# Telemetry and Big Data Workshop
# Introduction

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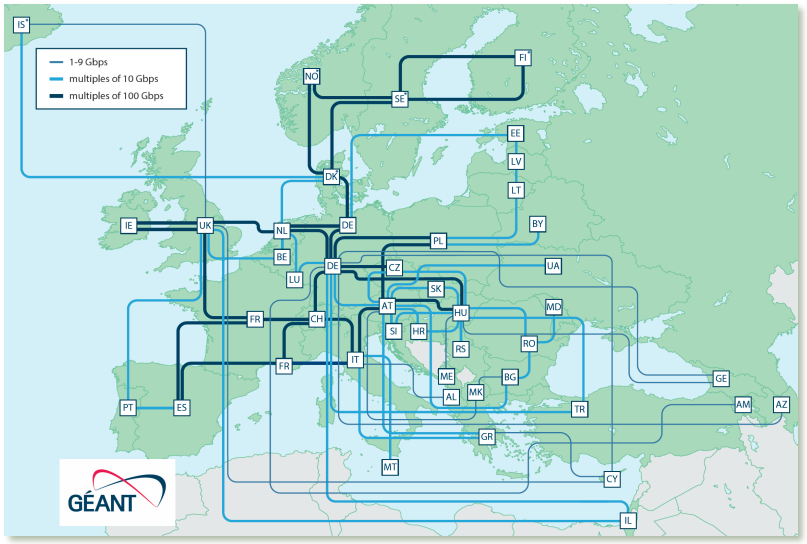
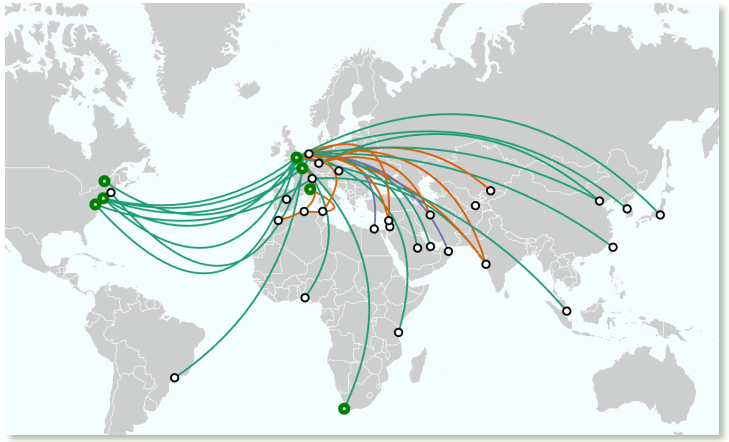
www.geant.org

# GÉANT

- The GÉANT Association, legal entity of European NRENs
- The GÉANT operational network (https://map.geant.org/)



- A European Commission co-funded project (family) – now GN4-3 and GN4-3N (to extend the fibre footprint in Europe)

# GÉANT Project

- **GÉANT's vision** is to ensure **equal** network **access for all scientists across Europe to** the research **infrastructures and** the **e-infrastructure resources** available to them
- A part of the European Union's Horizon 2020 research and innovation programme
  - GÉANT 2020 Framework Partnership Agreement (FPA)
- 40 partners, 500 contributors
- 50 M users
- GN4-3 started 1 Jan 2019 as a 4 year project

# Telemetry and Big Data Workshop

Idea from :

Network Technology and Services Development work package (WP6) :

- Network technology evolution
- Network services evolution and development
- Monitoring and management

Telemetry and Big Data permeate all of these areas

WP6 has three production monitoring tools: perfSONAR, PMP, and WiFiMon

WP6 presentations today:

- Data Plane Programming / In Band Telemetry, Mauro Campanella, (GARR)
- Streaming Telemetry, Pavle Vuletić (UoB)
- Use of Sketches in DPP for DDoS and Monitoring, Damian Parniewicz (PSNC)

# Why Telemetry and Big Data

The NRENs manage federated production networks (moving towards Terabit) for users who require high capacity e2e for advanced services (e.g. metrology)

The challenge is to do a leap in visibility, including analysis of multiple data sources to present service-oriented views.

