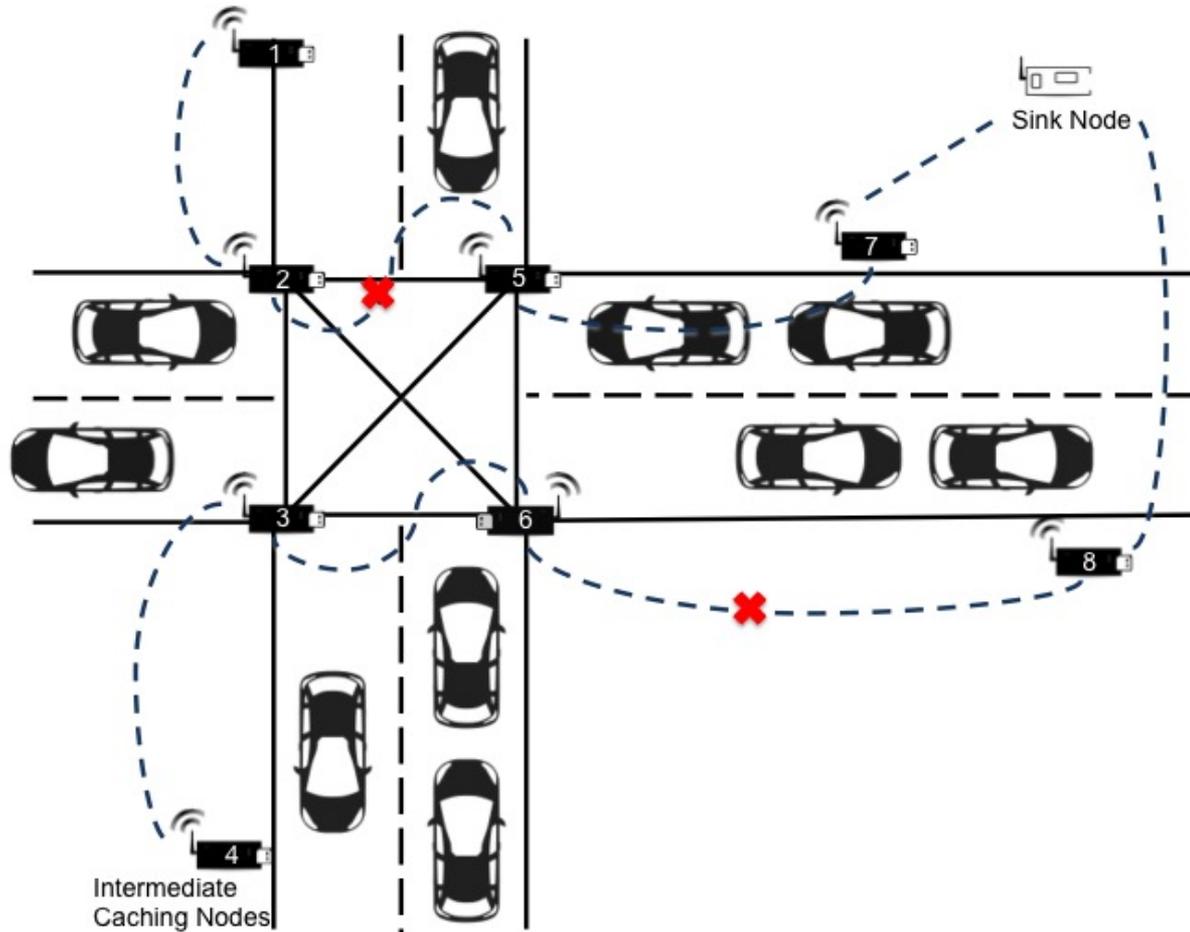


Figure 4: Data Transport in Wireless Sensor Networks for Smart Cities

# CONGESTION LOCATION IN WSN

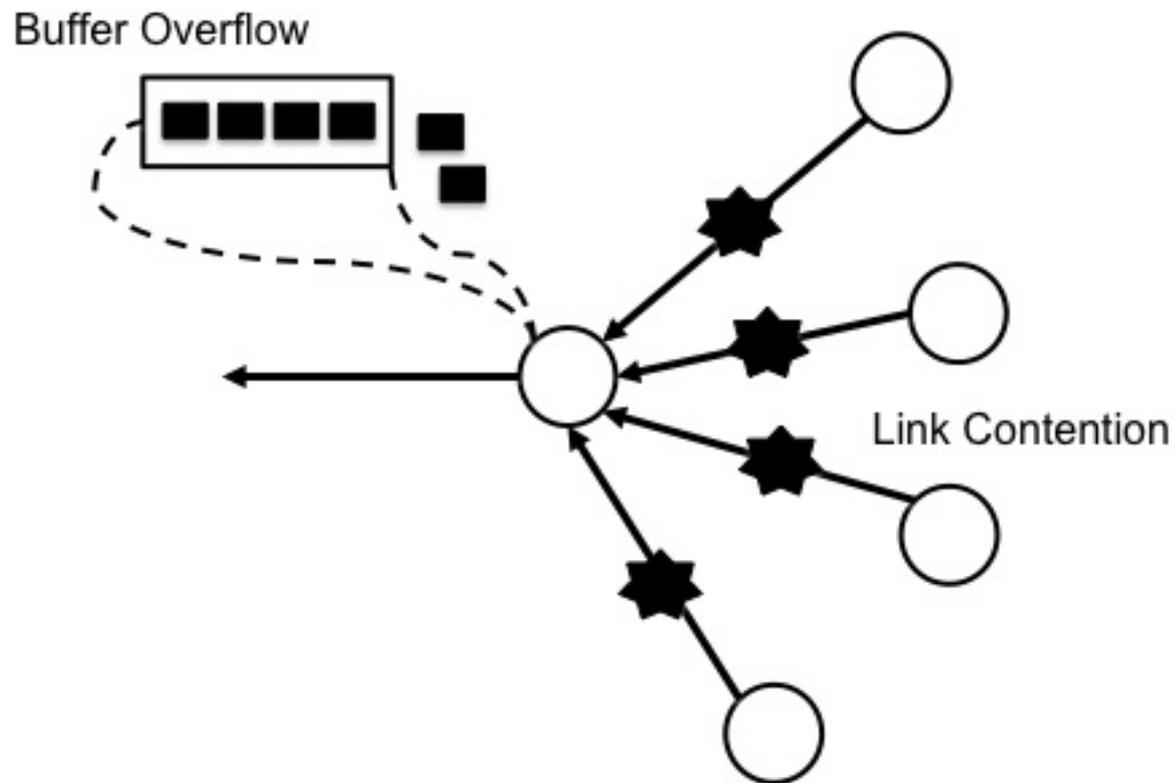


Figure 5: Packet Loss Scenarios in Wireless Sensor Networks

# CONGESTION LOCATION IN WSN

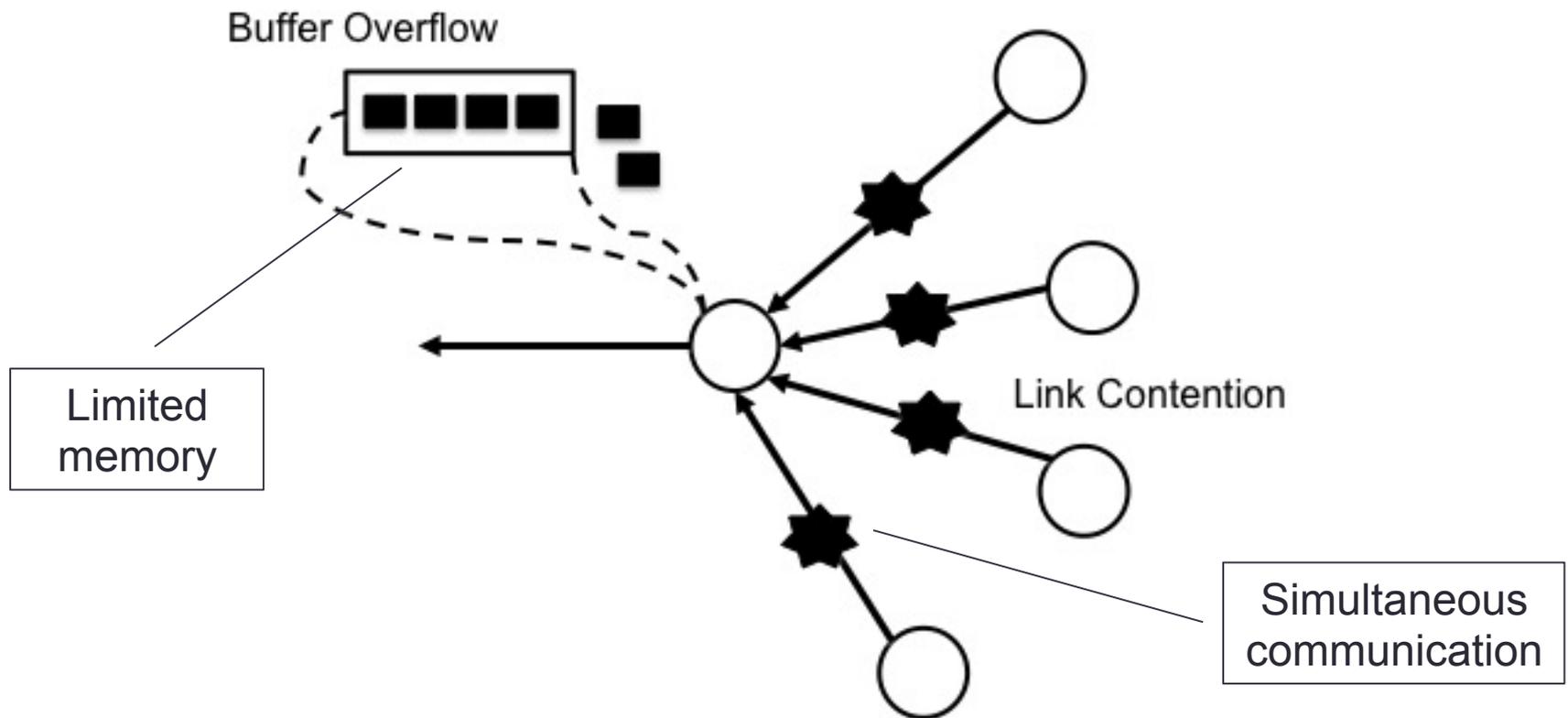


Figure 5: Packet Loss Scenarios in Wireless Sensor Networks

# CONGESTION CONTROL MECHANISMS

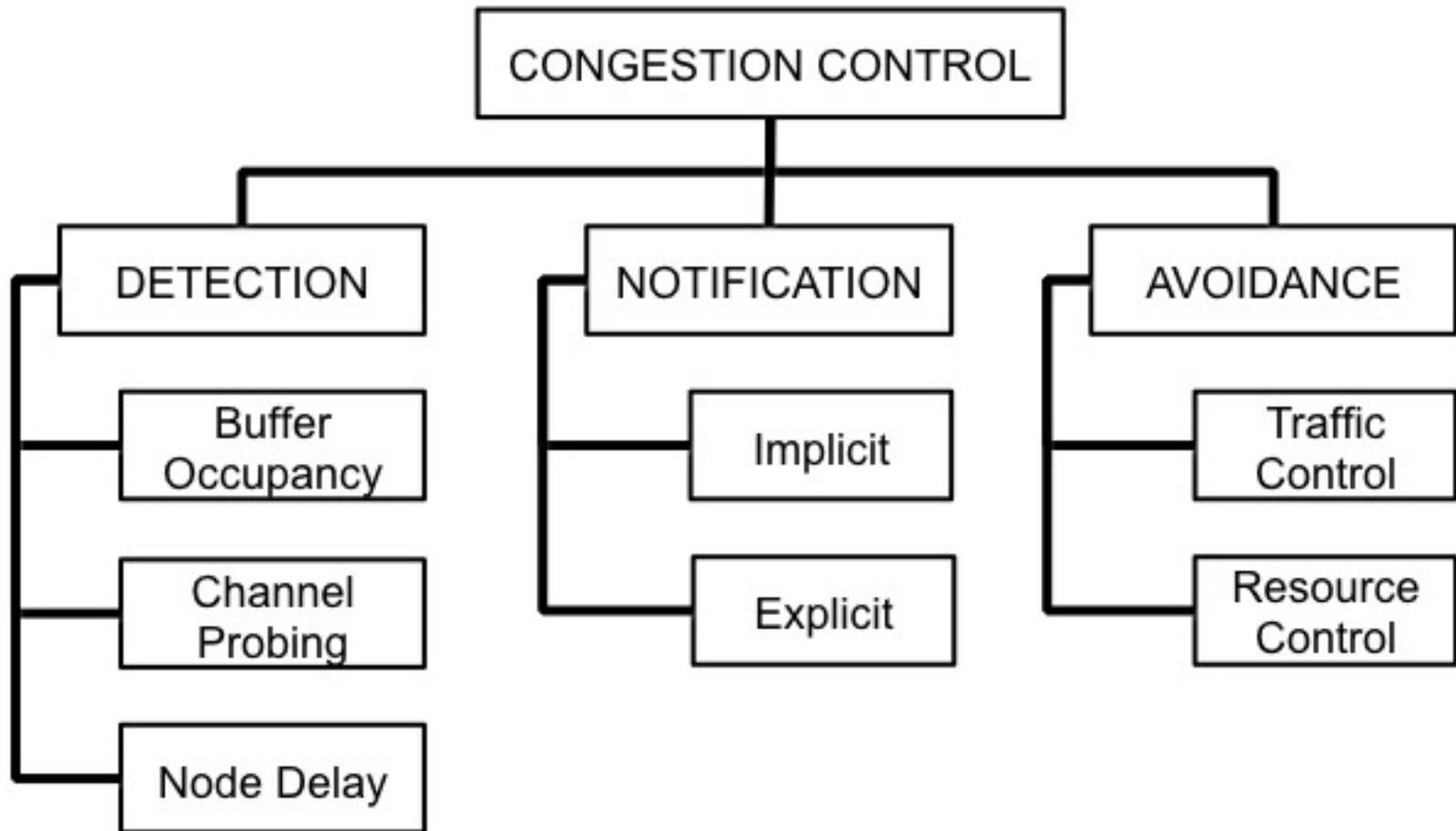


Figure 6: Classification of Congestion Control in Wireless Sensor Networks

# ANALYSIS

- Intermediate caching and congestion control mechanisms are different techniques that effectively improve WSN performance
- However, the two mechanisms are being design independently for most transport protocols being developed for WSN
- Result to non-optimal use of intermediate caching, inappropriate congestion window size and increase in energy consumption of intermediate nodes
- Congestion control techniques used by existing cache-based transport protocols are *not cache-aware*

# SOLUTION

- **HYPOTHESIS:** Provide an underlying support in designing a cache-aware congestion control mechanism which can effectively alleviate congestion in WSN while maximizes cache utilization
- Play a significant role in the design of cache-based transport protocol in WSN for Internet of Things applications in terms of:
  - Reliable end-to-end transmission with **better cache utilization**
  - **Improve network efficiency** through a bounded congestion window management
  - **Reduction in energy consumption** by means of minimal sensor functionality

**THANK YOU FOR LISTENING!**

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