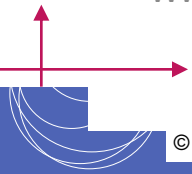


5G Networks and Devices: a Global Snapshot

October 2019

Global mobile Suppliers Association – GSA

www.gsacom.com



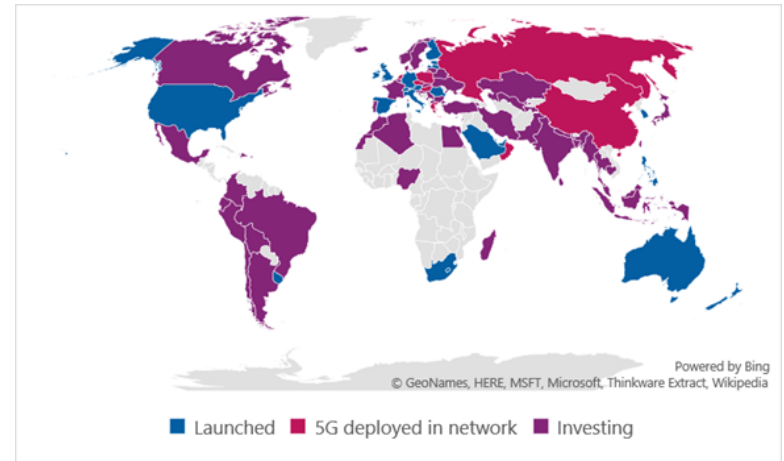
THE NUMBER OF 5G NETWORKS IS RISING FAST

321 operators investing in 3GPP-compliant 5G networks, 46 of which have launched services

GSA's data shows:

- 321 operators in 103 countries are investing in 5G (in the form of tests/trials, acquisition of licences, deployment of networks and launch of services).
- 62 operators have deployed 3GPP compliant 5G technology in their networks.
 - Of which...
 - 46 have launched a 3GPP-compliant 5G service
 - 34 operators have launched 3GPP-compliant 5G mobile services (32 full launches, 2 limited availability launches).
 - 27 operators have launched 3GPP-compliant 5G FWA or home broadband services (17 full launches, 10 limited availability launches).

5G investment worldwide, according to status of most advanced operator investments

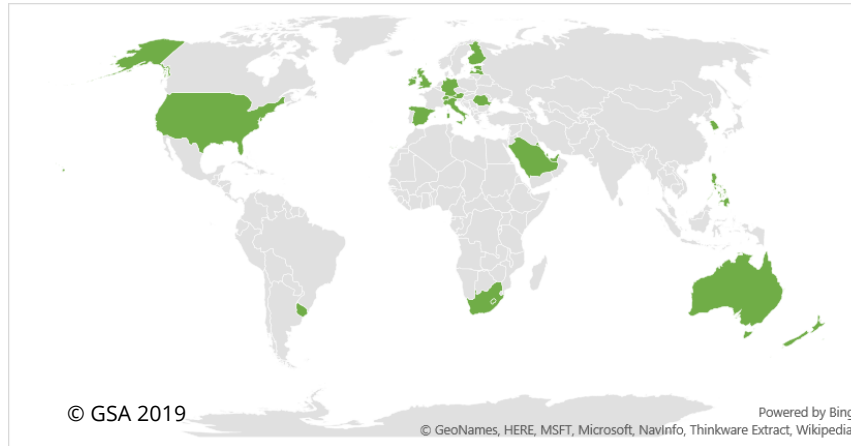


5G NETWORKS CAN BE FOUND ALL AROUND THE WORLD

Commercial launches: Americas: 5, Asia-Pacific: 7, Europe: 20, Middle East and Africa: 14

Americas:

Uruguay (Antel), USA (AT&T Mobility, Sprint, T-Mobile US, Verizon Wireless)



Europe:

Austria (3 Austria), Estonia (Elisa), Finland (Elisa, Telia), Germany (T-Mobile, Vodafone), Ireland (Vodafone), Italy (TIM, Vodafone), Latvia (Tele2), Monaco (Monaco Telecom), Romania (RCS & RDS [Digi Mobil], Vodafone), Spain (Vodafone), Switzerland (Sunrise Communications, Swisscom), UK (3 UK, EE, O2, Vodafone)

Middle East and Africa:

Bahrain (Batelco, Viva), Kuwait (Ooredoo, Viva, Zain), Lesotho (Vodacom), Maldives (Dhiraagu), Qatar (Ooredoo, Vodafone), Saudi Arabia (STC, Zain), South Africa (Rain), United Arab Emirates (Du, Etisalat),

Asia-Pacific:

Australia (Optus, Telstra), New Zealand (Spark), Philippines (Globe), Republic of Korea (KT Corporation, LG Uplus, SK Telecom)

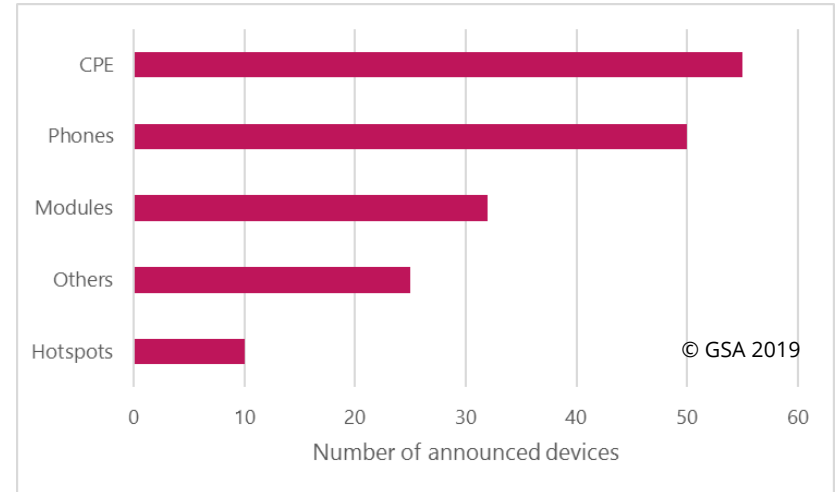
THE DEVICE ECOSYSTEM IS EXPANDING RAPIDLY

As of mid-October GSA had identified 172 announced 5G devices

The GAMBoD database includes 172* announced 3GPP compliant 5G devices from 71 vendors (at least 38 of them commercially available), including:

- 15 form factors including:
 - 50 phones
 - 55 CPE devices
 - 32 modules
 - 10 hotspots
 - 25 others (snap-on dongles/adapters, robots, routers, drones, TVs, head-mounted displays, USB terminals, a laptop, a switch, and a vending machine).

Number of announced 5G devices



* not all of the announced devices are commercially available at this stage, includes regional variants but not prototypes, includes phones that are 5G-enabled with adapter

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