# 52nd NMRG Meeting – IM 2019
## Sessions 1 and 2

Laurent Ciavaglia

# IRTF follows IETF policy ("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.

 As a reminder:

- By participating in the IETF, you agree to follow IETF processes and policies.
- If you are aware that any IETF 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.
- As a participant in or attendee to any IETF activity you acknowledge that written, audio, video, and photographic records of meetings may be made public.
- Personal information that you provide to IETF will be handled in accordance with the IETF Privacy Statement.
- 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.

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)

# Useful links

Agenda and Materials

https://datatracker.ietf.org/meeting/interim-2019-nmrg-01/session/nmrg

https://datatracker.ietf.org/meeting/interim-2019-nmrg-02/session/nmrg

# Access NMRG resources

- Charter, Meetings, Documents, Mailing list

  https://datatracker.ietf.org/rg/nmrg/about/

  https://irtf.org/nmrg

  https://www.irtf.org/mailman/listinfo/nmrg

# NMRG - Network Management Research Group

- A forum for researchers to explore new technologies for the management of the Internet.

- An activity of the IRTF – Internet **Research** Task Force
  - Not a standardization group
  - But "privileged link" with IETF

- Open
  - Mailing list
  - Meets 3-4 times / year, co-located with IETF meetings, IM/NOMS conferences, and ad-hoc/topical meetings
  - More use of virtual meetings (~monthly basis)

# 2019 meetings plan

- April, IEEE IM 2019, Washington
  - 2 sessions, Tuesday, 08 April 2019
  - Outreach to IEEE/IFIP NM communities
- June, NMRG Workshop, Silicon Valley, USA (under preparation)
  - Exact date/time TBC, in week 10-14 June 2019 or week 24-28 June
- July, IETF 105, Montreal
  - Regular session(s)
  - Interim TBC
- October, NMRG Workshop, Bologna, (under preparation)
- November, IETF 106, Singapore

- Monthly virtual meetings + topic-specific ones as per need

# ANRW 2019

- [https://irtf.org/anrw/2019/](https://irtf.org/anrw/2019/)
- Call for Papers
  - [...] New approaches to network management, operations, and control
  - **Submit your ideas!**
  - Deadline: May 10, 2019

# Research agenda

Intent-based Networking

AI for Network Management

Autonomic Networking 3.0
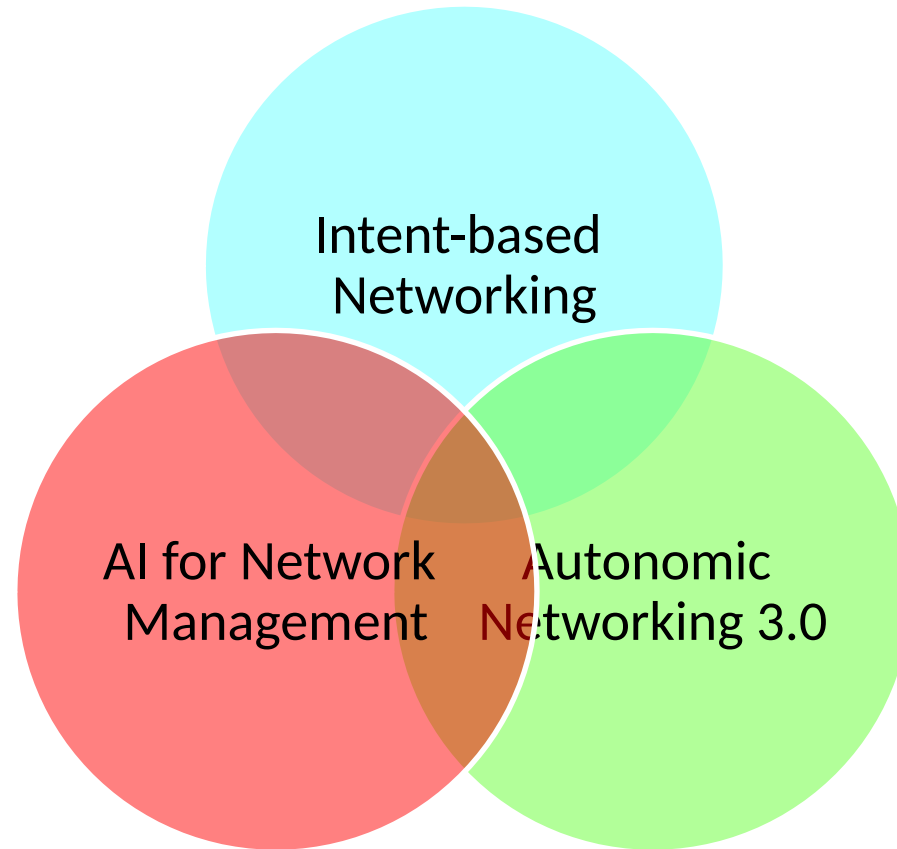
More details in
https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8334913 (page 15)

