

# WAC 2005: Preliminary Program

Oct 3-5, 2005, Vouliagmeni-Athens, Greece

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| <b>MONDAY Oct 3</b>  |   |
| 9:00 - 9:10          | <b>Welcome</b>  |
| 9:10 – 10:10         | <b>Keynote Talk:</b> Paul Spirakis, Univ. of Patras, Greece<br>“Algorithmic aspects of sensor nets”   |
| 10:10 – 10: 30       | <b>Coffee Break</b>   |
| 10:30 – 12:30        | <p><b><u>Autonomic Session 1:</u></b></p> <ul style="list-style-type: none"> <li>• “Experiments on the Automatic Evolution of Protocols using Genetic Programming”, Lidia Yamamoto and Christian Tschudin, University of Basel, Switzerland</li> <li>• “Service Evolution in Nomadic Wireless Environment”, Iacopo Carreras, Francesco De Pellegrini, Daniele Miorandi, Hagen Woesner, CREATE-NET, Italy</li> <li>• “User Cooperation and Search in Intelligent Networks”, Erol Gelenbe, Imperial College, United Kingdom</li> <li>• “Pocket Switched Networking: Challenges, Feasibility, and Implementation Issues”, Pan Hui, Cambridge University, Augustin Chaintreau, Intel Research, Richard Gass, Intel Research, James Scott, Intel Research, John Crowcroft, Cambridge University and Christophe Diot, Intel Research</li> </ul> |
| 12:30 – 2:15         | <b>Lunch Break</b>  |
| 2:15 – 3:15          | <b>Invited Talk:</b> Cesar Santivanez, BBN Technologies, USA<br>“Opportunistic Spectrum Access for Wireless Ad Hoc Networks: Research Challenges”   |
| 3:15 – 4:15          | <p><b><u>Autonomic Session 2:</u></b></p> <ul style="list-style-type: none"> <li>• “Autonomous Self-deployment of Wireless Access Networks in an Airport Environment”, Holger Claussen, Lucent Technologies, United Kingdom</li> <li>• “Autonomic Wireless Network Management”, Kai Zimmermann, Sebastian Felis, Stefan Schmid, Lars Eggert and Marcus Brunner, NEC Europe, Germany</li> <li>• “Context Driven Self-Configuration of Mobile Ad-Hoc Networks” Apostolos Malatras, George Pavlou, University of Surrey, United Kingdom</li> </ul>   |
| 4:15 – 4:30          | <b>Coffee Break</b>   |
| 4:30 - 6:00          | <p><b><u>Panel 1: Autonomicity vs. complexity</u></b></p> <p>Panel Organizer / Moderator: Paul Spirakis (U. Patras)<br/>Panellists: Radu Popescu-Zeletin (Fraunhofer-FOKUS), Cesar Santivanez (BBN), Erol Gelenbe (Imperial C.), David Lewis (TC Dublin), Tom Pfeifer (Waterford Institute of Technology), Stefan Schmid (NEC), ....</p>  |
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| <b>TUESDAY Oct 4</b> |   |
| 9:15 – 10:15         | <b>Invited Talk:</b> Costas Courcoubetis, AUEB, Greece<br>“Incentive Schemes in Memory-less P2P Systems”  |
| 10:15– 11:15         | <b><u>Autonomic Session 3:</u></b>  |

