



Fusion-Oriented Network Architectures and Protocols for Sensor Networks

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Sensor Networks

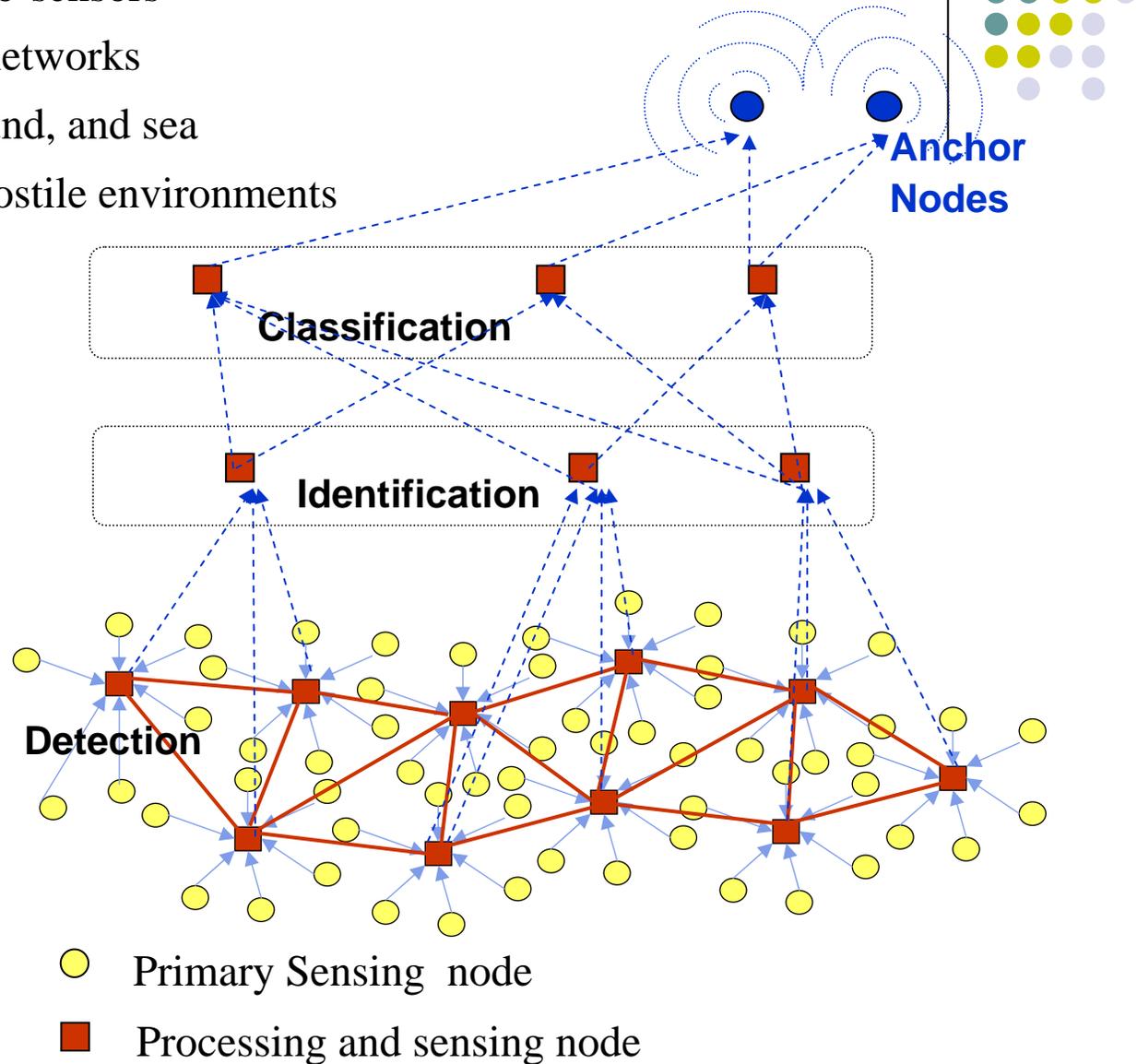
- Large array of smart micro-sensors
- Self-organizing Ad-Hoc networks
- Deployable from air, ground, and sea
- Survivable in harsh and hostile environments

