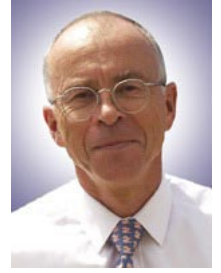




NEWCOM-ACoRN
Joint Workshop 2006



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Welcome to ftw!

It is my great pleasure and honor to welcome you to Vienna, the World Capital of Music! The Steering, Technical Program and Local Organizing Committees together have made tremendous efforts to make the NEWCOM-ACoRN Joint Workshop a true success.

As you can easily imagine I would have preferred to welcome you to Vienna, the World Capital of Telecommunications. While this would be an impudent exaggeration, I think it is fair to say that ftw. has established itself firmly in the world of telecommunications research. Austria has been at the forefront of mobile communications thanks to mobilkom austria, an innovative operator that has been significantly supporting ftw. since its beginning and the Institut für Nachrichtentechnik und Hochfrequenztechnik of Technische Universität Wien* since more than 17 years. In 2002, mobilkom austria was the first operator in Europe to launch an operational nationwide UMTS network. Previously, in 1999, they introduced the worldwide first m-commerce application (train tickets via mobile phone) and were instrumental in establishing Vienna as the city with the highest density of base stations in the mid-nineties.

In a time when large European infrastructure companies downsize their R&D efforts and dominant operators struggle to recoup their knowledge base after they have squandered it by dissolving their research departments, university- and research-driven networks like ACoRN and NEWCOM are becoming extremely important for the future of mobile communications.

So, enjoy the lively discussions about new ideas in a pleasant and challenging atmosphere. Let us strengthen the ties both within NEWCOM to make it a sustainable network of excellence and with our friends from down under. Don't forget that the early adoption of GSM by Australian operators has paved the way to make GSM the truly world-wide standard for mobile communications. It will be your ideas and your initiative to promote mobile communications, the technology that has been adopted by humankind faster than any other before, to serve human needs. Let's not leave the innovation to our respective neighbors across the oceans in the west and north!

Ernst Bonek
General Chair

* The most prominent drop-out from k.k. Polytechnisches Institut Wien (the predecessor of Technische Universität Wien, founded in 1815) was – believe it or not – Johann Strauss, jr., the King of Waltz.



Message from the NEWCOM Director

NEWCOM (Network of Excellence in Wireless COMmunications) is a European Network of Excellence that links in a cooperative way a large number of leading research groups in the strategic field of wireless communication. The main dimensions of NEWCOM vision are: Strengthening, development and integration of the research in the field and empowerment of groups and individuals via dissemination activities.

The NEWCOM-ACoRN Workshop is one of the several collaboration initiatives between NEWCOM community of researchers and the Australian companion network ACoRN, on the basis of a cooperation agreement signed in 2005.

This event, located in the rich cultural cradle of Vienna, will be a unique occasion to gain visibility on the most important research results obtained by the two communities, to exchange in a friendly and informal setting different perspectives on research topics, and to strengthen the liaisons between research groups and individuals.

Representing the wide community of NEWCOM, it is a great pleasure to thank Professor Lars Rasmussen, ACoRN Convenor, for his invaluable and friendly efforts in thinking of and setting up the NEWCOM-ACoRN collaboration agreement; the Workshop General Chair, Prof. Ernst Bonek, for taking on the overall responsibility for the joint workshop; the Technical Program Committee Chair, Prof. Alex Grant, and the committee members for preparing a high-level technical program; and, last but definitely not least, the Local Organisation Committee Chair, Dr. Jossy Sayir, and the committee members for their dedicated work of offering to the attendees a great selection of well blended social activities.

Sergio Benedetto
NEWCOM Director



Message from the ACoRN Network Convenor

The ARC Communications Research Network (ACoRN) is a research network funded by the Australian Research Council (ARC), bringing together more than 250 Australian researchers and research students in the areas of telecommunications. Building on a strong platform of existing research excellence, the network aims to inspire new collaborative initiatives in emerging technologies for wired and wireless communications.

Following a joint agreement established in 2005 between the Network of Excellence in Wireless Communications (NEWCOM) and ACoRN, close international collaboration across the two networks is quickly developing. This agreement is a major achievement for ACoRN and is a priority for establishing a strong Australian involvement in the European research community.

The inaugural NEWCOM–ACoRN Workshop is the first joint event in the ongoing collaboration, bringing together researchers and research students from Europe and Australia to foster new links. The workshop location in the cultural nucleus of Vienna provides the perfect setting for stimulating creativity, innovation and initiatives for joint technological advances in wireless communications. The aim is for this workshop to be the first of a long series of successful joint events to come.