To control and debug what is no longer just a "large" network, but rather an infrastructure that includes "computing", over multiple domains (site, NREN, GÉANT, …). This implies a need for ways to share our telemetry data.

Telemetry, "the in situ collection of measurements or other data at remote points and their automatic transmission to receiving equipment" (from Wikipedia). Applied to data networks has evolved rapidly, exploiting line speed merchant silicon (e.g. FPGA, Tofino) and offering high level programming languages for the data plane (e.g. P4, NDL)

# Telemetry and Big Data Workshop details

## Agenda

**10:15-11:15 Session 1**

*11:15-11:25 Tea and coffee break*

**11:25-12:25 Session 2**

**12:25-12:45 Discussion**

*12:45-13:35 Lunch break*

**13:35-14:45 Session 3**

*14:45-14:55 Tea and coffee break*

**14:55-15:55 Session 4**

**15:55-16:30 Discussion**

*16:30 End of Workshop*

## Program Committee

Mauro Campanella, GARR
Tim Chown, Jisc
Ivana Golub, PSNC
Richard Havern, GÉANT
Simon Leinen, SWITCH
Pavle Vuletić, UoB

# Telemetry and Big Data Workshop

The workshop will be recorded

Please use the chat and keep your microphone muted when not speaking

Presentation abstracts and speaker short bios:
https://wiki.geant.org/display/PUB/Telemetry+and+Big+Data+Workshop+-+abstracts

All presentations are/will be available on the wiki:
https://wiki.geant.org/display/PUB/Telemetry+and+Big+Data+Workshop

# Telemetry and Big Data Workshop

## Session 1

Session Chairs: Ivana Golub (PSNC), Tim Chown (Jisc)

- **Welcome, introduction**, *Mauro Campanella (GARR), Ivana Golub, (PSNC), Tim Chown (Jisc)*
- **Data Plane Programming / In Band Telemetry**, *Mauro Campanella, (GARR)*
- **Streaming Telemetry**, *Pavle Vuletić (UoB)*
- **GÉANT Operations use of Telemetry**, *Richard Havern (GÉANT)*
- **Use of Sketches in DPP for DDoS and Monitoring**, *Damian Parniewicz (PSNC)*

# Telemetry and Big Data Workshop

## Session 2

Session Chairs: Simon Leinen (SWITCH), Mauro Campanella (GARR)

- **Scalable and Cost-Efficient Generation of Unsampled NetFlow**, *Alexander Gall (SWITCH)*
- **DDoS Detection on P4 SmartNICs**, *Marinos Dimolianis (NTUA)*
- **Managing the Telemetry Firehose from 1:1 packet sampling**, *Yatish Kumar (ESnet)*
- **The path to modern logging, monitoring, and alerting in GARR**, *Fabio Farina (GARR)*

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## Session 3

Session Chairs: Simon Leinen (SWITCH), Mauro Campanella (GARR)

- **Community Shared Telemetry**, *Karl Newell (Internet2)*
- **Anomaly detection in Data Center infrastructure**, *Krzysztof Martyn (PSNC)*
- **Making Sense Of Your Big Data & Empowering Users**, *Dan Doyle (Indiana Global NOC)*
- **Making OSS Network Data Available to Network Researchers**, *Alex Moura (RNP)*

