

# COIN

## Computing in the Network

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IETF 112 – Virtual Madrid

Nov 11th, 2021

# Note Well

This is a reminder of IETF policies in effect on various topics such as patents or code of conduct. It is only meant to point you in the right direction. Exceptions may apply. The IETF's patent policy and the definition of an IETF "contribution" and "participation" are set forth in BCP 79; please read it carefully.

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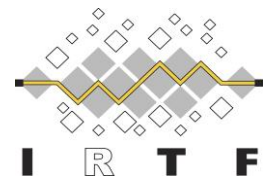
# Note Well - Policies

<https://ietf.org/policies>

Definitive information is in the documents listed below and other IETF BCPs. For advice, please talk to WG chairs or ADs:

- [BCP 9](#) (Internet Standards Process)
- [BCP 25](#) (Working Group processes)
- [BCP 25](#) (Anti-Harassment Procedures)
- [BCP 54](#) (Code of Conduct)
- [BCP 78](#) (Copyright)
- [BCP 79](#) (Patents, Participation)
- <https://www.ietf.org/privacy-policy/> (Privacy Policy)

**This session is being recorded**



# Goals of the IRTF

- The Internet Research Task Force (IRTF) focuses on longer term research issues related to the Internet while the parallel organization, the IETF, focuses on shorter term issues of engineering and standards making
- **The IRTF conducts research; it is not a standards development organization**
- While the IRTF can publish informational or experimental documents in the RFC series, its primary goal is to promote development of research collaboration and teamwork in exploring research issues related to Internet protocols, applications, architecture, and technology
- See “An IRTF Primer for IETF Participants” – [RFC 7418](#)

# Agenda (1/2)

- **Intro** - 5 mins
  1. **Chairs - Note Well and Update** - J/E/M
- **Papers** – 20 mins each
  2. **Extensible Internet** - Scott Shenker (UC Berkeley)
    - Paper: <https://ccronline.sigcomm.org/2021/revitalizing-the-public-internet-by-making-it-extensible/>
    - Video: <https://www.youtube.com/watch?v=xMoaj4w3R6k>, @ 10:44
  3. **ATP: In-network Aggregation for Multi-tenant Learning** - Wenfei Wu (Peking U.)
    - Paper: <https://www.usenix.org/conference/nsdi21/presentation/lao>
  4. **Information-centric Dataflow: Re-imagining Reactive Distributed Computing** – Dirk Kutscher (Emden University)
    - Paper: <https://doi.org/10.1145/3460417.3482975>
    - Slides: <https://conferences2.sigcomm.org/acm-icn/2021/assets/3-2-kutscher-387d18eb69a8104287bf75f800cc6a6042a8a00b89b0996bdd4abf7ab60542bd.pdf>
- **Ideas** – 10 mins each
  5. **MODA - An operating system for distributed applications** - Alessandro Bassi (Things)

# Agenda (2/2)

## Draft Updates - 10 mins each

6. **Use Cases for In-Network Computing** - Ike Kunze (RWTH Aachen University)
  - Draft: <https://datatracker.ietf.org/doc/html/draft-irtf-coinrg-use-cases-01>
7. **Transport Protocol Issues of In-Network Computing Systems** - Dirk Trossen (Huawei)
  - Draft: <https://www.ietf.org/archive/id/draft-kunze-coinrg-transport-issues-05.txt>
8. **Enhancing Security and Privacy with In-Network Computing** - Ina Fink (RWTH Aachen University)
  - Draft: <https://datatracker.ietf.org/doc/draft-fink-coin-sec-priv/03/>

## New Draft - 5 mins

9. **A Compute Resources Oriented Scheduling Mechanism based on Dataplane Programmability** – Kehan Li (ChinaMobile)
  - Draft: <https://datatracker.ietf.org/doc/draft-li-coinrg-compute-resource-scheduling/>

