Joint Statement between
ESA and
the European Space Industry
on their Concerted Efforts on

Satellite for 5G

With the present Joint Statement,

the European Space Agency, an international intergovernmental organization established by the Convention on the establishment of a European Space Agency, with its headquarters located in 8-10, rue Mario Nikis, 75015 Paris, France, represented by Magali Vaissière, Director of Telecommunications and Integrated Applications,

(hereinafter referred to as "ESA"),

and

- **Airbus, Communication Intelligence Security**, with its headquarters located in Ottobrunn, Germany, represented by Evert Dudok, Executive Vice President
- **Airbus Defence and Space SAS**, a company duly organised under the laws of France, fully owned by Airbus Group, whose Space Systems business line is represented by Nicolas Chamussy, Executive Vice-President Space Systems and President of Airbus Defence & Space France
- **Avanti Communications Group Plc**, with its headquarters located in London, UK, represented by David Williams, Chief Executive Officer
- **Echostar Mobile Limited**, with its headquarters located in Dublin, Ireland, a direct subsidiary of Echostar Corporation, based in USA, represented by Chris Britton, Managing Director
- **Eutelsat S.A.**, with its headquarters in Paris, France, represented by Rodolphe Belmer, Chief Executive Officer
- **Hispasat S.A.**, with its headquarters in Madrid, Spain, represented by Carlos Espinós, Chief Executive Officer
- **Inmarsat Global Limited**, with its headquarters in London, UK, represented by Rupert Pearce, Chief Executive Officer
- **Intelsat S.A**., with its headquarters located in Luxembourg, represented by Stephen Spengler, Chief Executive Officer
- **LeoSat BV**, based in The Netherlands, represented by Mark Rigolle, Chief Executive Officer
- **Network Access Associates Ltd**, with its headquarters located in the United Kingdom, a wholly owned subsidiary of WorldVu Satellites Ltd, aka OneWeb, registered in Jersey, represented by Eric Béranger, Chief Executive Officer

- **Newtec Cy N.V.**, with its headquarters in Belgium, represented by Thomas Van den Driessche, Chief Executive Officer
- **SatixFy UK Ltd**, registered in Farnborough, UK, affiliate of SatixFy Ltd. headquartered in Hong-Kong , represented by Simona Gat, Chief Executive Officer
- **SES S.A.**, with its headquarters located in Luxembourg, represented by Karim Michel Sabbagh, President and Chief Executive Officer
- **Telesat Canada**, with its headquarters located in Canada, represented by Daniel Goldberg President and Chief Executive Officer
- **Thales Alenia Space**, with its headquarters located in France, represented by Jean Loic Galle, Chief Executive Officer
- **ViaSat SA**, with its headquarters located in Switzerland, a wholly owned subsidiary of ViaSat Inc, represented by Stefano Vaccaro, Chief Executive Officer

(hereinafter jointly referred to as "the European Space Industry"),

ESA and the European Space Industry jointly referred to as "the Signatories" and individually as a "Signatory",

The Signatories share the understanding that:

- The on-going development of the 5th Generation of communication networks provides a unique opportunity for a seamless integration of satellite with terrestrial networks as an integral component of the 5G system.
- 5G enables the seamless interworking of different technologies and networks, mobile, fixed, wireless, satellite, as well as their orchestration. Certain complementary work has been initiated in 3GPP (and ETSI) with respect to the integration of satellite into 5G.
- Terrestrial and satellite 5G convergence has been initiated in Europe in particular through the initiative undertaken by the European Commission (EC) as part of the Horizon2020 and 5G Public Private Partnership (5GPPP). The Signatories intend to build upon that initiative and reinforce it, for the benefit of the European satellite and terrestrial telecom industry, in close collaboration with the EC and other key stakeholders.
- Satellite can offer complementary connectivity options and seamless user experience, and provide important benefits when integrated in the overall 5G system, owing to its intrinsic advantages including universal coverage, multicasting and broadcasting capability.
- Satellite networks can be configured to provide the guarantee of the highest level of connectivity, availability, resilience and security to significant sectors targeted by 5G (hereinafter referred to as "Verticals"). Technological innovation enables the continuous improvement of such performance capabilities.

- Satellites can contribute to new business opportunities in 5G by supporting new types of applications and innovative business models within multiple Verticals, mainly in transport, media & entertainment, and public safety, and potentially in energy, agriculture, health and factories of the future, as typical examples.

Recognising that the capabilities of satellite networks should be more actively promoted and demonstrated toward the private stakeholders involved in the definition, design, planning and deployment of 5G solutions as well as by the Verticals targeted by 5G;

Acknowledging that the 5G stakeholders collaboration landscape opportunities established by the European Commission through the 5G Public Private Partnership (5GPPP) and the 5G Infrastructure Association (5GIA), its proposed 5G Pan-European trials roadmap and the significant public support proposed through the Horizon2020 Information and Communication Technologies (H2020 ICT) 5G work programme;

The Signatories share the willingness to combine certain efforts in the field of Satellite for 5G (hereinafter referred to as "the Concerted Efforts") pursuant to the following objective:

To develop and demonstrate the added value that Satellite brings in the context of 5G in facilitating Pan-European and global coverage, resilience, mobility and security for the provision of 5G services and as enabler of innovative infrastructure and services. For that purpose, priority will be given to Verticals in which satellites can have a prominent role, such as transport, media and entertainment, public safety, without precluding additional relevant Verticals and use cases.

