## Security and Cooperation in Wireless Networks

Thwarting Malicious and Selfish Behavior in the Age of Ubiquitous Computing

Jean-Pierre Hubaux

Joint work with

Levente Buttyan

With contributions from N. Ben Salem, M. Cagalj,
 S. Capkun, M. Felegyhazi, T. Holczer,
 P. Papadimitratos, P. Schaffer, and M. Raya

http://secowinet.epfl.ch

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- 1. Introduction
- 2. Thwarting malicious behavior
- 3. Thwarting selfish behavior







Upcoming wireless networks	
<ul> <li>New kinds of networks <ul> <li>Personal communications</li> <li>Small operators, community networks</li> <li>Cellular operators in shared spectrum</li> <li>Mesh networks</li> <li>Hybrid ad hoc networks (also called "Multi-hop cellular networks")</li> <li>"Autonomous" ad hoc networks</li> <li>Personal area networks</li> </ul> </li> </ul>	
<ul> <li>Sensor and RFID networks</li> <li></li> </ul>	
<ul> <li>New wireless communication technologies         <ul> <li>Cognitive radios</li> <li>MIMO</li> <li>Ultra Wide Band</li> <li>Directional antennas</li> </ul> </li> </ul>	
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Upcoming networks vs. mechanisms									
Rule enforced Upcoming mecha wireless networks	ment anisms Na <sup>mir</sup>	ig and ad	thessing thessing thessociation	non <sup>s</sup> eon <sup>s</sup>	or discovel	Enfor	ing fair M <sup>R</sup> Enforcin	C FN <sup>II</sup> BPX FOUL	NOP. Benevior.
Small operators, community networks	Х	Х			Х	Х		X	Х
Cellular operators in	Х				Х	Х		X	Х
Mesh networks	Х	Х	X	Х	Х	Х		Х	?
Hybrid ad hoc	Х	Х	Х	Х	Х	Х	X	Х	Х
Self-organized	Х	Х	Х	Х	Х	Х	X		Х
ad hoc networks	Х	Х	Х	Х	Х	?	?	?	?
Sensor networks	Х	Х	X	Х	Х	?		Х	?
RFID networks	Х	?	X		Х				?
	-	S	ecurity			•	Сооре	eration	18



















































































List of Contributors	
Aachen University, Germany	
AIST, Japan	
Budapest University of Technology and Economics, Hungary	
Create-NET, Italy	
DoCoMo Euro-Labs, Germany	
EPFL, Switzerland	
Harvard University, USA	
Konica Italia, Italy	
KTH, Sweden	
MIT, USA	
Motorola Labs, France	
Oxford University, UK	
Stevens Institute of Technology, USA	
Technical University of Catalonia, Spain	
Technical University of Denmark, Denmark	
Universität Duisburg Essen, Germany	
Universität Karlsruhe, Germany	
University of Aalborg, Denmark	
University of Bologna, Italy	
University of California at Berkeley, USA	
University of California, San Diego, USA	
University of Dresden, Germany	
University of Paderborn, Germany	
University of Padova, Italy	
University of Piraeus, Greece	
VTT, Finland	
WINLAB and Rutgers University, USA	60
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## Panel at Mobicom 2007 (Montreal, September 9 – 15)

Bonobos Vs Chimps: Cooperative and Non-Cooperative Behavior in Wireless Networks

Panelists:

Jean-Pierre Hubaux, EPFL (organizer and moderator) Ramesh Johari, Stanford University P. R. Kumar, UIUC Joseph Mitola, MITRE Corp. Heather Zheng, UCSB

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