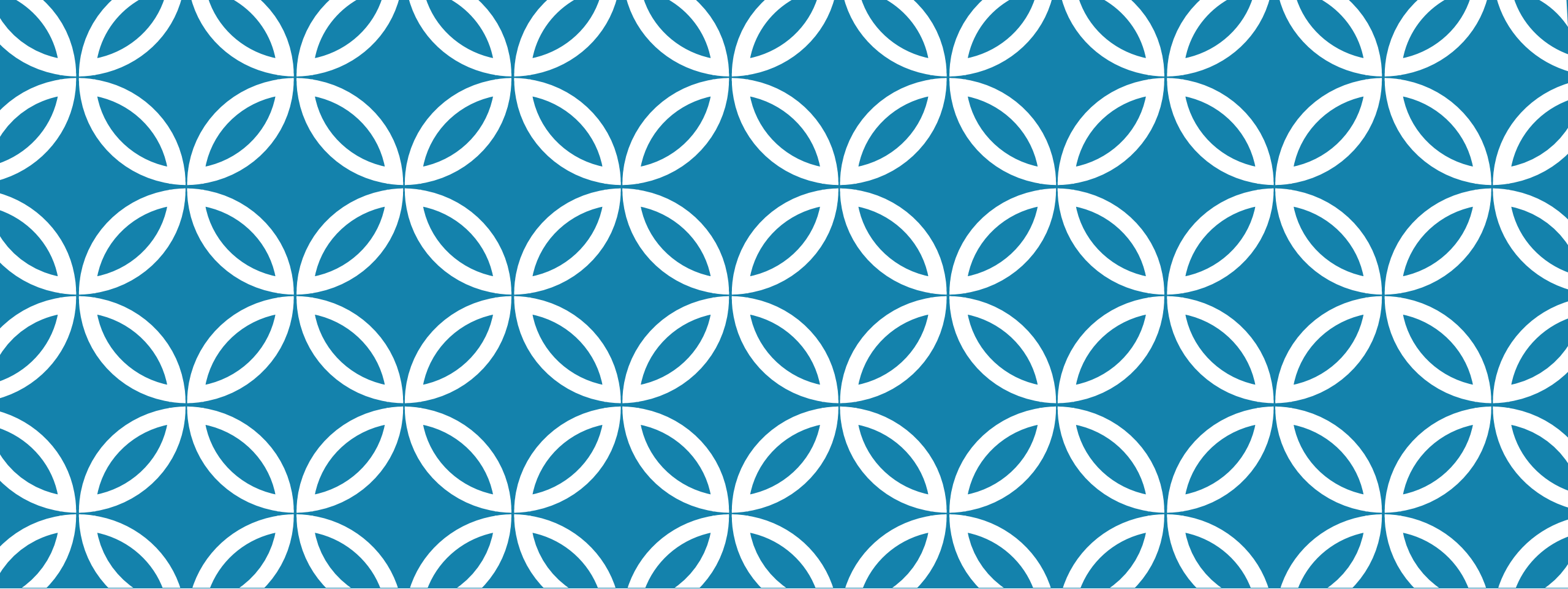




6G RESEARCH DIRECTIONS

Dirk v. Hugo, Behcet Sarikaya
IETF 114 Side Meeting
July 2022

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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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)

MOTIVATION

- 5G deployment ongoing
- Next phases (e.g., 5G Advanced) covering enhancements towards
 - More efficiency, (access) heterogeneity, network slicing, data analytics based automation, readiness to SDN/NFV, cloud, and open source, service awareness, ...
- Ultimate 5G systems' dream to enable some 'futuristic' applications may come very late
- ... thus 6G research worldwide started
- Developing Secure and Reliable 6G networks (US President at a recent speech on July 15, 2022)

OUTLINE

- Looking into 6G by Chairs
- Shaping Future 6G Network Presentation by Hannu Flink
- IoT as 6G Driver or The Need for New Authentication Methods for Internet of Things Presentation by Dirk
- Q&A

LOOKING INTO 6G

- Separate link layer from network architecture
- Why can't 5G (or 6G) NR operate on a home router, without a carrier?
- Assume flexible spectrum access (geo database)
- Every interface must be testable and self-testing
- *Interface neutrality* = every control needs to be accessible to network consumer, not just operator (bounded by slice or authorization)
- Clean interfaces particularly at layer 2 and 3
- No configuration files, ever
- No hard-coded addresses (e.g., gateways), ever

LOOKING INTO 6G

- 6G needs an architecture re-think, not (only) better PHY
- Cleaner separation between media/complexity-dependent layers, common data transport and control planes
- Design scalable, unified **IP-based control plane** for everything from peer-to-peer mode to managed national cellular network
- Cleanly separate access from backbone
 - since likely continue to be both locally (enterprise) and third-party managed
 - Allow us to leverage fiber availability without doing complicated backhaul mechanism
- Opportunity to bridge the Wi-Fi - cellular chasm
 - It should not matter to the end user which PHY is being used, and change it by tuning to a different spectrum band
- 3G IP-based 4G LTE 5G Cloud what about 6G? We propose IoT

Q&A

➤ Can IoT be the driver for 6G?