On behalf of ACoRN, I would like to extend my gratitude to the NEWCOM Scientific Director, Prof. Sergio Benedetto, for being instrumental in establishing the ACoRN–NEWCOM collaborative agreement; to the Workshop General Chair, Prof. Ernst Bonek, for taking on the overall responsibility for the joint workshop; to the Technical Program Committee Chair, Prof. Alex Grant, and the committee members for putting together an interesting and inspiring technical program; and finally to the Local Organisation Committee Chair, Dr. Jossy Sayir, and the committee members for the hard work of setting up what promises to be a memorable event with a thrilling selection of social activities

Lars K. Rasmussen
ACoRN Network Convenor

Hosting Institutions



The **ARC Communications Research Network (ACoRN)** is a network of researchers and research students. ACoRN aims to stimulate creativity, innovation and breakthrough science, leading to technological advancement in telecommunications. ACoRN is made up of Australian Universities and Industry that are involved in telecommunications research and also has strong collaborative links with international groups, such as NEWCOM.



The **Telecommunications Research Center Vienna (ftw.)** is the joint research center of leading players in telecom business and science in Austria. Round 60 researchers from all over the world conduct research into telecommunication's technologies for tomorrow. Each project is defined through dialog between academia and industry and selected on the grounds of their industrial relevance.



With about 40 scientific staff members, the **Institute of Communications and Radio-Frequency Engineering** is one of the largest departments of the Faculty of Electrical Engineering and Information Technology at Vienna University of Technology. The department's research and development efforts emphasize fields of great practical relevance, including mobile communications, optical communications, radio-frequency engineering, rapid prototyping, and signal processing.



NEWCOM (Network of Excellence in Wireless Communications) is an European network that links in a cooperative way a large number of leading research groups addressing the Strategic Objective „Mobile and wireless systems beyond 3G“, a frontier research area of the Priority Thematic Area of IST.



The **Vienna University of Technology** was founded in 1815 as Imperial-Royal Polytechnical Institute and was the first University of Technology within present-day German-speaking Europe. Today the university finds high international and domestic recognition in teaching as well as in research and is a highly esteemed partner of innovation oriented enterprises.

Committees

General Chair:

Ernst Bonek (NEWCOM)

Steering Committee:

Lars Rasmussen (ACoRN)

Sergio Benedetto (NEWCOM)

Jamie Evans (ACoRN)

Roberto Verdone (NEWCOM)

Technical Program Committee:

Alex Grant (ACoRN)

Pierre Duhamel (NEWCOM)

Langford B. White (ACoRN)

Sergio Palazzo (NEWCOM)

Mark Reed (ACoRN)

Frederik Petré (NEWCOM)

Head of Local Organizing Committee:

Jossy Sayir (NEWCOM)

Sessions and Papers

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List of sessions

Information Theory 1 (Thursday, 1a)

Channel Estimation (Thursday, 1b)

Information Theory 2 (Thursday, 2a)

OFDM (Thursday, 2b)

Error Control Coding (Thursday, 3a)

Wireless Signal Processing (Thursday, 3b)

Channel Modeling (Friday, 1a)

Ad Hoc and Sensor Networks (Friday, 1b)

Location Determination (Friday, 2a)

Wireless Networks (Friday, 2b)

Cross-Layer Design (Friday, 3)

Information Theory 1 (Thursday, 1a)

Constant Rate Loss Strategies for the Gaussian Broadcast Channel

Claudio Weidmann

An Information-Theoretic Measure for the Selection of Effective Memory Order in Flat-Fading Channels

Parastoo Sadeghi; Jonathan Manton; Predrag Rapajic

A Lower Bound on Network Layer Control Information

Roy Timo; Leif Hanlen; Kim Blackmore

Broadcasting with Partial Transmit Channel State Information

Avi Steiner; Shlomo Shamai

Channel Estimation (Thursday, 1b)

Channel tracking for OFDM systems using detections pruning

Ido Nevat; Jinhong Yuan

Coarse and Turbo Synchronization: A Case-Study for DVB-RCS

Susanne Godtmann; Niels Hadaschik; Wolfgang Steinert; André Pollok; Gerd Ascheid; Heinrich Meyr

Optimal burst format for joint Doppler-Shift and Doppler-Rate estimation in packet transmission

Francesca Zanier; Luca Giugno; Marco Luise

Low-Complexity Joint Data Detection and Channel Estimation in Time-Varying Flat-Fading Channels within the SAGE Framework

Joachim Wehinger; Thomas Zemen; Alexander Kocian; Bernard Fleury

Information Theory 2 (Thursday, 2a)

Robust power allocation for maximizing the compound capacity

Ami Wiesel; Yonina Eldar; Shlomo Shamai

Design of Joint Source-Channel Arithmetic Codes based on Asymptotic Performance Analysis

