

THOUGHTS ON WIRELESS NETWORKING

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COST-NSF Workshop
June 23-25, 2003

NeXtworking'03 June 23-25, 2003, Chania, Crete, Greece
The First COST-IST(EU)-NSF(USA) Workshop on EXCHANGES & TRENDS IN NETWORKING Anthony Ephremides

NOVEL CHALLENGES

- Physical layer
- Mobility
- Shared medium
- Reliance on portable energy

LEAD TO:

- Variable topology
- Interference/MAC
- Energy efficiency/longevity

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APPROACHES

- Cross-layer design (no “GRAPH”)
- Energy efficiency at all layers
- Medium exploitation (multicast advantage)
- Application specificity

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CLASSIFICATION

- Cellular
- LANs
- Satellite
- Ad hoc ←
- Sensor ← (sp.case)

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STATUS

- To operate a Multi-Hop Wireless Network, we need to break the Routing/MAC/Routing/MAC....knot
- 802.11 (CSMA/CA) & Bluetooth are “FINE” heuristics
- Do not know or understand limitations and fundamentals
 - GUPTA-KUMAR
 - TSE-GROSSLAUSER

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WHAT TO DO

- Need basic theory
- Need innovative ideas
(not $\varepsilon - \delta$ - increments)
- Need freedom from standards!
- Themes:
 - Cross-Layer Design
 - Energy Awareness
 - Medium Exploitation
 - Physical Layer

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