



Niels ten Oever
Postdoctoral Researcher
University of Amsterdam

mail@nielstenoever.net



Riccardo Nanni
University of Bologna

riccardo.nanni9@unibo.it

The standardisation of lawful interception technologies in the 3GPP

Interrogating 5G and surveillance amid
US-China competition

Introduction

3GPP: main venue for mobile connectivity standards setting since 3G

1. Founded by the European industry (ETSI)
2. Now Chinese actors (Huawei) compete on par to EU giants (Ericsson, Nokia)

Lawful interception: most governments legally require that the telephony infrastructure allow law enforcement to intercept communications.

US-China competition: growing mistrust on each other's capacity to illegally access sensitive information.

Standardisation

ITU - 3G

TD-SCDMA (China)

CDMA 2000

UMTS

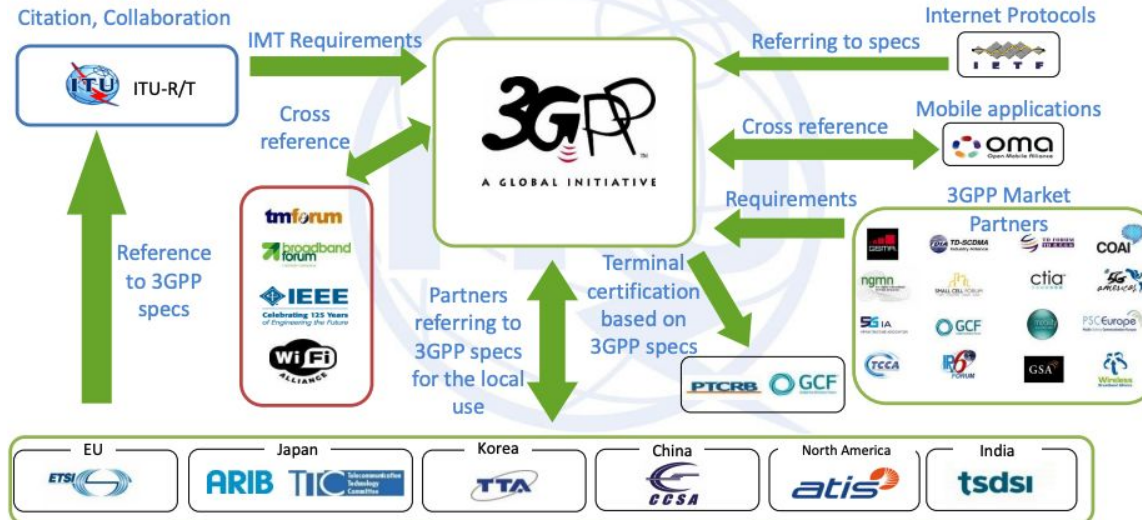
ITU - 4G

LTE

LTE-TDD (China)