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|                        | <ul style="list-style-type: none"> <li>• “Integration of Decentralized Economic Models for Resource Self-Management in Application Layer Networks”, Pablo Chacin, Felix Freitag, Leandro Navarro, Isaac Chao, Oscar Ardaiz, Polytechnic University of Catalonia, Spain</li> <li>• “Service Discovery and Provision for Autonomic Mobile Computing”, George C. Polyzos, Christopher N. Ververidis and Elias C. Efstathiou, Athens University of Economics and Business, Greece</li> <li>• “Context Dissemination for Autonomic Communication Systems”, Nadeem Akhtar, Klaus Moessner, Ralf Kernchen, University of Surrey, United Kingdom</li> </ul>  |
| 11:15 – 11:30          | <b><u>Coffee Break</u></b>   |
| 11:30 – 12:45          | <b><u>Autonomic Session 4:</u></b> <ul style="list-style-type: none"> <li>• “Knowledge Networks: the Nervous System of an Autonomic Communication Infrastructure”, Maurice Mulvenna, University of Ulster, United Kingdom, Franco Zambonelli, Universita di Modena e Reggio Emilia, Italy, Kevin Curran, University of Ulster, United Kingdom, Nugent, University of Ulster, United Kingdom</li> <li>• “Towards a Reliable, Wide-Area Infrastructure for Context Based Self-Management of Communications”, Graeme Stevenson, Paddy Nixon and Simon Dobson, University College, Dublin</li> <li>• “Semantic Interoperability for an Autonomic Knowledge Delivery Service” David Lewis, Declan O’Sullivan, Ruaidhri Power, John Keeney, Trinity College Dublin, Ireland</li> </ul> |
| 12:45 – 2:30           | <b><u>Lunch Break</u></b>  |
| 2:30 – 3:30            | <b><u>Autonomic Session 5:</u></b> <ul style="list-style-type: none"> <li>• “Autonomic Communication Security in Sensor Networks”, Tassos Dimitriou, Ioannis Krontiris, Athens Information Technology, Greece</li> <li>• “Trust Management Issues for Ad Hoc and Self-organized Networks”, Vassileios Tsetsos, Giannis F. Marias &amp; Sarantis Paskalis, University of Athens, Greece</li> <li>• “Multipath Routing Protocol for Mobile Ad-hoc Networks: Security Issues and Performance Evaluation”, Rosa Mavropodi, Christos Douligeris, University of Piraeus, Greece</li> </ul>   |
| 3:30 – 3:45            | <b><u>Coffee Break</u></b>   |
| 3:45 – 4:45            | <b><u>Autonomic Session 6:</u></b> <ul style="list-style-type: none"> <li>• “Autonomous network equipments”, Dominique Gaiti, University of Troyes, Guy Pujolle, UPMC, Mikael Salaun, France Telecom and Hubert Zimmermann, Ginkgo-Networks, France</li> <li>• “Towards Self-Optimizing Protocol Stack for Autonomic Communication: Initial Experience”, Xiaoyuan Gu, Technische Universitat Braunschweig, Xiaoming Fu, Universitat Gottingen, Hannes Tschofenig, Siemens AG, Lars Wolf, Technische Universitat Braunschweig, Germany</li> <li>• “Towards Service Awareness and Autonomic Features in a SIP-enabled Network”, Giuseppe Valetto, Laurent Walter Goix and Guillaume Delaire, Telecom Italia Lab, Italy</li> </ul>  |
| 8:00 - ....            | <b><u>Dinner</u></b>   |
| <b>WEDNESDAY Oct 5</b> |  |

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| 9:30 – 10:30  | <b>Invited Talk:</b> Leandros Tassioulas, Univ. of Thessaly, Greece<br>“Coordination and resilience in ad hoc and sensor networks”  |
| 10:30 – 11:30 | <b>Autonomic Session 7:</b> <ul style="list-style-type: none"> <li>• “On natural mobility models”, Vincent Borrel, Marcelo Dias de Amorim, and Serge Fdida, Universite Pierre, France</li> <li>• “Nomadic Wireless Sensor Networks for Autonomic Pervasive Environments”, Iacopo Carreras and Antonio Francescon, CREATE-NET, and Enrico Gregori, CNR-IIT, Italy</li> <li>• “Adaptive Scheduling in Wireless Sensor Networks”, A.G. Ruzzelli, University College Dublin, M.J. O’Grady, Practice &amp; Research in Intelligent Systems &amp; Media (PRISM) Laboratory and G.M.P. O’Hare, R. Tynan, University College Dublin, Ireland</li> </ul> |
| 11:30 – 12:00 | <b>Coffee Break</b>   |
| 12:00 - 1:30  | <b>Panel 2: Autonomic Communications Roadmap</b><br>Panel Organizer / Moderator: Michael Smirnov<br>(panellists TBD)  |
| 1: 30 – 1:45  | <b>Closing Session</b>  |
| 1:45 –        | <b>Closing Lunch</b>  |
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## **LIST OF ACCEPTED/PRESENTED PAPERS<sup>1</sup>**