Sensor Fusion

- Human Network Level
- Global Network Level
- Sub-Network Level
- Geographical Level
- Local Level

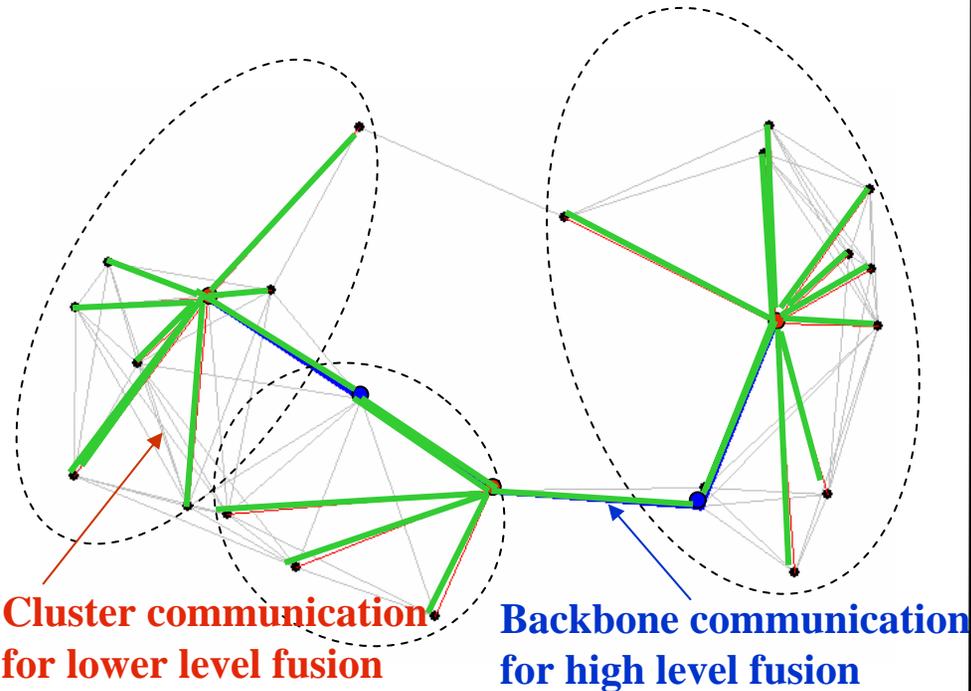
General Concerns

- Energy Consuming
- Resource Allocation
- Sensing Integrity
- Self-organization
- Fault Tolerance
- Mobility





Fusion-Oriented Dynamic Network Architecture



Self-Reconfiguration:

Node move in/out, Node failure

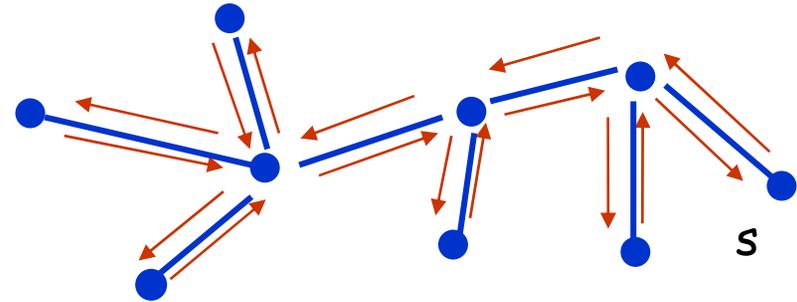
Cross-layer Intersections

- Power consuming
- Traffic loads
- Node constraints
- Fusion requirements

Control-based Protocols

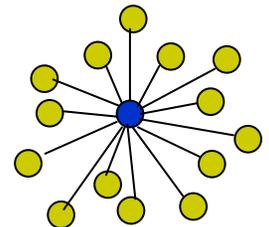
Backbone (reliable, durable)

- Distributed Global Control
- Taking-Turns Protocol
- Round Robin on Euclidean Circuit
- TCP Connection



Cluster (fast delivery)

- Centralized Local Control
- Random Access Protocols
- One hop communication
- UDP Connection



Correlation-based Communication Protocols

