

A circular graphic composed of many small words in various colors, arranged in a spiral pattern. A white banner with a blue arrow and the text '→ SPACE FOR DAILY LIFE' is overlaid on the center.

→ SPACE FOR DAILY LIFE

# Space-enabled 5G services

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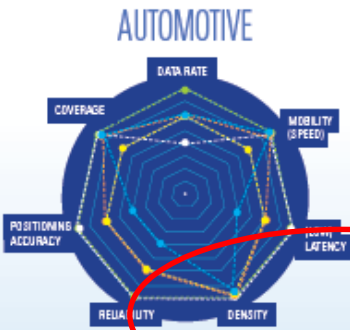
Application Workshop 18/19.09.2017, Berlin  
Panel: Sat for 5G to boost the digital society

ESA-TIAA-HO-2017-1171

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# Less Applications: thematic are

And many more use cases!



- Automated driving
- Share my view
- Bird's eye view
- Digitalization of transport and logistics
- Information society on the road

istics



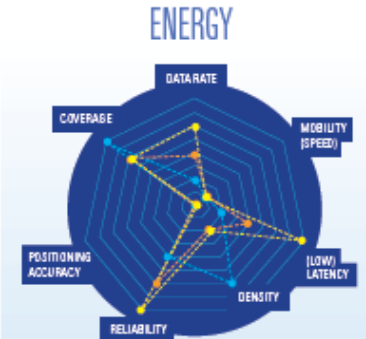
Aviation & RPAS



Education & Develop



Energy

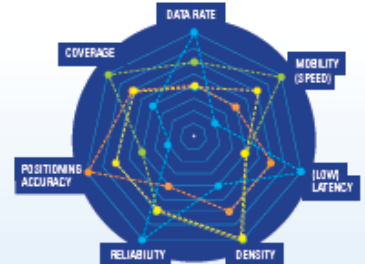


- Grid access
- Grid backbone
- Grid backbone

Environmental Resource



e-HEALTH



- Assets and Interventions management In Hospital
- Robotics
- Remote monitoring
- Smarter medication

MEDIA & ENTERTAINMENT

Factories



- Ultra
- On-site
- User
- Immer
- Coop
- Colla
- Time-critical process control
- Non time-critical factory automation
- Remote control
- Intra-/Inter-enterprise communication
- Connected goods

**ARTES Applications**

> 300 activities  
473 entities  
26 countries



atures & t Cities



Food & Agriculture



Health



# Use case: Transport - achievements

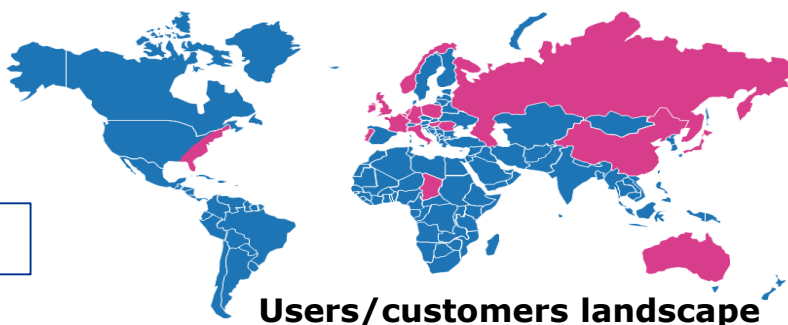
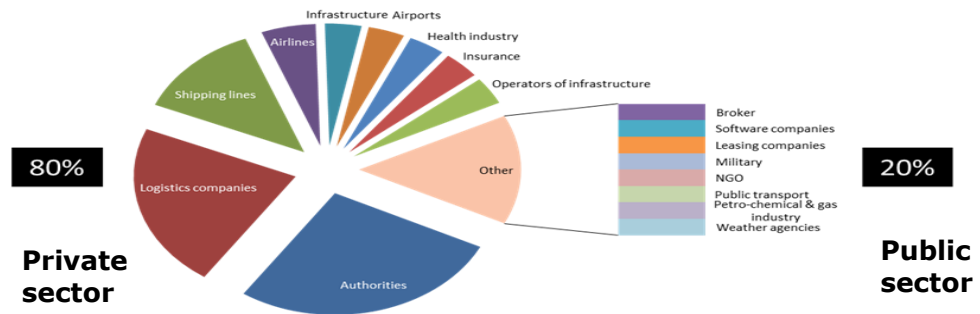
The transport sector, in its diversity, is extremely important in terms of impact that space assets can have for provision of new services or enhancement of current process (**40% transport-related projects in the IAP portfolio**)



