# COIN
# Computing in the Network Research Group

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Interim Meeting – April 7 2020

# Note Well – Intellectual Property

- **The IRTF follows the IETF Intellectual Property Rights (IPR) disclosure rules**

- By participating in the IRTF, you agree to follow IRTF processes and policies:
  - If you are aware that any IRTF contribution is covered by patents or patent applications that are owned or controlled by you or your sponsor, you must disclose that fact, or not participate in the discussion
  - The IRTF expects that you file such IPR disclosures in a timely manner – in a period measured in days or weeks, not months
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# Note Well – Privacy & Code of Conduct

- As a participant in, or attendee to, any IRTF activity you acknowledge that written, audio, video, and photographic records of meetings may be made public

- Personal information that you provide to IRTF will be handled in accordance with the Privacy Policy at https://www.ietf.org/privacy-policy/

- As a participant or attendee, you agree to work respectfully with other participants; please contact the ombudsteam (https://www.ietf.org/contact/ombudsteam/) if you have questions or concerns about this

- See RFC 7154 (Code of Conduct) and RFC 7776 (Anti-Harassment Procedures), which also apply to IRTF

# Goals of the IRTF

- The Internet Research Task Force (IRTF) focuses on longer term research issues related to the Internet while the parallel organisation, the IETF, focuses on shorter term issues of engineering and standards making

- **The IRTF conducts research; it is not a standards development organisation**

- 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

# *Connectivity Hints*

- **Meeting material**: https://datatracker.ietf.org/rg/coinrg/meetings/

- **Etherpad:** https://etherpad.ietf.org:9009/p/notes-ietf-interim-2020-coinrg-02?useMonospaceFont=true

- **Jabber:** xmpp:coinrg@jabber.ietf.org?join

- Please remember that **all sessions are being recorded.**

- Please also:

- Ensure your **video is off**

- **Keep yourself muted** unless you are speaking.

- Use **Webex chat only to join the mic queue**
  - "+q" adds you the the queue
  - "-q" removes you from the queue

- Add your name and affiliation to the **virtual bluesheet** (the session Etherpad) via IETF Datatracker Meeting agenda

# *COIN – How to make this more exciting!?* ☺

- Our goal:

  *Foster research in computing in the network to improve performance for networks and applications*

- Focus:
  - Architectures
  - Protocols
  - Real-world use cases, applications, work in progress

# *Agenda (1)*

**0. Chairs update** - 10 min
  1) Reminder of IPR policies
  2) ICIN 2020 update
  3) Current drafts
  4) Milestones list and plans for updating

**1. Research Presentations** – 10-15 min each
  1) Offloading Online MapReduce tasks with Stateful Programmable Data Planes
     (Marco Faltelli, University of Rome, Italy)
  2) P4DNS
     (Jackson Woodruff, University of Cambridge, UK)
  3) Common data layer
     (Edgar Ramos, Ericsson Finland, Roberto Morabito, Princeton U. USA,
      Marie-José Montpetit, U. Concordia Montreal Canada, Eve M. Schooler,
      Intel USA)
  4) One Data Model and Function Blocks
     (Michael Koster, SmartThings, USA)

# *Agenda (2)*

**2. Drafts Updates** – 5-10 min each

    1) "In-network Computing for App-centric Micro-services"
       https://datatracker.ietf.org/doc/draft-sarathchandra-coin-appcentres/
       (Dirk Trossen, Huawei Munich, Germany)

    2) "Enhancing Security and Privacy with In-Network Computing"
       https://datatracker.ietf.org/doc/draft-fink-coin-sec-priv/
       (Ina Berenice Fink, RWTH Aachen University, Germany)

    3) "Transport issues"
       https://datatracker.ietf.org/doc/draft-kunze-coinrg-transport-issues/
       (Ike Kunze, RWTH Aachen University, Germany)

    4) "Requirements of Computing in the Network"
       https://datatracker.ietf.org/doc/draft-liu-coinrg-requirement/
       (Peng Liu, China Mobile, China)

    5) "Edge Data Discovery"
       https://datatracker.ietf.org/doc/draft-mcbride-edge-data-discovery-overview/
       (Eve M. Schooler, Intel, USA)

