

# Session: Large Scale Experimental Facilities

**Georg Carle** 

carle@tum.de http://www.net.cit.tum.de/~carle

Acknowledgements:
All members of the Chair of
Network Architectures and Services



## Agenda: Large Scale Experimental Facilities



- Georg Carle (TUM): Introduction
- Marie-José Montpetit (Interim Executive Director of SLICES-RI): SLICES research infrastructure in the international research platform landscape
- Tobias Hoßfeld (University of Würzburg): Measurement-based Research, Sustainability and Research Data Management
- Sebastian Gallenmüller (TUM): Reproducible Experiments, SIGCOMM and CoNEXT artifact evaluation and infrastructure needs
- Ivan Seskar (Rutgers University): US testbed landscape
- Serge Fdida (Sorbonne University), Georg Carle (TUM): Outcomes of Dagstuhl Seminar 24462
- Panel: Viewpoints on Large Scale Research Infrastructures for Computing/Communication Experiments
  - Georg Carle Panel Moderator
  - Marie-José Montpetit (SLICES-RI)
  - Ivan Seskar (Rutgers University)
  - Serge Fdida (Sorbonne University)
  - Tobias Hoßfeld (University of Würzburg)
  - Sebastian Gallenmüller (TUM)

# Research Campus Garching







**TUM Garching Campus** 

FRM II FRM I

# Communication and Computation Experimental Research



## Large heterogeneity in Research Infrastructures

- Purpose-built setups
- Difficulty to extend experiments of others



## Reproducible Experiments



ACM SIGCOMM MoMeTools - Workshop on Models, Methods and Tools for Reproducible Network Research,
Georg Carle, Hartmut Ritter, Klaus Wehrle,
Karlsruhe, Germany, August 2003

ACM SIGCOMM Reproducibility Workshop Olivier Bonaventure, Luigi Iannone, Damien Saucez Los Angeles, USA, August 2017

Dagstuhl seminar "Encouraging Reproducibility in Scientific Research of the Internet", October 2018

SLICES Research Infrastructure: opportunity for reproducibility

- Blueprints, including 5G/6G RANs and cores
- Reproducibility toolchain, including experiment orchestration
- Experiment portability with pos
- Data management components
- Educational material

## SLICES Research Infrastructure



#### **SLICES-RI**

- European Research Infrastructure Consortium (ERIC)
- Only countries can become member of ERICs
- National nodes organize the national activities

#### SLICES-DE

- TUM is designated national node for Germany
- Connection between German and European activities
- Coordination of activities in Germany with SLICES-RI
- Technically: Connecting German testbeds to SLICES services, with authentication (OpenID) and reproducibility (with pos)

## Panel



- Georg Carle Panel Moderator
- Marie-José Montpetit (SLICES-RI)
- Ivan Seskar (Rutgers University)
- Serge Fdida (Sorbonne University)
- Tobias Hoßfeld (University of Würzburg)
- Sebastian Gallenmüller (TUM)





#### Question to the Panel:

How far are we in supporting 6G research by research infrastructures that allow for

- Ease of use and low time to first experiment
- Reproducibility
- Availability of specific 6G equipment
- Sustainability, energy-efficiency, and high utilization
- FAIR research data management
- Community building