Project's prime location

Sample of IAP transport projects portfolio

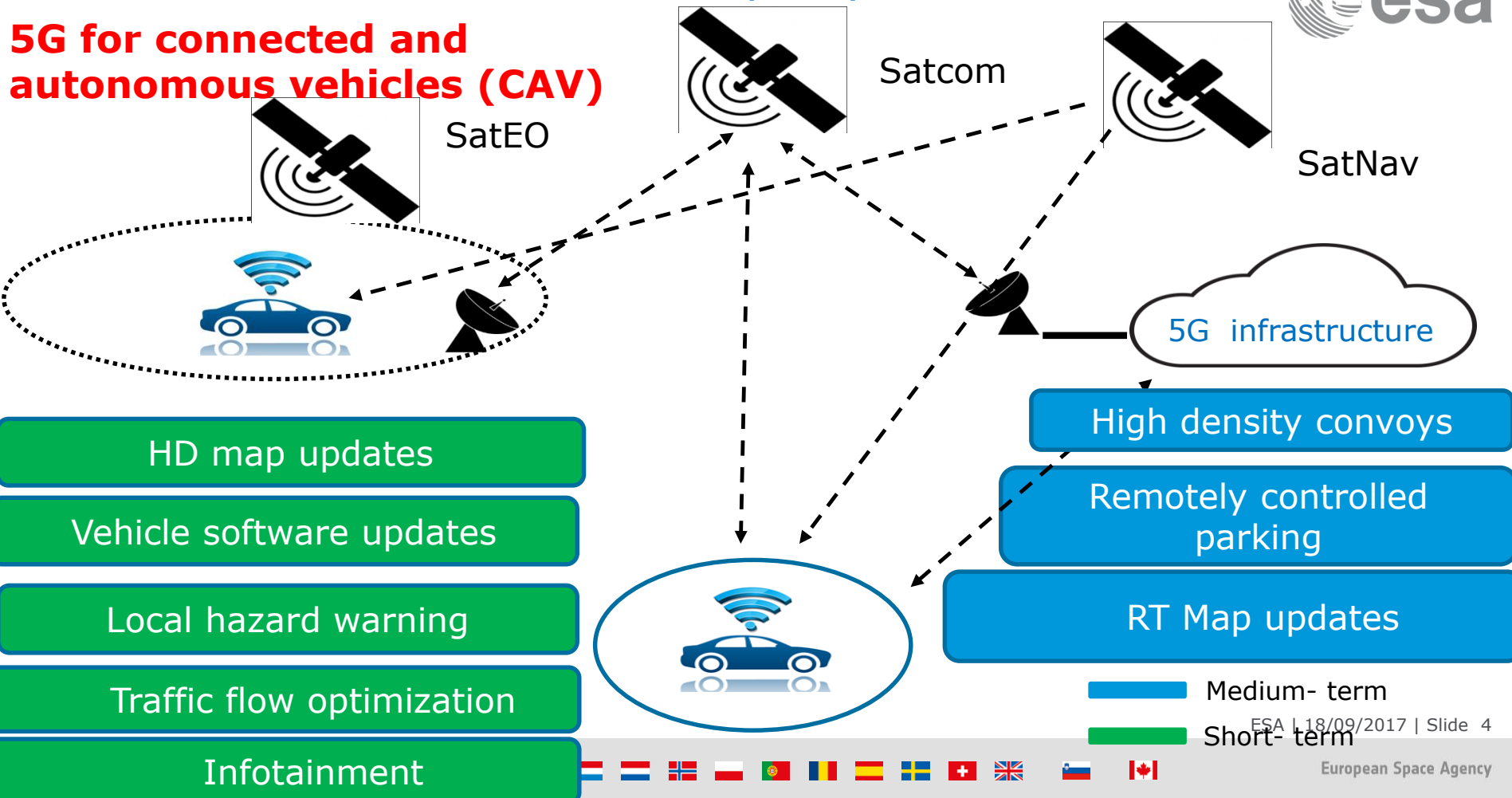
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Users/customers landscape