ITU - 5G

3GPP



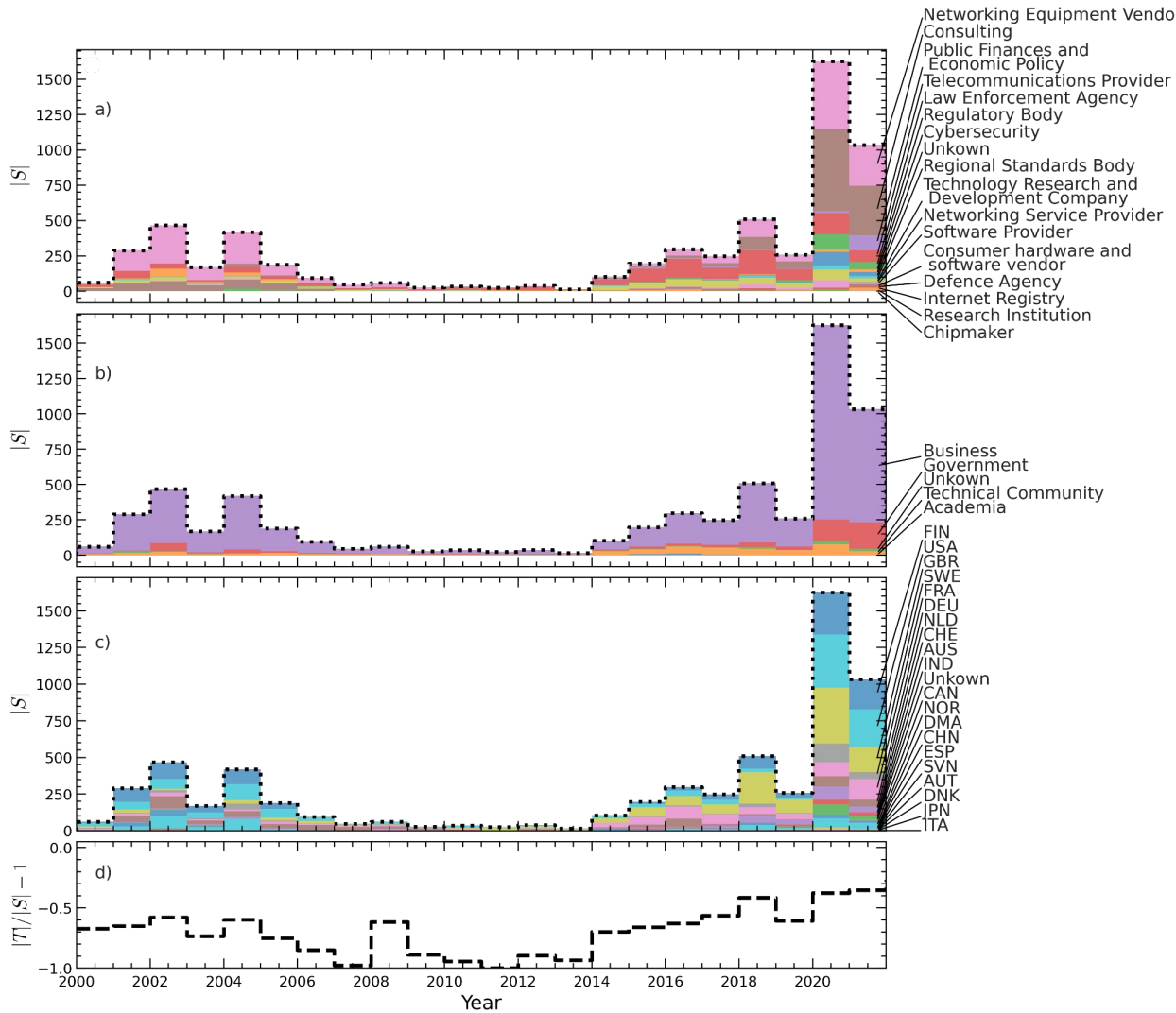
Politics and Tension in 5G Standardisation

1. US - China technological competition (EU caught in between)
2. Need for scalability vs. tendency towards protectionism