# IBN topic - current work plan
## as agreed at IETF100/Singapore

- **How to call stuff**
  - document(s) on terminology/taxonomy
- **How to express/model intent**
  - information model, grammar, languages
- **How to realize Intent Based Systems**
  - "reference" functional architecture, functional blocks/components, mechanisms/techniques, theory of operations/lifecycle
- **Additional work items could also investigate**
  - functions and techniques ; use cases ; what are the challenges and corresponding research items

# IBN topic - work plan update

- **Extend/Update with:**
  - Problem statement, scope, design challenges and goals
  - Concepts definition
  - Intent at design and run time, impact of CI/CD(?)
  - Interoperability
  - Continuous measure/validation of intent realization
  - Evaluation, validation, implementation

- **Deliverables, Milestones, Criteria for RG adoption**

- **Progressing the work (RG support)**
  - Regular, dedicated virtual meetings (1 or 2 per month?)
  - Interim meetings: June, TBC ; July-IETF105 ; October, TBC
  - Hackathon...?
  - Mailing list, other tools needed?

# IBN topic - work plan update

- Are we missing some aspects of IBN?
- What output will have most value/relevance?
- Who IM/NOMS communities is willing to join the effort, to contribute on what.
- How can NMRG and IM/NOMS collaborate for mutual benefits?
- e.g. dedicated track in conference, workshop, special issue, joint papers, demos…

# Future of NMRG

- Some important questions and principles
  - What is our shared goal?
    - Define the collective outcome we want to achieve with the RG
  - Who is the public? Which communities?
    - Define the scope and beneficiaries
  - What is our approach / way of working?
  - What is the link with IETF?

  - Pluri-disciplinary
    - different, complementary competencies to solve problems
  - Cross-fertilization
    - provide and get knowledge from others, enrich our understandings, broaden our views

# IM/NOMS - NMRG

- How to contribute to the NMRG
- Mutual benefits

# Future of NMRG

- **Charter update to capture current focus (e.g. IBN) and milestones**

- Inspiring talks e.g. at future IETF meetings
  - Hot Topics in Network Management
- "In-depth" **survey**
  - Change name? Charter? Stop NMRG?
  - Research topics?
  - Methods and tools?
  - Areas of improvement
  - Communities outreach. How, what for, what benefits?
  - How we run f2f, interim and virtual meetings
  - For all questions: clear proposals and motivations (why)!

# Future of NMRG

- Some ideas and topics
  - Managing at ultra low and high scales and speed
  - Role and place of human (in the (management) loop), human-network interactions, instrumentation, visualization, trust/oversight
  - Post-NETCONF/YANG era
  - Site/Network Reliability Engineering field (SRE/NRE)
  - Foundations, principles, concepts, architectures, techniques, protocols, mechanisms, models, evaluations, benchmarking, tooling, toolchain, operations, lifecycle management
  - Application areas (IoT, 6G, nano-networks...)