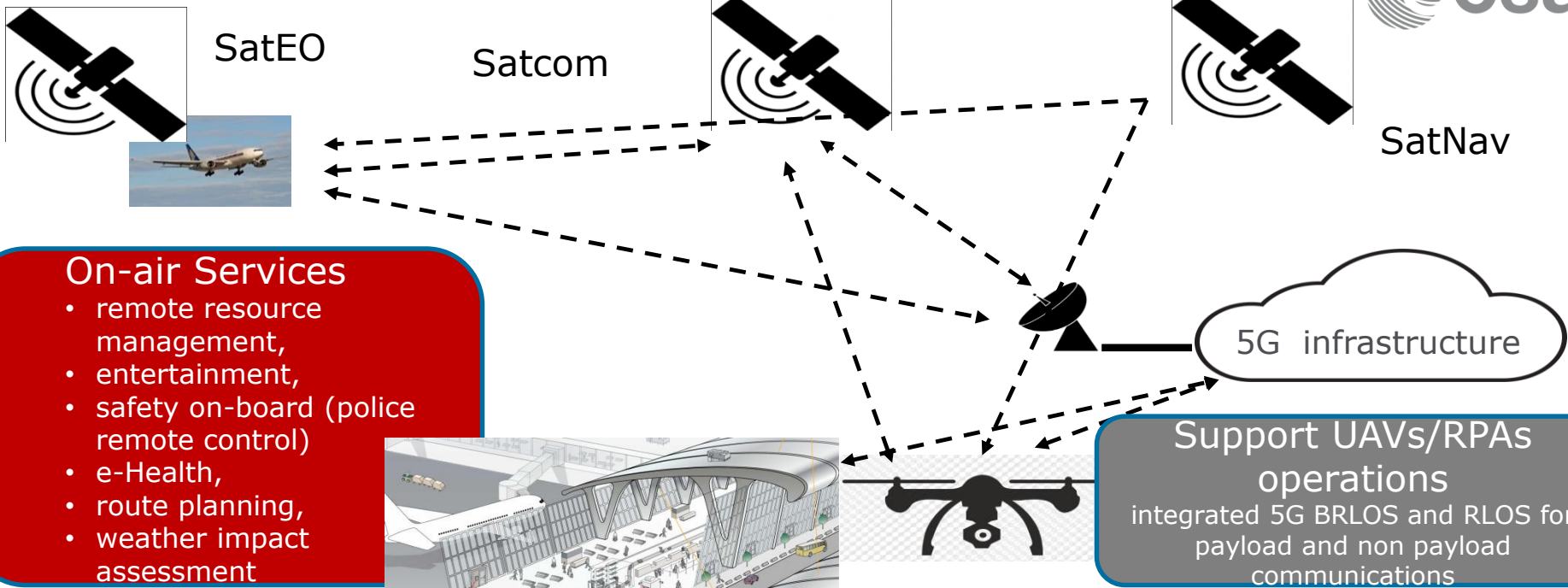
# Use case: Automotive – future perspectives

## 5G for connected and autonomous vehicles (CAV)





# Use case: Aviation – future perspectives



## On-air Services

- remote resource management,
- entertainment,
- safety on-board (police remote control)
- e-Health,
- route planning,
- weather impact assessment

Support UAVs/RPAs operations  
integrated 5G BRLOS and RLOS for payload and non payload communications

**SMART Airports**  
Services for more efficient and secure airports (capacity, cyber-security, energy reduction, operational efficiency)



# Involved Value Adders and Users/stakeholders



The Voice of European Railways



and many more....

