Satelliten-Workshop BEREC Mobilregulierungsdialog

RTR/Dietmar Zlabinger

2024-06-13

Satellitenworkshop BEREC

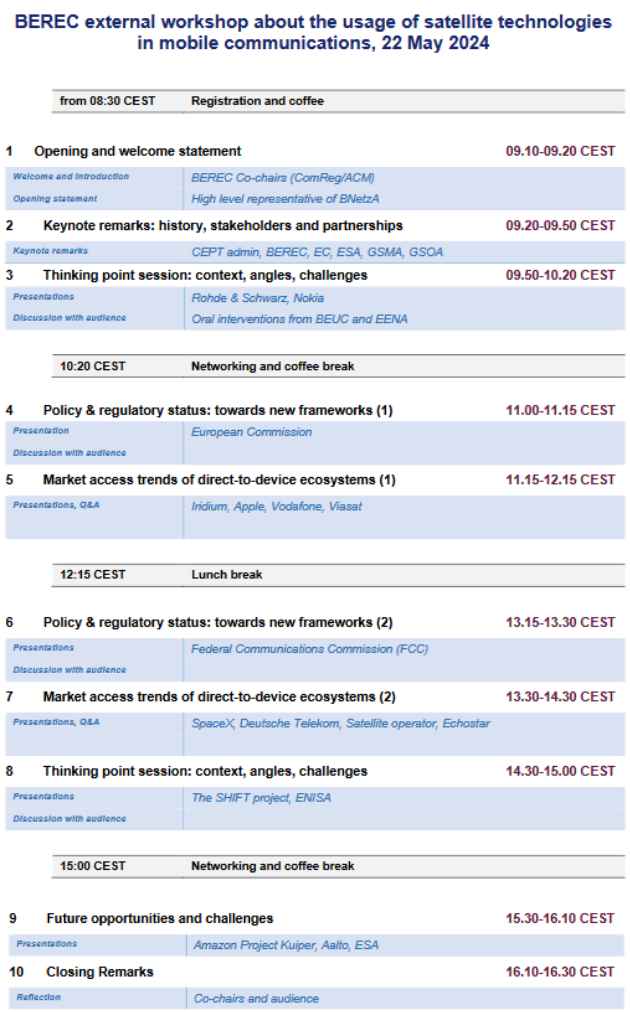
BEREC external workshop about the usage of satellite technologies in mobile communications

Event date:

22-05-2024

Event location: Hybrid (Mainz, Germany, and virtual)

BEREC workshop on the usage of satellite technologies in mobile communications on Wednesday, 22 May 2024,
from 09:10 to 16:30 CET, in Mainz, Germany.



BEREC external workshop about the usage of satellite technologies in mobile communications, 22 May 2024

	from 08:30 CEST — Registration and coffee	
1	Opening and welcome statement	09.10-09.20 CEST
	Welcome and Introduction — BEREC Co-chairs (ComReg/ACM)	
	Opening statement — High level representative of BNetzA	
2	Keynote remarks: history, stakeholders and partnerships	09.20-09.50 CEST
	Keynote remarks — CEPT admin, BEREC, EC, ESA, GSMA, GSOA	
3	Thinking point session: context, angles, challenges	09.50-10.20 CEST
	Presentations — Rohde & Schwarz, Nokia	
	Discussion with audience — Oral interventions from BEUC and EENA	
	10:20 CEST — Networking and coffee break	
4	Policy & regulatory status: towards new frameworks (1)	11.00-11.15 CEST
	Presentation — European Commission	
	Discussion with audience	
5	Market access trends of direct-to-device ecosystems (1)	11.15-12.15 CEST
	Presentations, Q&A — Iridium, Apple, Vodafone, Viasat	
	12:15 CEST — Lunch break	
6	Policy & regulatory status: towards new frameworks (2)	13.15-13.30 CEST
	Presentations — Federal Communications Commission (FCC)	
	Discussion with audience	
7	Market access trends of direct-to-device ecosystems (2)	13.30-14.30 CEST
	Presentations, Q&A — SpaceX, Deutsche Telekom, Satellite operator, Echostar	
8	Thinking point session: context, angles, challenges	14.30-15.00 CEST
	Presentations — The SHIFT project, ENISA	
	Discussion with audience	
	15:00 CEST — Networking and coffee break	
9	Future opportunities and challenges	15.30-16.10 CEST
	Presentations — Amazon Project Kuiper, Aalto, ESA	
10	Closing Remarks	16.10-16.30 CEST
	Reflection — Co-chairs and audience	

