

#### Location

Carl-Cranz-Gesellschaft Argelsrieder Feld 22, bldg. TE 03, D-82234 Wessling-Oberpfaffenhofen

Participants will receive details to the seminar location as well as a list of nearby accommodations with the confirmation of registration. Please note that the accommodation is not included, and participants are asked to make their own hotel accommodation.

#### Fee

#### EUR 1.490,--

CCG is a non-profit organisation, exempt from value-added tax in Germany. For foreign seminar locations the local tax regulations are applicable. Members of CCG receive a discount of 10 %. Student discounts are available on request. Discounts cannot be combined.

Invoice is to be paid within 14 days of invoice issue date by direct deposit only.

## Registration

Please register up to 2 weeks before the seminar via E-Mail anmelden@ccg-ev.de or online at www.ccg-ev.de You will receive a confirmation E-Mail with further information.

## Further Information

For more information about our organization please contact: Carl-Cranz-Gesellschaft e.V. Argelsrieder Feld 22 D-82234 Wessling-Oberpfaffenhofen Tel. +49 (0) 8153 / 88 11 98 -12 E-Mail ccg@ccg-ev.de / Internet www.ccg-ev.de

For more information on the content of the seminar please contact Dr.-Ing. Francesco Rossetto Rohde & Schwarz GmbH & Co. KG, D-81614 München E-Mail: francesco.rossetto@rohde-schwarz.com

## **Substitutions and Cancellations**

Substitutions of participants may be made at any time. Cancellation of an accepted registration later than 14 days prior to the start of the seminar is subject to a 25% cancelation fee. No shows will be billed for the entire seminar fee.

CCG reserves the right to cancel a course up to 14 days before the course's beginning in case of low number of participants or for other significant reasons. Furthermore, CCG reserves the right, against the announcement in the programme, to possibly replace at short notice a lecturer and also the lecturer's topic. Any claims for damages shall be excluded.



## Ad Hoc Networks: Peer to Peer for wireless networking

## Who Should Attend

Engineers and project technical leaders and decision makers from both industry and research institutions in the areas of wireless communications, sensors, military and car communications

#### Focus

The seminar focuses on the applications and missions of multihop wireless networks and discusses a few selected fundamental theoretical results on the capacity. It provides a comprehensive discussion of the different protocol layers, from PHY to transport. For each layer, the best established research results are compared against the different real world implementations and the important engineering challenges are analysed.

The layer-oriented discussion is completed by topics like directive antennas in MANETs as well as broadcast protocols. Finally, the most successful application scenarios are discussed in detail, with emphasis on military, vehicular and directional networks.

The material will provide both a thorough overview of the general aspects, issues and solutions for MANETs as well as in-depth discussion of the practical implementations.

#### Lecturers

Francesco Rossetto	DrIng.	Rohde & Schwarz GmbH & Co. KG, München
Andrea Munari	DrIng.	DLR, German Aerospace Center Oberpfaffenhofen

## Seminar DK 1.22

# Ad Hoc Networks: Peer to Peer for wireless networking

Carl-Cranz-

Gesellschaft für technisch-wissenschaftliche Weiterbildung

Gesellschaft e.V. Weßling

October 14 – 15, 2024 Oberpfaffenhofen near Munich

# Scientific Coordination

Dr.-Ing. Francesco Rossetto Rohde & Schwarz GmbH & Co. KG, München





# **Seminar Outline**

## Monday, October 14, 2024 10.15 – 16.30

10.15 – 10.30	Introduction
10.30 – 12.00 F. Rossetto	General aspects and PHY layer MANET motivations and applications – Capacity of ad hoc networks – PHY layer in ad hoc networks – Channel impairments and interference – Most wide- spread PHY techniques
13.00 – 14.30 A. Munari	Medium Access Control for MANETs Scheduled and random access MACs – Coded slot- ted ALOHA – Fairness and possible solutions
15.00 – 16.30 A. Munari	Routing I Fundamentals: Dijkstra's and Bellman Ford; the challenges – Key routing protocols: DSR & AODV

### Tuesday, October 15, 2024 08.30 – 16.30

08.30 – 10.00 A. Munari	<b>Routing II</b> Further important routing protocols: link state, geo- graphic routing, hybrid routing – Routing metrics (power based, ETX, ETT)
10.30 – 12.00 A. Munari	Broadcast & Directionality Broadcast: issues and approaches – Directionality in MANETs: impact on protocols, benefits & chal- lenges, the 802.11ad
13.00 – 14.30 F. Rossetto	Higher layers. Mesh & tactical networks TCP in MANETs – Modularity MAC/routing – Mesh networks – Tactical Networks
15.00 – 16.30 F. Rossetto	Vehicular networks & D2D General issues for VANETs – the 802.11p and LTE V2X – LTE D2D

## Material

Each attendant will be provided with detailed course material in English.

#### Language

English