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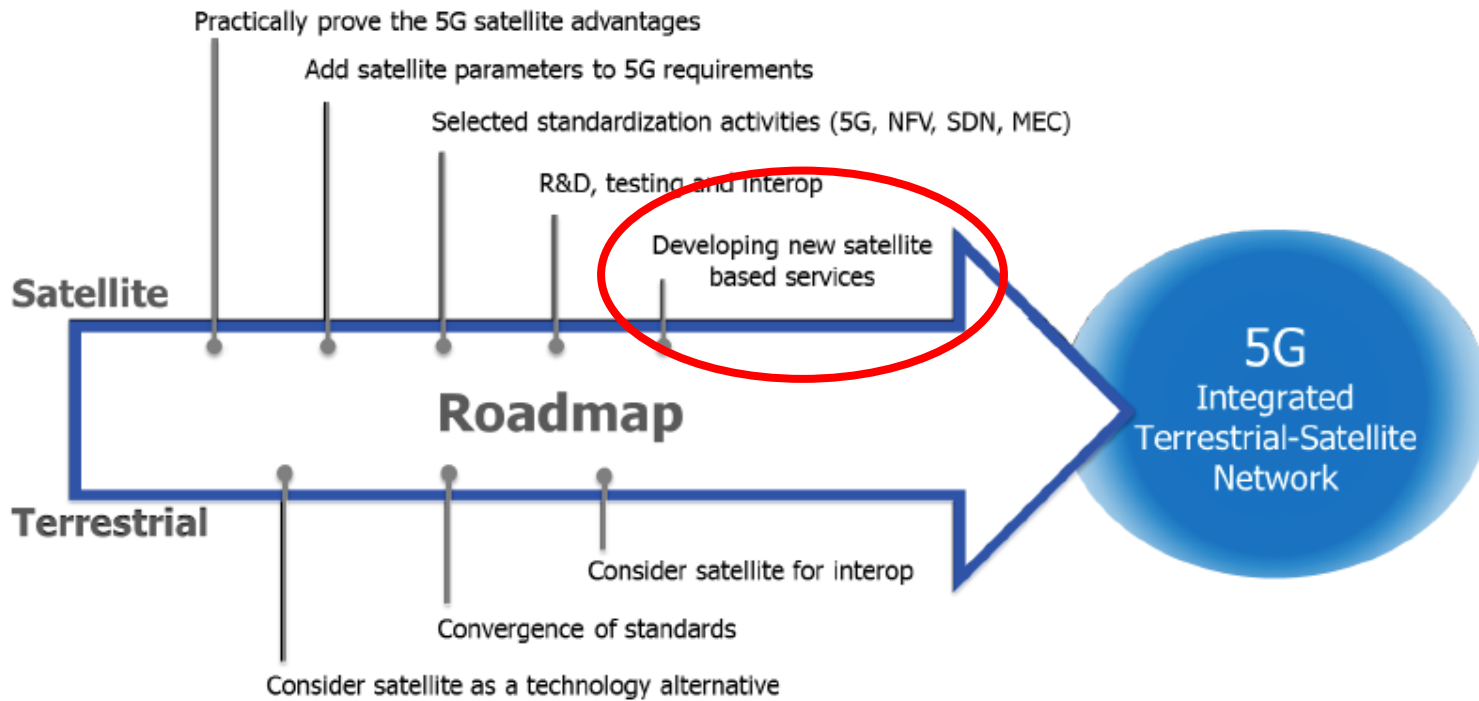
ESA | 18/09/2017 | Slide 6



