

# GCP: Gossip-based Code Propagation for Large-scale Mobile Wireless Sensor Network

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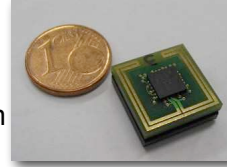
## Mobile Wireless Sensor Network

### Sensor:

- Compact device
- Low cost
- Limited resources
- ➔ Power, memory, processing, ...

### Wireless communication:

- Ad-hoc network
- Restricted vision of the system



### Needed capabilities:

- Adaptability
- Large scale
- Self organization



## Peer-to-peer and Gossip-based Paradigms

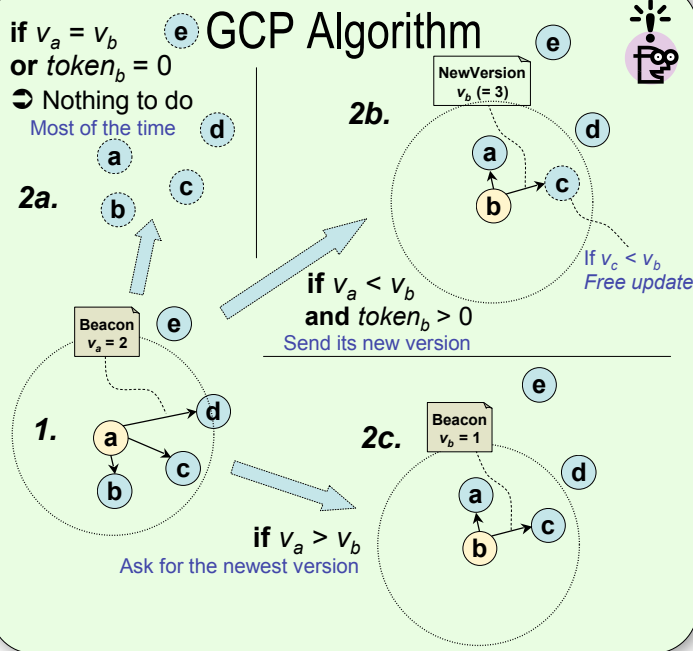
### Peer-to-peer:

- Logical overlay network
- Symmetrical node role
- Knowledge of a small subset of the network

### Epidemic model:

- Periodic information exchange
- Fast information propagation
- Low-cost algorithm
- ➔ Number of message, load balancing, ...

**Ideal candidate for adaptation to mobile WSN**



## Objectives: Software Update

### Why?

- Deployed for a long period of time
- Updating code "by hand" unfeasible

### How?

➔ Epidemic propagation

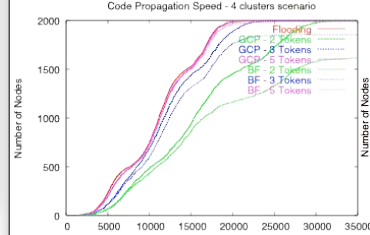
### What we need?

- High speed propagation
- Optimal load balancing

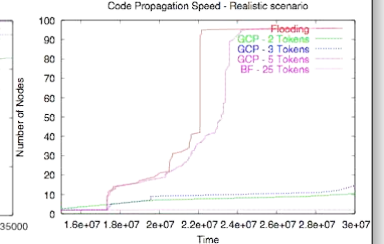
## Simulation Results

### Propagation speed:

#### Synthetic

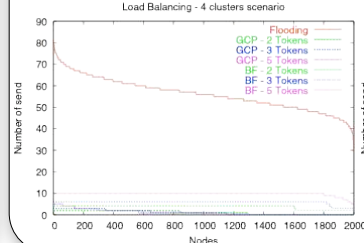


#### Realistic

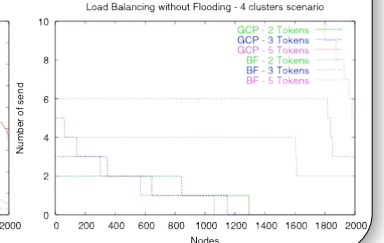


### Load balancing:

#### With flooding



#### Without flooding



## Algorithms Comparative

	No local additional information	No beacon additional information	Load balancing	Propagation speed
Flooding	+	+	--	++
Boundary fl.	-	+	+	-
GCP	-	-	++	++

## Conclusion

### Propagation speed

Almost the same speed than optimal one  
(Corresponding to the flooding version)

### Load balancing

Significantly improve load balancing

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