Salma Ben Jamaa; Claudio Weidmann; Michel Kieffer

Performance and Network Load for Receiver Cooperation versus Hybrid ARQ

Timo Mayer

Reliability-Based HARQ Using Word Error Probabilities

Justus Fricke; Hendrik Schoeneich; Peter Hoeher

OFDM (Thursday, 2b)

Nonlinear mitigation for two carrier transmission using regenerative satellite payloads
Craig Burnet

Iterative Channel Estimation and Decoding of Turbo/Convolutionally Coded STBC-OFDM Systems

Hakan Dogan; Hakan Cirpan; Erdal Panayirci

Partial transmit sequences method for reduction of PAPR in real-valued OFDM systems
Ping Wu; Guangyue Lu; Catharina Carlemalm-Logothetis

On timing synchronization approaches for OFDM systems with receive antenna diversity
Shuang Tian; Jean Armstrong

Error Control Coding (Thursday, 3a)

High Data Rate Trellis Coded Modulation
Yi Hong

Erasure Correcting LDPC Codes for Channels with Packet Losses
Sarah Johnson

Improved Sum-Min decoding of irregular LDPC codes using nonlinear post-processing
Gottfried Lechner; Jossy Sayir

Analysis and Design of Concatenated Codes
Fredrik Brännström; Alexandre Graell i Amat; Lars K. Rasmussen

Wireless Signal Processing (Thursday, 3b)

Symmetric Radial Basis Function Network Equaliser
Sheng Chen; Andreas Wolfgang; Sergio Benedetto; Pierre Duhamel; Lajos Hanzo

Design of compact components for ultra wideband communication front ends
Marek Bialkowski; Amin Abbosh; Hing Kan

Design and Simulation of NLOS High Data Rate mm-Wave WLANs
Ian Holland; André Pollok; William Cowley

Channel Modeling (Friday, 1a)

Analysis of Popular Unitary–Independent–Unitary Models of MIMO Channels

Claude Oestges

An Extended Correlation Matrix Distance Metric Used to Evaluate the Short–Term Time Variation of Wideband Channels Predicted by Different MIMO Channel Models

Hui Xiao; Alister Burr

Power ratios and distributions in indoor NLoS channels for dual–polarised 2x2 MIMO systems

Wim Kotterman; Markus Landmann; Gerd Sommerkorn; Reiner Thomae

Estimation of Phase Drift during Calibration Measurements for Efficient Beam Pattern Modelling

Markus Landmann; Reiner Thomä

Ad Hoc and Sensor Networks (Friday, 1b)

On the Design of Tree–Based Topologies for Multi–Sink Wireless Sensor Networks

Chiara Buratti; John Orriss; Roberto Verdone

Information Delivery with Geographical Forwarding in Vehicular Wireless Networks

Marco Fiore; Alessandro Leonardi; Antonio Matera; Claudio Casetti; Carla–Fabiana Chiasserini; Sergio Palazzo

Optimizing Localized Mobility Management For Make–Before–Break Handoffs

Henrik Petander

Location Determination (Friday, 2a)

Location Determination with Factor Graphs for TDoA

Christian Mensing; Simon Plass

2D indoor mapping using impulse radios

Wenyu Guo; Nicholas Filer; Rudolf Zetik

Spatial Localization of Scattering Objects from High–Resolution Parameter Estimates

Giovanni Del Galdo; Vadim Algeier; Nicolai Czink; Martin Haardt

Wireless Networks (Friday, 2b)

Hopfield Neural Network Algorithm for Joint Dynamic Resource Allocation in Heterogeneous Wireless Networks

David Gomez-Barquero; Daniel Calabuig; Jose Monserrat; Narcis Cardona; Nuria Garcia; Jordi Perez-Romero

Performance Analysis of 802.11 CSMA/CA with Pareto Distributed Packet Interarrival Times on Error-Prone Channel

Jack Sudarev; Langford White

Resource Allocation Framework for Video Streaming Over Wireless OFDMA Systems

Chee Hock Liew

An Analytical Model for MPEG4 Transmission in Wireless Networks

Mario Barbera; Ahmet Kondo; Chee Hock Liew; Giovanni Schembra

Cross-Layer Design (Friday, 3)

SNR Prediction for Opportunistic Beamforming using Adaptive Filters

Markus Jordan; Gerd Ascheid; Heinrich Meyr

End-to-End TCP vs Cross Layer Congestion Control for Wireless Networks

Belinda Chiera; Langford White

Channel- and Application-Aware Transmission of Mixed Traffic over Wireless Shared Channels

Guenther Liebl

Advanced Transmission Strategies for Mixed Traffic over MC-CDMA

Guenther Liebl; Virginia Corvino; Luca Giuliani; Velio Tralli; Timo Mayer; Roberto Verdone