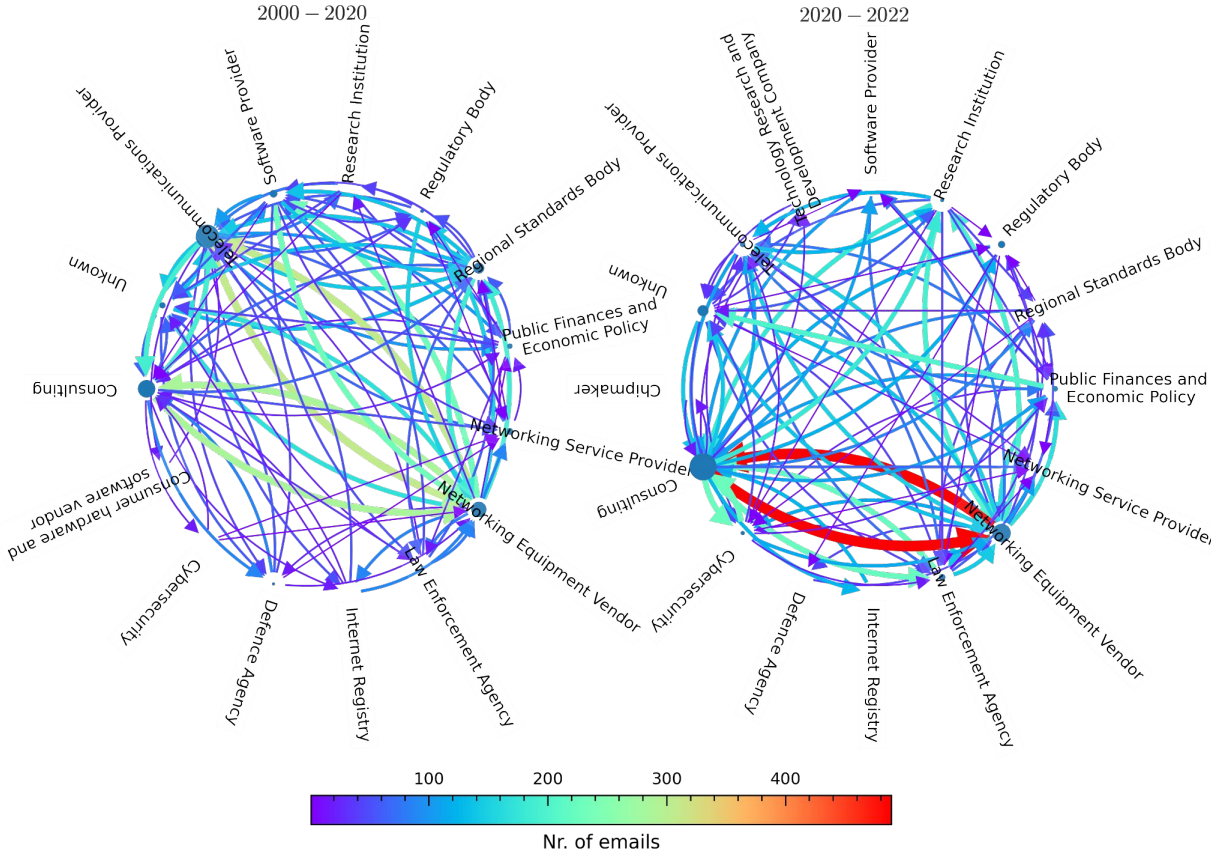
Theory

1. Infrastructure as a site and tool of political contestation (Musiani 2013)
2. Economic protectionism as a means for balancing power inequalities in great power competition (Ikenberry 2018; Baroncelli 2017)
3. Global infrastructural fragmentation and territorialization of cyberspace (Drake, Cerf, and Kleinwächter 2016; Mueller 2017; Lambach 2019)