1. “Autonomous Self-deployment of Wireless Access Networks in an Airport Environment”, **Holger Claussen**, Lucent Technologies, United Kingdom
2. “Service Evolution in Nomadic Wireless Environment”, Iacopo Carreras, Francesco De Pellegrini, **Daniele Miorandi**, Hagen Woesner, CREATE-NET, Italy
3. “Autonomic Communication Security in Sensor Networks”, **Tassos Dimitriou**, Ioannis Krontiris, Athens Information Technology, Greece
4. “Nomadic Wireless Sensor Networks for Autonomic Pervasive Environments”, **Iacopo Carreras** and Antonio Francescon, CREATE-NET, and Enrico Gregori, CNR-IIT, Italy
5. “Integration of Decentralized Economic Models for Resource Self- Management in Application Layer Networks”, **Pablo Chacin**, Felix Freitag, Leandro Navarro, Isaac Chao, Oscar Ardaiz, Polytechnic University of Catalonia, Spain
6. “On natural mobility models”, **Vincent Borrel**, Marcelo Dias de Amorim, and Serge Fdida, Universite Pierre, France
7. “Pocket Switched Networking: Challenges, Feasibility, and Implementation Issues”, Pan Hui, Cambridge University, Augustin Chaintreau, Intel Research, Richard Gass, Intel Research, **James Scott**, Intel Research, John Crowcroft, Cambridge University and Christophe Diot, Intel Research
8. “Experiments on the Automatic Evolution of Protocols using Genetic Programming”, **Lidia Yamamoto** and Christian Tschudin, University of Basel, Switzerland
9. “Semantic Interoperability for an Autonomic Knowledge Delivery Service” **David Lewis**, Declan O’Sullivan, Ruaidhri Power, John Keeney, Trinity College Dublin, Ireland
10. “Autonomic Wireless Network Management”, Kai Zimmermann, Sebastian Felis, **Stefan Schmid**, Lars Eggert and Marcus Brunner, NEC Europe, Germany
11. “Towards Service Awareness and Autonomic Features in a SIP-enabled Network”, Giuseppe Valetto, **Laurent Walter Goix** and Guillaume Delaire, Telecom Italia Lab, Italy
12. “Knowledge Networks: the Nervous System of an Autonomic Communication Infrastructure”, **Maurice Mulvenna**, University of Ulster, United Kingdom, Franco Zambonelli, Universita di Modena e Reggio Emilia, Italy, Kevin Curran, University of

<sup>1</sup> Registered authors in bold

- Ulster, United Kingdom, Nugent, University of Ulster, United Kingdom
13. "Towards a Reliable, Wide-Area Infrastructure for Context Based Self-Management of Communications", **Graeme Stevenson**, Paddy Nixon and **Simon Dobson**, University College, Dublin
  14. "Trust Management Issues for Ad Hoc and Self-organized Networks", Vassileios Tsetos, **Giannis F. Marias**, Sarantis Paskalis, University of Athens, Greece
  15. "Towards Self-Optimizing Protocol Stack for Autonomic Communication: Initial Experience", **Xiaoyuan Gu**, Technische Universitat Braunschweig, Xiaoming Fu, Universitat Gottingen, Hannes Tschofenig, Siemens AG, Lars Wolf, Technische Universitat Braunschweig, Germany
  16. "Context Dissemination for Autonomic Communication Systems", Nadeem Akhtar, **Klaus Moessner**, Ralf Kernchen, University of Surrey, United Kingdom
  17. "Context Driven Self-Configuration of Mobile Ad-Hoc Networks" Apostolos Malatras, **George Pavlou**, University of Surrey, United Kingdom
  18. "User Cooperation and Search in Intelligent Networks", **Erol Gelenbe**, Imperial College, United Kingdom
  19. "Adaptive Scheduling in Wireless Sensor Networks", **A.G. Ruzzelli**, University College Dublin, M.J. O'Grady, Practice & Research in Intelligent Systems & Media (PRISM) Laboratory and G.M.P. O'Hare, R. Tynan, University College Dublin, Ireland
  20. "Autonomous network equipments", Dominique Gaiti, University of Troyes, **Guy Pujolle**, UPMC, Mikael Salaun, France Telecom and Hubert Zimmermann, Ginkgo-Networks, France
  21. "Service Discovery and Provision for Autonomic Mobile Computing", **George C. Polyzos**, Christopher N. Ververidis and Elias C. Efstathiou, Athens University of Economics and Business, Greece
  22. "Multipath Routing Protocol for Mobile Ad-hoc Networks: Security Issues and Performance Evaluation", Rosa Mavropodi, **Christos Douligeris**, University of Piraeus, Greece

## **KEYNOTE TALK:**

### **Algorithmic aspects of sensor nets**

Paul Spirakis, Univ. of Patras, Greece

[http://www.cti.gr/Paul\\_Spirakis/](http://www.cti.gr/Paul_Spirakis/)

Wireless sensor nets pose new challenges in some foundational issues regarding computation and communication. The talk will discuss some of them, indicate current approaches and open problems.