## RG topics – 10 mins

- Announcements & Future meetings

# Administrivia

- Meetecho:
  - <https://meetings.conf.meetecho.com/ietf112/?group=coinrg&short=&item=1>
  - Automatic Bluesheets
  - Integrated Jabber/IM/Chat
    - We will monitor both the **chat and the queue for questions**
    - Default to **audio muted** and **video off**, unless you are speaking
    - **Wear headphones if you can**
- Live Minutes:
  - CodiMD: Integrated into Meetecho (Please collaborate!)
  - <https://codimd.ietf.org/notes-ietf-112-coinrg>
- Mailing list:
  - [coin@irtf.org](mailto:coin@irtf.org)
  - To subscribe: <https://www.ietf.org/mailman/listinfo/Coin>
- Meeting materials:
  - <https://datatracker.ietf.org/meeting/112/session/coinrg>

# COIN Document Status

- **RG Documents**

- [draft-irtf-coinrg-use-cases](#) : Use Cases for In-Network Computing
- [draft-kutscher-coinrg-dir](#): Directions for Computing in the Network (**expired and needs update**)

- **New draft**

- [draft-defoy-coinrg-p4-by-tenants-in-mobile-nw](#): Use Case for P4 Programmability by Tenants of Future Mobile Virtual Networks

- **Other Documents (update status needed from authors)**

- [draft-kunze-coinrg-transport-issues](#): Transport Protocol Issues of In-Network Computing Systems
- [draft-fink-coin-sec-priv](#): Enhancing Security and Privacy with In-Network Computing
- [draft-mcbride-edge-data-discovery-overview](#): Edge Data Discovery for COIN
- [draft-sarathchandra-coin-appcentres](#): In-Network Computing for App-Centric Micro-Services
- [draft-hsingh-coinrg-p4use](#): Use of P4 Programs in IETF Specifications
- [draft-hsingh-coinrg-reqs-p4com](#) - Requirements for P4 Program Splitting for Heterogeneous Network Node
- [draft-defoy-coinrg-mobile-discovery](#): Impact of Mobility on Discovery in COIN
- [draft-fu-coinrg-joint-optimization-req](#) : Requirements of computing and network joint optimization and scheduling
- [draft-li-coin-oam-framework](#): COIN Operation, Administration and Maintenance Framework
- [draft-liu-coin-differential-reservatio](#) : Differential Computing Resource Reservation
- [draft-liu-coinrg-requirement](#): Requirement of Computing in network
- [draft-mcbride-data-discovery-problem-statement](#): Data Discovery Problem Statement
- [draft-mcbride-edge-data-discovery-overview](#): Edge Data Discovery for COIN



# Milestones @ IETF-112

Date	Milestone
Dec 2019 ✓	Capture the SoTA of the COIN landscape - <u>partly achieved</u>
Sep 2020 ✓	Articulate COIN challenges - <u>partly achieved</u>
Apr 2020	Discuss/catalog COIN requirements and implications for network elements (including network services, network SW stacks, network HW design, etc.) - <u>on going activity</u>
Apr 2020 ✓	Target COIN case studies, from architecture, implementation and use case standpoints – <u>drafts exist – on going activity</u>
Apr 2020 ✓	Apr 2020 Identify COIN network-related eco-system dependencies - <u>partly achieved</u>
Nov 2020	Work toward defining a COIN scope appropriate for the IRTF, within which new research, architectures, mechanisms and protocols can be proposed – <u>to do</u>
Nov 2021	<b>Milestone review for next Interim(proposed)</b>

# Presentations and Discussions

# Announcements & Future meetings

- Ongoing & Upcoming:
  - Virtual HotNets workshop:
    - <https://conferences.sigcomm.org/hotnets/2021/>
    - Workshop date: **Nov 10-12**
- Meetings
  - Interim
    - Revisit scope of RG
    - When:
      - “virtually co-located” with CoNEXT workshop (?) – early Dec
      - Mid-way between meetings - Jan/Feb timeframe (?)
  - IETF 113
    - Virtual/hybrid (?) – **Mar 19-25**