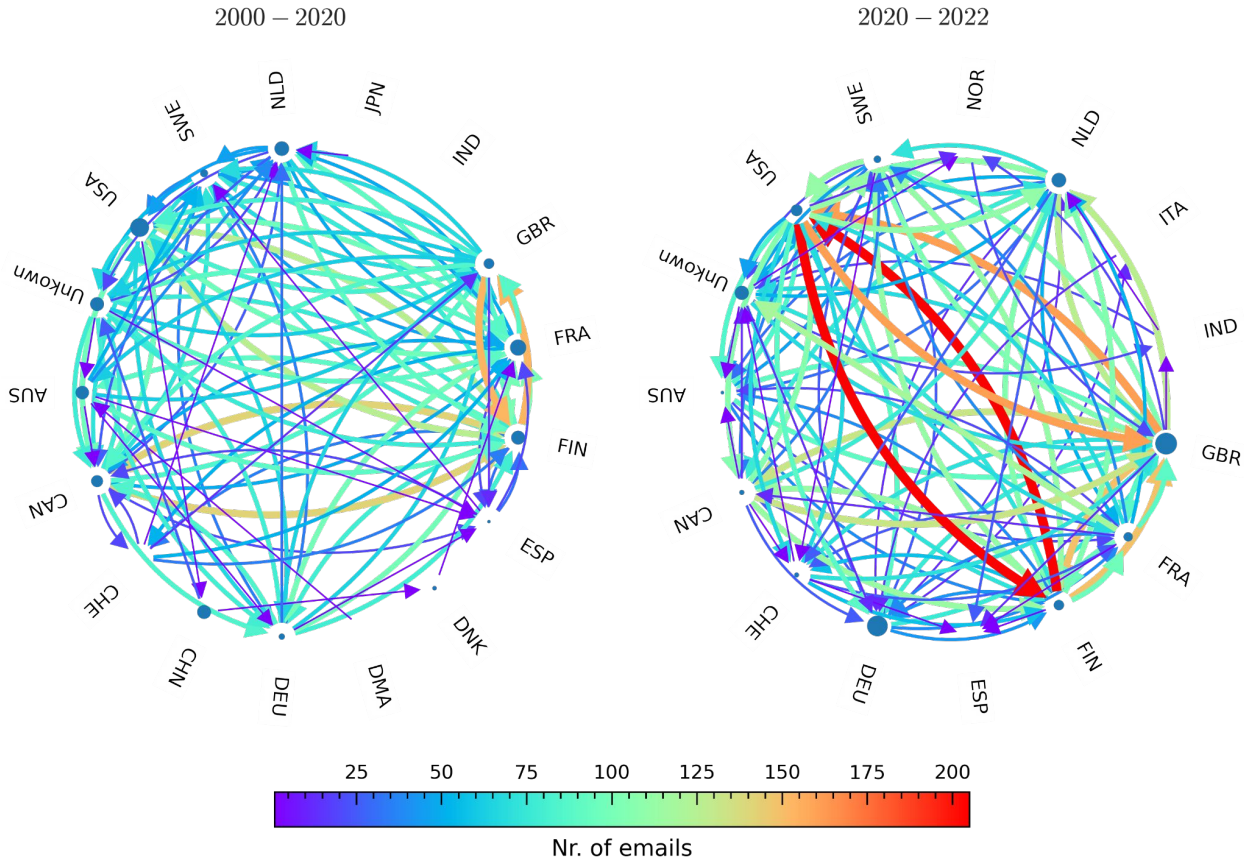
First look at the list



Of companies and (some) states



Three main findings



Conclusion

1. Standardisation of lawful intercept in 5G happens in 3GPP by European and North American governments and their consultants, implemented by all global equipment manufacturers and operators
2. Further integration of standardisation of lawful intercept technologies by all countries could lead to an easing of geopolitical tensions, especially since all actors already work together in the 3GPP
3. To increase democratic legitimacy in the production of infrastructures, increased civil society participation in standardisation should seriously be considered.

Bonus: Interested in the code? Run it yourself! :)

BigBang

<http://dataactive.github.io/bigbang/>

open-source tool for scientific analysis of Internet standards development and Internet governance communities.

Out of the box analysis of all IETF, 3GPP, ICANN, RIPE, and IEEE mailinglists for network, statistical, and discourse analysis



Christoph Becker, PhD
R&D
Flemish Institute for Technological Research

<https://christovis.github.io>

```
Activities | Yocto-emulator | /bin/sh | za mt20 17:12 | /bin/sh

Release
Ign25 https://repo.mongodb.org/apt/ubuntu focal/mongo
Mit26 https://repo.mongodb.org/apt/ubuntu focal/mongo
Fetched 1.363 kB in 2s (569 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
All packages are up to date.
kosmosk cd Data/srsLTE/srsepc
cd: no such file or directory: Data/srsLTE/srsepc
kosmosk ls
CMakeLists.txt  epc.conf.example  mnmns.conf.example  srs
epc.conf        hdr                               mnmns.conf           user
kosmosk sudo srsepc epc.conf

Built in Release mode using commit 45484b6e2 on branch ma
--- Software Radio Systems EPC ---

Reading configuration file epc.conf...
MSS Initialized.
MNE S11 Initialized
MNE CTP-C Initialized
MNE Initialized. MCC: 0x000, MNC: 0x001
SPGW GTP-U Initialized.
SPGW S11 Initialized.
SP-CW Initialized.
Received S1 Setup Request.
S1 Setup Request - eNB Name: srsenb01, eNB Id: 0x100
S1 Setup Request - MCC:0x00, MNC:01
S1 Setup Request - TAC: 7, PLMN: 0x110
S1 Setup Request - Paging DRX: V12B
Sending S1 Setup Request.
Initial UE message: LIBLTE_MNE_MSR_TYPE_TRACKING_AREA_UPDATE
Received Initial UE message -- Tracking Area Update Request
Tracking Area Update Request -- S-TMSI: 0x0
Warning: Tracking area update requests are not handled yet.
Initial UE message: LIBLTE_MNE_MSR_TYPE_ATTACH_REQUEST
Received Initial UE message -- Attach Request
Attach request -- Attach Request
Attach request -- R-TMSI: 0x0b916015
Attach request -- eNB UE S1AP Id: 2
Attach request -- Attach type: 2
Attach Request -- UE Network Capabilities EEA: 11110000
Attach Request -- UE Network Capabilities EEA: 01110000
Attach Request -- MS Network Capabilities Present: true
PON Connectivity Request -- EPS Bearer Identity requested: 0
PON Connectivity Request -- Procedure Transaction Id: 2
UL NAS: Received Identity Transfer Information
UD Response -- INSI: 0x000527830001
User not found at MSS. INSI: 0x000527830001
User not found. INSI: 0x000527830001
```