**3. Future plans and Discussion**

    1) Research Group Items
    2) Prep for Madrid – Interim (June?)
    3) Open discussion

# *ICIN 2020 Update*

https://www.icin-conference.org/

- Conference on Innovation in Clouds, Internet and Network (ICIN'20)
  - Feb. 24-27, 2020
- Netproc workshop
  - P4 applications and services (2 papers later in this meeting)
  - Discussion on the future of P4/Tofino architecture
  - P4 tutorial
- Panel on Computing in the Network
  - General agreement on cloud-edge continuum evolution towards more in network computing
    - But what is edge networking/computing vs. in-network?
    - Some dissident voice from Zhe Lou (Huawei) on locating computing solely in core switch fabric
  - Computing in the network seen as a major emerging trend in networking
- ICIN 2021: "Services everywhere: melding networking and computing in an intelligent cloud-edge continuum"
  - March 1-4, 2021 - Paris, France

# *Drafts (1)*

- Active Drafts
  - draft-sarathchandra-coin-appcentres-01: In-Network Computing for App-Centric Micro-Services
    - https://datatracker.ietf.org/doc/draft-sarathchandra-coin-appcentres/
  - draft-kunze-coin-industrial-use-cases-02: Industrial Use Cases for In-Network Computing
    - https://datatracker.ietf.org/doc/draft-kunze-coin-industrial-use-cases/
  - draft-kunze-coinrg-transport-issues-01: Transport Protocol Issues of In-Network Computing Systems
    - https://datatracker.ietf.org/doc/draft-kunze-coinrg-transport-issues/
  - draft-kutscher-coinrg-dir-02: Directions for Computing in the Network
    - https://datatracker.ietf.org/doc/draft-kutscher-coinrg-di
  - draft-liu-coinrg-requirement-02: Requirement of Computing in network
    - https://datatracker.ietf.org/doc/draft-liu-coinrg-requirement/
  - draft-mcbride-edge-data-discovery-overview-02: Edge Data Discovery for COIN
    - https://datatracker.ietf.org/doc/draft-mcbride-edge-data-discovery-overview/
  - "Enhancing Security and Privacy with In-Network Computing"
    - https://datatracker.ietf.org/doc/draft-fink-coin-sec-priv/

# *Drafts (2)*

- Other Drafts
  - draft-montpetit-coin-xr-03 : In Network Computing Enablers for Extended Reality
    - https://datatracker.ietf.org/doc/draft-montpetit-coin-xr/
  - draft-he-coin-managed-networks-01 : In-Network Computing for Managed Networks: Use Cases and Research Challenges
    - https://datatracker.ietf.org/doc/draft-he-coin-managed-networks/

# *Milestones Update – UPDATE NEEDED*

- Current milestones
  - Dec 2019 - Capture the SoTA of the COIN landscape - <u>done and ongoing</u>
  - Dec 2019 - Articulate COIN challenges – <u>done partly</u>
  - Apr 2020 - Discuss/catalog COIN requirements and implications for network elements (including network services, network SW stacks, network HW design, etc.) - <u>done partly and on-going</u>
  - Apr 2020 - Target COIN case studies, from architecture, implementation and use case standpoints <u>done partly and on-going</u>
  - Apr 2020 - Identify COIN network-related eco-system dependencies – <u>not done</u>
  - Nov 2020 - Work toward defining a COIN scope appropriate for the IRTF, within which new architectures, mechanisms and protocols can be proposed – **???**

- Need updating to reflect recent development in the group and more specific goals
  - Start a discussion on the list and arrive to consensus by Madrid?

# *Presentations*

## *Advice to presenters:*
## *Link your work to the charter and to the cloud-edge continuum if possible*

# *Future Plans*

- **Interim meeting mid-June?**
  - Document management
  - New research topics
  - RG document adoption?
    - Naming of drafts reminder
  - Controversial/Outrageous Opinion(s) segment – "Take a stance"
    - Encourage varied perspectives (pro/con, academia/govt/industry, compute/storage/network, etc)
- **Madrid preparation (virtual?)**
  - Hackathon
    - Tools development
    - Architecture evolution and multistream processing project
  - Updated Milestones
  - Preparation should be started on the list and at the interim