European Space Agency

# Key to acceptance is Satellite-Terrestrial integration

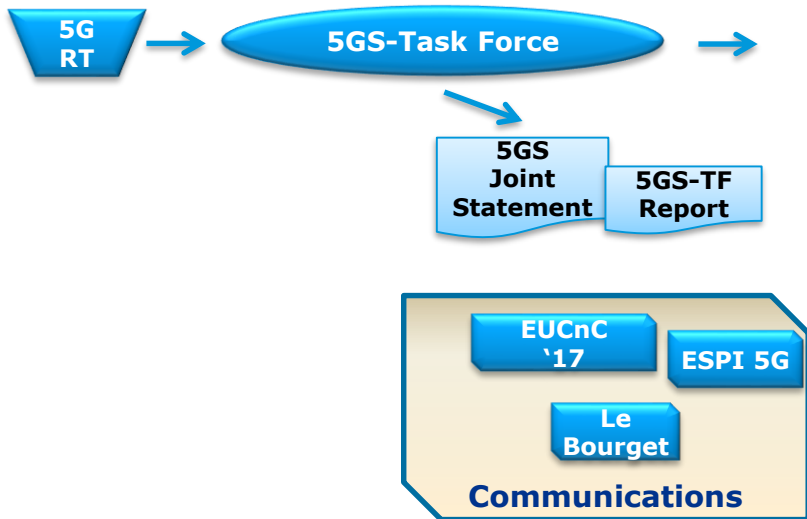
Integration requires a number of milestones for which support is necessary



# ESA 5G Satellite Initiative Roadmap

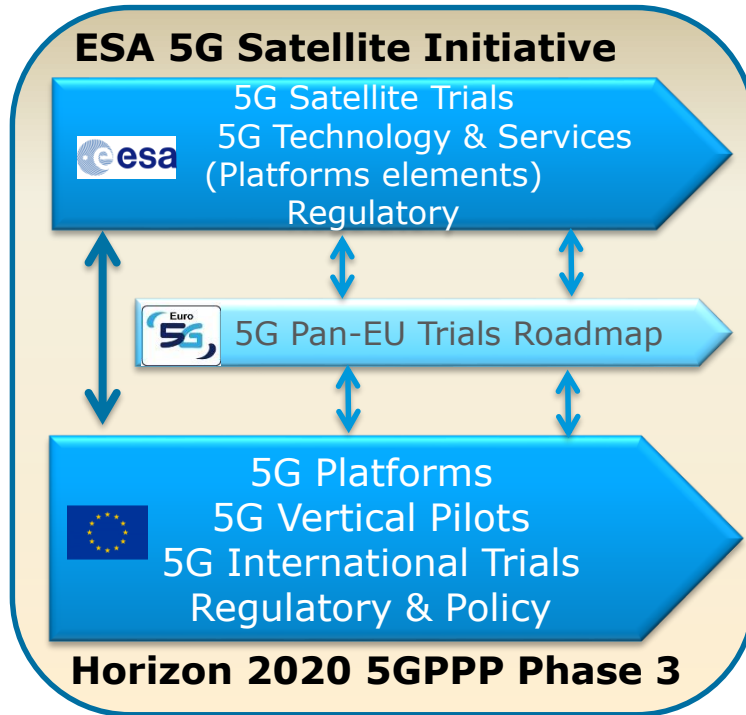


April                      May                      June                      |                      H2'17                      2018                      2019                      2020+



