



Location

CCG-Center, Technologiepark

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

A list of nearby accommodations, a description of the location and hints for travel will be mailed to the participants upon registration. Please make your own hotel accommodation.

Fee

EUR 1.375,--

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 %. Where several employees from one company / office apply for the same course, each participant will receive a discount of 10 %. For students special rates are available on request. Discounts cannot be combined.

Please pay by non-cash means after receiving the invoice.

Registration

Please write or call (up to 3 weeks before the seminar) to Carl-Cranz-Gesellschaft e.V.; Argelsrieder Feld 22, D-82234 Wessling Tel. +49 (0) 8153 / 88 11 98 -12, Fax -19, E-Mail: anmelden@ccg-ev.de
Internet: www.ccg-ev.de

After receipt of registration, a confirmation letter will be sent.

Further Information

For more information about our organization please do not hesitate to contact the CCG at Oberpfaffenhofen at the phone number given above.

For more information on the content of the seminar please contact

Tomaso de Cola, DLR, German Aerospace Center
Oberpfaffenhofen, D-82234 Wessling
Phone: +49 (0) 8153 / 28-2156, E-Mail: tomaso.decola@dlr.de

Substitutions and Cancellations

Substitutions may be made at any time. Cancellation of an accepted registration made up to 10 days prior to the start of the seminar is subject to a EUR 25,-- administrative fee. Participants canceling after that date are responsible for the entire seminar fee.

CCG reserves the right to cancel a course up to 10 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.

Focus

The upcoming data science and EO missions will be requiring unprecedented high data rates in order to provide customers with large volume of data on daily basis. As such, a proper ground segment infrastructure tailored to such needs as well as sophisticated space segments are envisioned to meet these performance targets. More importantly, the overall system design has to be supported by proper communications protocols, from the physical layer up to the application. In this respect, the Consultative Committee for Space Data Systems (CCSDS), serving as standardization body for space missions, has been developing a rich framework to support the different phases of a mission and more interestingly has been developing a large portfolio of communication protocols that applicable to high-data rate missions. Starting from this baseline, this seminar will discuss the main communication protocol supporting telecommand and telemetry at the lower layers of the protocol stack, as well as elaborating further on the communications means to support more complex missions, where multiple interconnected space assets are present. As such, the seminar will be primarily focused on the providing the main features of the Delay Tolerant Network (DTN) architecture and its interface with the lower layers of the protocol stack as well as its interworking with the applications in use for support the future space missions (such as CFDP).

Who Should Attend

Engineers, scientists, managers, and technicians interested in state of the art satellite data communication technology and related services

Lecturer

Tomaso de Cola	DLR, German Aerospace Center, Oberpfaffenhofen Institute of Communications and Navigation
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Seminar DK 1.25

DTN-based Protocol Architectures for Future High Data Rate Space Missions

March 21 – 22, 2023
Oberpfaffenhofen near Munich

Scientific Coordination

Tomaso de Cola
DLR, German Aerospace Center
Oberpfaffenhofen



Seminar Outline

Tuesday, March 21, 2023
10.15 – 17.00

10.15 – 10.30	Introduction
10.30 – 11.00	High data rate space missions
11.30 – 12.00	CCSDS protocols General introduction to the CCSDS standardization framework: main technical areas, overall management, specific activities in the context of communications
13.00 – 14.00	Generalities about space communication protocols Concepts about CCSDS data communications, EPP, SPP, and interface between higher and lower layer protocols
14.00 – 15.00	Generalities about Space Data Link Protocols Overview about TM, TC, ULSP, and Proximity-1 Protocols
15.30 – 17.00	DTN Protocol Architecture – part 1 Overview of the overall DTN protocol architecture and positioning within CCSDS

Wednesday, March 22, 2023
09.30 – 16.30

09.30 – 12.00	DTN Protocol Architecture – part 2 Focus on BP specification on the basis of RFC 9171 and the ongoing revision of the existing CCSDS specification
13.00 – 14.30	DTN Protocol Architecture – part 2 Focus on LTP specification as currently defined in the CCSDS specification and the ongoing revision work done within CCSDS
15.00 – 16.30	CFDP protocol Overview of the CFDP protocol and related operation configuration for file transfer; details about data communications and overall filestore management

Material

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

Language

English

Additional Courses

- „Optische Freistrahlkommunikation für Weltraum- und atmosphärische Anwendungen“, 1.–2.3.2023 (Code DK 1.14)
- „Satellitenkommunikation“, 9.–11.5.2023 (Code DK 2.08)
- „Galileo - Stand und Weiterentwicklung“, 13.–14.6.2023 (Code SE 3.06)
- „Militärische Satellitenkommunikation“, 11.–14.9.2023 (Code DK 2.35)