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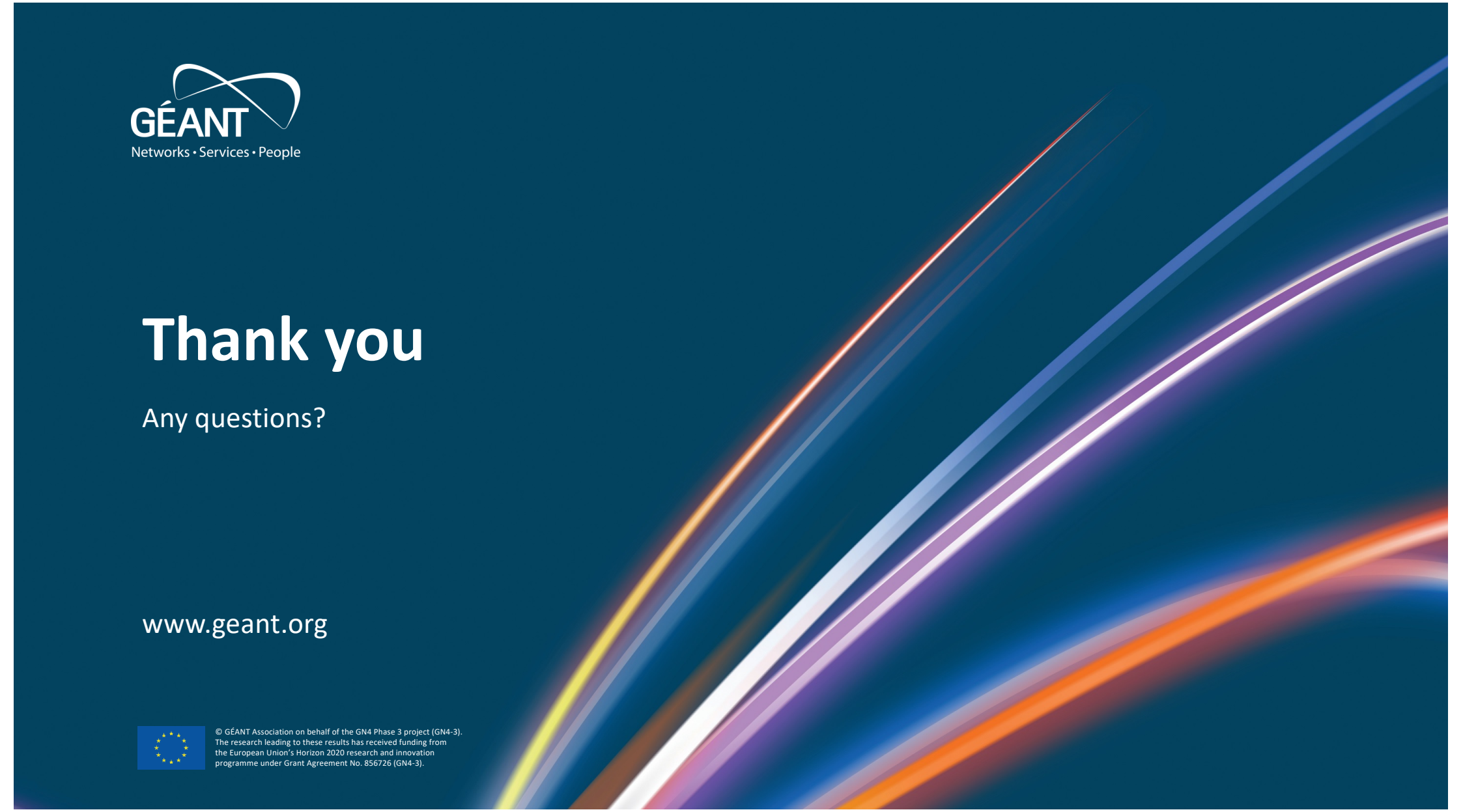
## Session 4

Session Chairs: Pavle Vuletić (UoB), Ivana Golub (PSNC)

- **Network Telemetry at AmLight**, *Jeronimo Bezerra (Amlight)*
- **DPDK + Kafka: Multi-MPPS Telemetry Data Ingest and Stream Processing at ESnet**, *Richard Cziva (ESnet)*
- **NetSage Use Cases and Scalability**, *Doug Southworth (Indiana University)*
- **A Proposal towards sFlow Monitoring Dashboards for AI-controlled NRENs**, *Mariam Kiran (Esnet)*





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