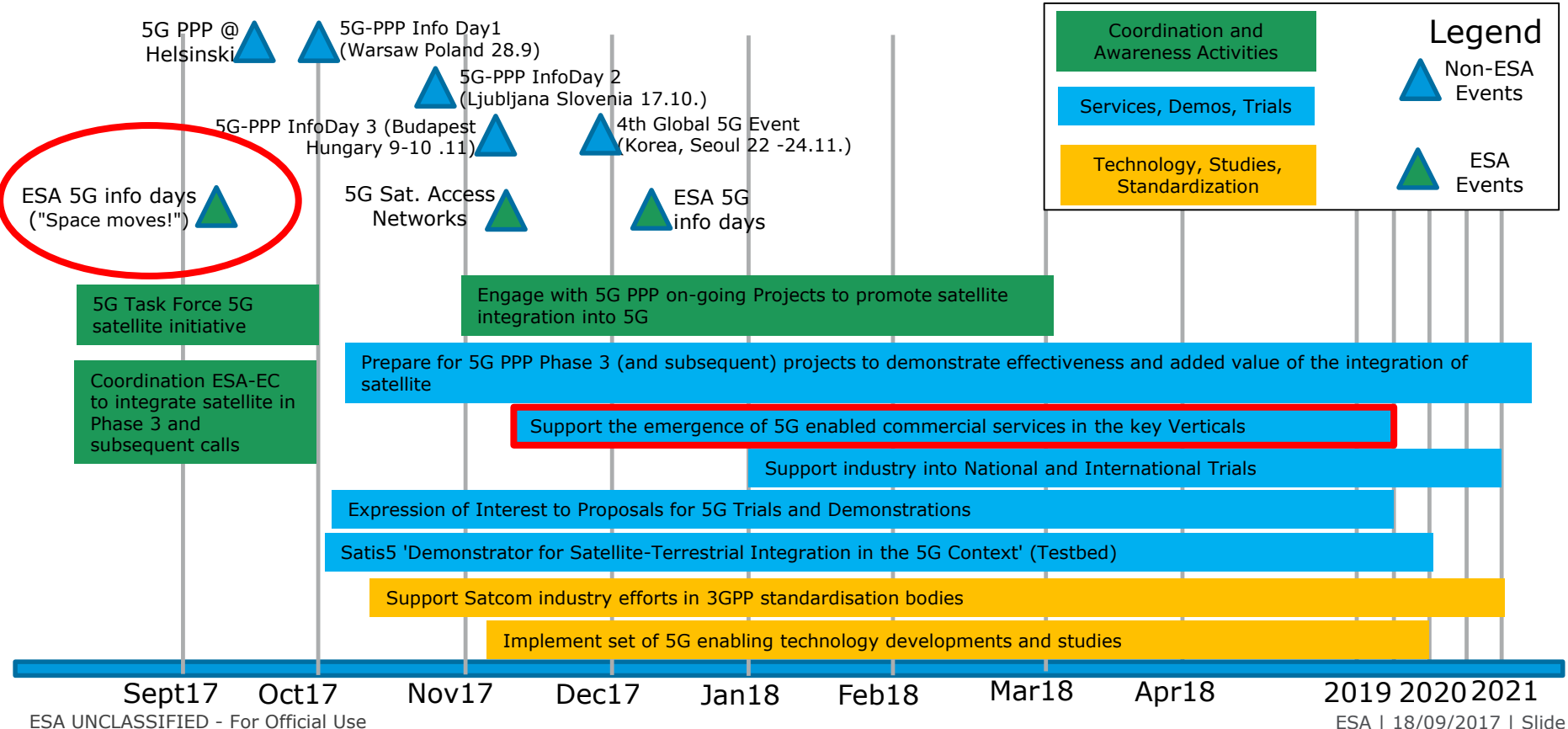
**Definition consolidation**

## 5G Integrated Roadmap





# 5G Events and Action Plan Timeline



# Topics for 5G enabled services in the **Transport Vertical**



## Automated and connected cars

IAP Open call for Feasibility Studies and Demonstration Projects

Smart Airports

IAP Feasibility study OC: Q4 2017

## Unmanned Maritime Vehicles

IAP Feasibility study OC: Q1 2018

People Mobility

IAP Kick-start thematic call : 20/09 – 31/10

<https://business.esa.int/funding/intended-tender/people-mobility>



# Conclusions



- ESA Business Applications has a long standing experience in supporting the development and roll-out of commercial services in many thematic domains, involving an ecosystem composed by value-adders, space industry and users/customers
- It is therefore an excellent platform to support the development of new services enabled by 5G, leveraging on the strengths of the specific terrestrial and satellite technologies
- Key success factors are the user-driven approach and the satellite-terrestrial integration
- Service studies and trials can demonstrate the usefulness of satellite in complementing 5G terrestrial system for providing societal and economic benefits for Europe



# Thank you



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