1) The Concerted Efforts will focus on:
    a) A federation of 5G service trials, including satellite capabilities. The trials will be harmonised with the EC Action Plan and shall aim to be integrated within the wider trial roadmap facilitated by the 5G Infrastructure Association, as part of an ESA "Satellite for 5G Initiative" in the 2018-2020 timeframe and beyond. These trials:
        i. Will focus on selected 5G Verticals and use cases, with deployment in the field with users and applications representative of the pre-operational and operational environment.
        ii. May include a first phase based on existing space and ground segment assets (starting in 2017) and a second phase with space and ground segment technologies currently under development or planned to be developed (e.g. from 2019 onwards) and foresee incremental levels of satcom 5G integration and capabilities.
        iii. Primarily complement other national, international or private initiatives, whether already including or not including satellite.
        iv. Shall demonstrate the use of satellite communications capabilities integrated and interoperable in the 5G environment, achieve interoperability of networks and demonstrate the functionality, performance and benefits brought by the use of satellite. These trials shall aim to include the participation of terrestrial telecommunication infrastructure and Vertical stakeholders to demonstrate the benefits of satellite communications and space-based information.

b) A set of transversal activities forming also part of an ESA “Satellite for 5G Initiative” in the areas of applications development, standardisation, resource management aspects, interoperability demonstration campaigns, and ground segment development for integration with terrestrial networks. These activities may include access to or provision of testbeds, experimentation and other facilities. Additionally ESA will continue the ongoing support to regulatory and spectrum management activities, as appropriate. Space segment technology developments will be addressed through the existing financial and programmatic instruments with their established ARTES rules and procedures.
c) A set of industry led outreach activities forming also part of an ESA “Satellite for 5G Initiative”, aimed at promoting awareness of satellite in 5G in national and international events and providing visibility of achievements in 5G field trials and 5G technology integrations.

2) The Concerted Efforts envisage a close cooperation between private and public stakeholders. Pursuant to this objective, all Signatories will contribute to the success of the activities, particularly with their own resources, infrastructure, satellite capacity, subject to decisions at the appropriate level and the establishment of appropriate instruments in accordance with Signatories’ respective legal frameworks, rules and procedures.

3) In setting up the “Satellite for 5G Initiative”, ESA, in consultation and agreement with its Member States, will deploy existing financial and programmatic instruments with their established rules and procedures and put in place complementary programmatic instruments, as required for the implementation of the three sets of activities defined under 1) above.

4) Following the signature of this Joint Statement, the Signatories will consolidate at latest by November 2017 the definition of basic principles governing the establishment of trial projects and detailing requirements for the transversal actions.

5) The Concerted Efforts shall be set out to ensure a complementary effort to other European, National and International trial initiatives. In particular, it is envisaged as a first step to deliver a roadmap of Pan-European and international trials in time to be integrated as additional satellite contributions to the November 2017 5G Pan-European trials roadmap facilitated by the 5GIA and the projects that will stem from the coming European Union 5GPPP calls with the aim to further strengthen the validation of satellite use cases in the overall portfolio of 5G trials.

Signatures

Paris, 21 June 2017

- **Airbus, Communication Intelligence Security**, signed by Evert Dudok
- **Airbus Defence and Space SAS**, signed by Nicolas Chamussy
- **Avanti Communications Group Plc**, signed by David Williams
- **Echostar Mobile Limited**, signed by Chris Britton
- **Eutelsat S.A.**, signed by Rodolphe Belmer
- **Hispasat S.A.**, signed by Carlos Espinós
- **Inmarsat Global Limited**, signed by Rupert Pearce
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- **SatixFy UK Ltd**, signed by Simona Gat
- **SES S.A.**, signed by Karim Michel Sabbagh
- **Telesat Canada**, signed by Daniel Goldberg
- **Thales Alenia Space**, signed Jean Loic Galle
- **ViaSat SA**, signed by Stefano Vaccaro

Herndon, Virginia, USA, 17 July 2017

- **VT iDirect Solutions Ltd,** with its headquarters located in Killarney, Ireland, a wholly owned subsidiary of VT iDirect, Inc., represented by Chris Norem, member of Board of Directors for VT iDirect Solutions Ltd

Rome, 1 August 2017

- **Telespazio S.p.A,** with its headquarters located in Rome, Italy, a wholly owned subsidiary of Leonardo S.p.A and Thales S.A., represented by Luigi Pasquali, Telespazio CEO

Munich, 20 September 2017

- **Nomor Research GmBH,** with its headquarters located in Munich, Germany, represented by Ingo Viering, CEO

London, 2 October 2017

- **GVF Ltd (GLOBAL VSAT FORUM),** with its headquarters located in St. Albans, Hertfordshire AL1 3TF, UK, represented by Secretary General, David Hartshorn

London, 4 October 2017

- **Arquiva Ltd,** with its Registered Office located in Winchester, Hampshire, UK, represented by David Crawford, Managing Director, Arqiva Satellite & Media