Satellitenkommunikation

- Geostationäre Satelliten (35 786 km, GEO)
  - Wichtig für Telekommunikation

- Zunehmende Bedeutung von Satelliten in niedrigeren Umlaufbahnen.
  - Medium Orbit (7.000 - 25.000, MEO)
  - Low Orbit (300-1.500 km, LEO)

Q: PD-USGov-Military-Air Force
Wikimedia

Satellitenkommunikation – MEO & LEO

RTR

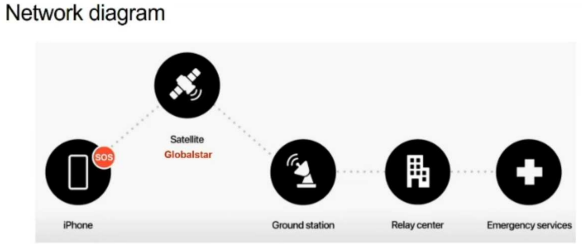
Wesentliche Entwicklung der letzten Jahre:

- Stark ansteigende Anzahl an LEO-Satelliten
- Voran Starlink mit > 5000 Satelliten
- Diskussion um Direct-to-cell
- Vergleich LEO<>GEO:
  - Geringere Latenz
  - Vielfaches an Kapazität
  - Hohe Kosten

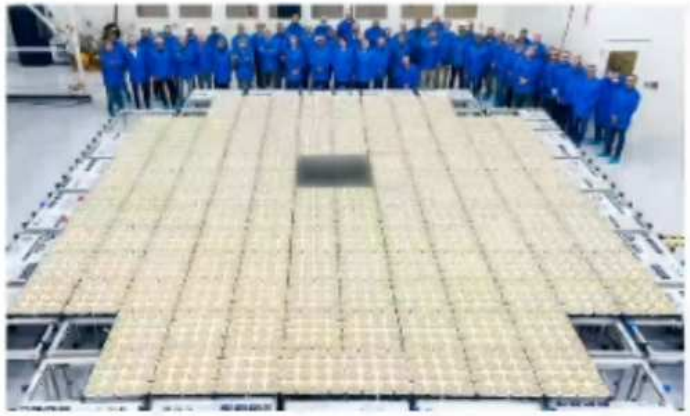
https://satellitemap.space/?constellation=starlink 25.5.2024 20h45

Direct-to-cell (auch: Direct-to-device)

- Direkte Kommunikation eines terrestrischen Mobiltelefons mit Satelliten
- Heute: iPhone – Bidirektionale Notfalls-Satelliten SMS (ab iPhone 14) über Globalstar:



Q: Apple Inc

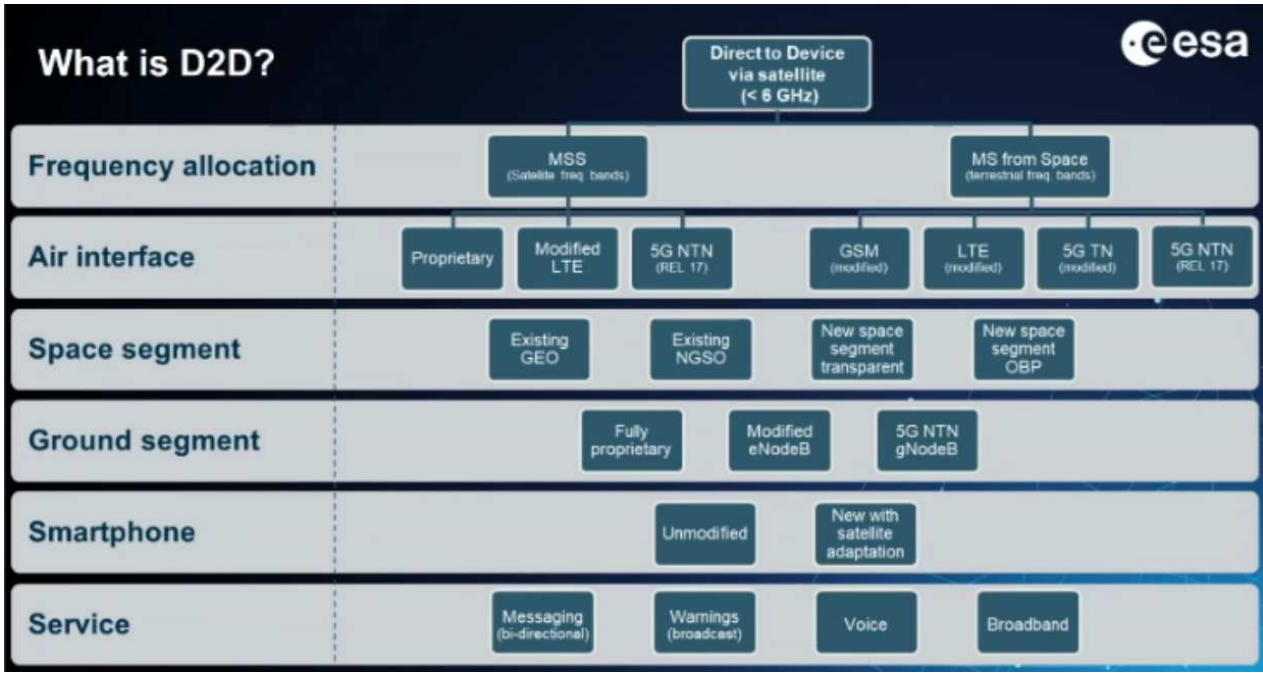


Test-Satellit für Direct-to-cell
Q: Vodafone, AST

- Entwicklung: Test-LEO-Satelliten von Starlink und AST Space Mobile
- NTN-Standardisierung durch 3GPP für die weitere Entwicklung wesentlich

Direct-to-cell - Optionen

- Im Detail viele Varianten in Diskussion, siehe Abbildung rechts



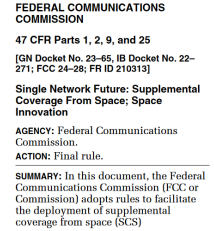
Q: ESA, 22.5.2024

Insbesondere Frage des verwendeten Spektrums:

- MSS-Spektrum: Entwicklung in 3GPP (Nonterrestrial Network, NTN; Rel 17-19; 1,6, 2, 30 GHz)
- Terr. Mobilfunk-Spektrum: Idee bestehende Geräte weiter zu nutzen; technische und regulatorische Herausforderung, Ansatz von Starlink und AST

Direct to cell – FCC

- Am 14. März 2024 veröffentlichte die FCC das Regelwerk „Supplementary Coverage from Space (CSC)“.
- https://www.federalregister.gov/documents/2024/04/30/2024-06669/single-network-future-supplemental-coverage-from-space-space-innovation
- Erlaubt die Zusammenarbeit zwischen Satelliten-Betreiber und drahtlosen Betreibern um direkte Kommunikation zwischen Endgeräten zu ermöglichen.
- Es wird dabei Spektrum benutzt, welches zuvor ausschließlich für terrestrische Nutzung zugeteilt wurde.
- Endnutzer erhalten dadurch bessere Versorgung insbesondere in entlegenen, unversorgten Gebieten wie auch in Katastrophengebieten.
- Umfasst sind die US-Bänder 600 (614-652/663-698), 700 (698-769/775-799/805-806), 800 (824-849/869-894), BB PCS (1850-1915/1930-1995), AWS-H (1915-1920/1995-2000) [jeweils MHz]
- Verpflichtungen zu Notruf und Notruf-Routing nach Standort zum passenden PSAP
- Regelwerk zum Schutz der Nachbarn Mexiko und Kanada nach ITU RR Art 4.4
- US-Satelliten-Lizenz: Außerhalb der USA: Betrieb nur wenn vom betroffenen Land bewilligt



FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 1, 2, 9, and 25

[GN Docket No. 23–65, IB Docket No. 22–271; FCC 24–28; FR ID 210313]

Single Network Future: Supplemental Coverage From Space; Space Innovation

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: In this document, the Federal Communications Commission (FCC or Commission) adopts rules to facilitate the deployment of supplemental coverage from space (SCS)

EK White Paper (Februar 2024)

21. Feb 2024 „How to master Europe‘s digital infrastructure needs?“
https://digital-strategy.ec.europa.eu/en/library/white-paper-how-master-europes-digital-infrastructure-needs