## **INVITED TALKS:**

### **Incentive Schemes in Memory-less P2P Systems,**

C. Courcoubetis, Athens University of Economics and Business, Greece

The asymptotic analysis of certain public good models for p2p file sharing suggests that when the aim is to maximize social welfare, a fixed contribution scheme in terms of the number of files shared per unit of time can be asymptotically optimal as the number of participants  $n$  grows to infinity. Such an incentive scheme is very simple and attractive, and is also suitable for other p2p applications with similar public good characteristics such as WLAN peering. However, its enforcement is not straightforward in cases where no trusted software or central entity accounting for peers' transactions can be assumed and peers are free to change their identity with no cost. That is, when no sort of user memory is available to be able to identify and punish the potential free riders. A 'memory-less' p2p system should rely only on the time peers are consuming resources to ensure that they contribute adequately. BitTorrent is an example of a successful real world application focusing on bandwidth provisioning for content distribution, which implements a reciprocative incentive scheme without relying on past transactions of peers but on a direct exchange of resources (i.e. upload bandwidth). In this presentation we will discuss how to implement economic incentives in a memory-less p2p system focusing on content availability. We believe time spent in the system will become a critical parameter of the contribution of peers in this context, especially as access speeds increase and people store more

content in their PCs for their own use. We propose an incentive mechanism which both controls the time stay in the system so as not to be too short and provides an incentive to offer a fixed number of files throughout that time. We then present a theoretical framework for the study of its qualitative characteristics. We evaluate the resulting efficiency (compared to the one achieved using the theoretically optimal schemes) and provide some insights for the correct tuning of its basic parameters.

**"Opportunistic Spectrum Access for Wireless Ad Hoc Networks: Research Challenges",**  
C. Santivanez, BBN, USA

"Traditionally, the frequency spectrum has been rigidly allocated to users/services. This rigid allocation has led to inefficient utilization and an apparent scarcity. More recently, technological advances in a number of areas (software defined radios, wideband sensing technologies, DSP receivers and waveforms agility) have enabled the development of a new communication paradigm, namely Opportunistic Spectrum Access (OSA) that promises to eliminate the apparent scarcity problem. In OSA, wireless nodes' spectrum usage is not pre-determined (wired in hardware) with a fixed frequency/modulation assignment, but instead radios become aware of their environment, in particular of the presence of "primary" or "protected" spectrum users, and based on this information decides on a spectrum usage that is compatible with the regulatory policy in effect at the place and time (avoiding an adverse impact on the primary licensees). OSA promises a significant improvement on spectrum utilization. However, while conceptually simple, OSA turns out to be a very complicated concept to realize, specially under a dynamic mobile ad hoc network where the decisions need to be taken on a distributed and autonomous manner. In this talk, we'll revise current efforts underway to realize the OSA vision. In particular, we'll cover work on two enabling blocks for OSA in a distributed ad hoc network: policy-driven operation, and algorithms for coordinated spectrum allocation."

**"Coordination and resilience in ad hoc and sensor networks"**

Leandros Tassioulas, Univ. of Thessaly, Greece

Unpredictability in traffic load variations, link capacity fluctuations, topology modifications, node failures or various types of intentional misbehavior may lead a network to overload conditions. A smooth and balanced system response in those stressful situations is essential for effective crisis management in the network. This is more of an issue in wireless ad-hoc and sensor networks where due to the nature of the system and the likely scenarios of operation, anomalous behavior of that type is more likely to occur. In this talk we will present mathematical formulations that will allow us to model and quantify the magnitude of misbehavior. Subsequently we will evaluate the response of various coordination algorithms to different misbehavior scenarios and present design guidelines for algorithms that exhibit robust performance to the types of misbehavior most likely to be encountered in our system.

**PANEL DETAILS:**

Panel 1: Autonomicity vs. Complexity

(TBC)

Panel2 : Autonomic Communications Roadmap.

(TBC)