White Paper

Connectivity to all

- “[...] *satellite broadband can bring broadband services with up to 100 Mbps download speeds to very **rural and remote areas**, where no very high-capacity networks are available, even if affordability remains crucial to facilitate take-up in these areas. They can also provide resilient emergency services in **disaster or crisis situations**. However, while satellite services can bridge the digital divide, they cannot currently replace the performance of ground-based networks.*”
- “*Beyond terrestrial connectivity, further investments are required for the integration of advanced satellite services providing **complementary solutions** for backhaul, device connectivity in **remote areas** not covered by terrestrial technologies or to ensure **service continuity in case of crisis or disaster relief**.*”

Authorisation framework

- “[…] *it is imperative that **spectrum is managed in a more coordinated way** among all Member States to **maximise its social and economic value** and enhance terrestrial and satellite connectivity across the entire EU.*”
- “*Furthermore, coverage of wireless networks, such as satellite networks, can extend beyond national – and even EU – borders. While there are still clear benefits in keeping the implementation of authorisation regimes at national level, in particular for local access and retail services, **assigning radio spectrum under conditions which differ between Member States may not always be the most efficient approach, in particular for satellite communications.** There could therefore be an **economic and technical justification for a more European approach**.*”
- “[…] *in particular the fast development of the satellite sector and its cross-border nature invite new reflections regarding **enhanced or common licensing regimes** (even EU-level selection and authorisation, if appropriate).*“

D2D connectivity

- *“rapidly developing satellite communications, ensuring secure government and commercial applications, including **direct-to-device satellite connectivity**, using spectrum allocated for mobile satellite and, if appropriate, terrestrial services.”*

Global leadership

- “*The objective is not only to ensure that the EU remains among the global leaders in communications systems, but also to achieve **leadership** in the development of new capabilities in related areas such as […] **non-terrestrial connectivity**, […].*”

European Commission

Q: Julija Varnaité-Kamstra, DG CONNECT, Radio Spectrum Unit
22.05.2024, BEREC-Sat-Workshop, Mainz

MSS in EU im 2GHz-Band nach Mai 2027

RTR

- Die Europäische Kommission hat in einem Beauty-Contest die Frequenzen für MSS (Mobile Satellite Service) bis 2027 zu vergeben
- Die Radio Spectrum Policy Group (RSPG) hat 2024 eine Opinion zum Band erstellt
  - Radio Spectrum Policy Group: "*RSPG Opinion on assessment of different possible scenarios for the use of the frequency bands 1980-2010 MHz and 2170-2200 MHz by the Mobile Satellite Services beyond 2027*", 7. Feb 2024
    https://radio-spectrum-policy-group.ec.europa.eu/document/download/b1f597f2-d6b5-44e5-878d-ea09bdd8a1d7_en?filename=RSPG24-007final-RSPG-Opinion-MSS-public_version.pdf
- Im Auftrag der Europäischen Kommission wird eine Studie zur künftigen Nutzung erstellt, der Endbericht soll bis Ende 2024 vorliegen
- Die Europäische Kommission plant Q2/2025 eine neue Entscheidung zu 2 GHz MSS

BEREC Aktivitäten & EK Whitepaper

RTR

- BEREC Report zu „**satellite connectivity for universal service**“
  - https://www.berec.europa.eu/en/document-categories/berec/reports/report-on-satellite-connectivity-for-universal-service
  - Füllung von Versorgungslücken, Nutzung bei Katastrophen, technische Aspekte (Kapazität)
- BEREC Report zu „**Workshop on secure and reliable connectivity from LEO satellite fleets, 13 April 2023**“
  - https://www.berec.europa.eu/en/document-categories/berec/reports/summary-report-berec-workshop-on-secure-and-reliable-connectivity-from-leo-satellite-fleets-13-april-2023
- BEREC **Workshop “about the usage of satellite technologies in mobile communications 22-05-2024**“
  - https://www.berec.europa.eu/en/events/berec-events-2024/berec-external-workshop-about-the-usage-of-satellite-technologies-in-mobile-communications
- **EK White Paper**, 21. Feb 2024 „How to master Europe‘s digital infrastructure needs?“
  - https://digital-strategy.ec.europa.eu/en/library/white-paper-how-master-europes-digital-infrastructure-needs
  - Breitband in ländlichen Gebieten, Nutzung bei Katastrophen, Direct-to-Cell, Globale Leadership bei nicht-terrestrischer Kapazität, Europäische/gemeinsame Lizenzierung

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