



DEFENSIE  
LA DÉFENSE

# The next war will reach Space

## Switch to Space 2

Nicolas Gérôme, 05 October 2020



INTEGRATED CAPABILITY MANAGEMENT



# A day without space

*Media removed*



Video is courtesy of Norwegian Ministry of Defence

# Increasing Space Threats



Deception



Dazzling



Ground site attack



ASAT Missile



Purposed debris generation

Reversible

Non-reversible



Jamming



Cyber attack



Direct Energy Weapons



Co-orbital threats



Nuclear detonation in space

# 07/09/2018: Athena-Fidus eavesdropping

## La France accuse la Russie de tentative d'espionnage par satellite

Selon la ministre de la défense Florence Parly, le satellite russe Louch-Olymp s'est approché d'un peu trop près du satellite franco-italien Athena-Fidus en 2017.

Le Monde avec AFP · Publié le 07 septembre 2018 à 17h42 - Mis à jour le 08 septembre 2018 à 06h42

🔊 Lecture 1 min.



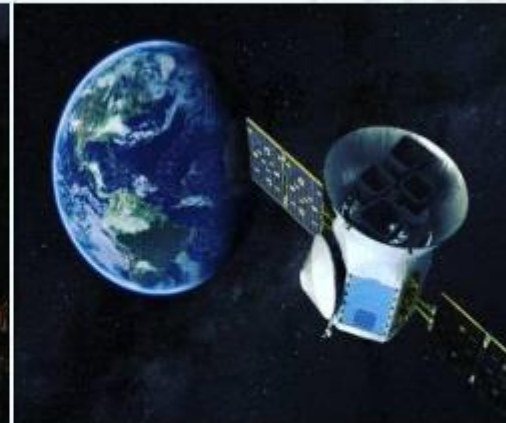
La ministre de la défense, Florence Parly, au palais de l'Élysée, le 6 juillet. LUDOVIC MARIN / AFP

Services



# 27/03/2019: Mission Shakti

**Mission Shakti': India's first  
anti-satellite missile system  
that destroyed a LEO satellite**



**India has become the fourth nation in the world after United States, China and Russia to demonstrate anti-satellite missile capability by shooting down a satellite.**

The 'Mission Shakti' operation by the Defence Research and Development Organization (DRDO) and the Indian Space Research Organization (ISRO)



DEFENSIE  
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# 02/09/2019: Aeolus/Starlink-44 near-miss



**ESA Operations** ✓ @esaoperations · Sep 2, 2019



Replying to @esaoperations and 3 others

The manoeuvre took place about 1/2 an orbit before the potential collision. Not long after the collision was expected, [#Aeolus](#) called home as usual to send back its science data – proving the manoeuvre was successful and a collision was indeed avoided



**ESA Operations** ✓

@esaoperations

.be

# 15/04/2020: Russian Nudol Test

## #SPACEWATCHGL OPINION: RUSSIA'S NUDOL ASAT TEST – A SHORT ANALYSIS

*By Sonay Sarac*

Recently, Russia announced that it will conduct a test of its Nudol ASAT system on 15 April 2020. In fact, such a test was subsequently carried out. The ground-based ballistic missile took off from its test site in Plesetsk, in north-western Russia. What is known about this test so far, and what might be Russian intentions behind it?

### ***The Nudol ASAT system: Designed for Targets in Low Earth Orbit***

Very little is known about the Nudol anti-satellite system, and this has led to much speculation.

There are different opinions about the maximum altitude the ballistic missile can reach. However, the system is capable of intercepting targets in low-Earth orbit (LEO). Even though this missile launch took place at the test site in Plesetsk, flexible anti-satellite operations are possible by using a mobile missile launch pad – a transporter erector launcher (TEL). According to the Secure World Foundation, seven confirmed tests of the Nudol have been conducted since 2014, four of which may have been successful. Two others are still unconfirmed. The recent use of the Nudol system is thus the eighth confirmed test. It is not clear whether Russia had a target in mind with this test although at the time of launch, an old



*A computer generated image of the Russian Nudol Antisatellite missile and TEL. Image courtesy of Plymouth University.*



# 15/07/2020 Kosmos 2543 Kinetic test

## Russia just tested satellite-destroying tech in space, US Space Command claims

*Nothing was destroyed, but it's not a good look*

By Loren Grush | @lorangrush | Jul 23, 2020, 1:27pm EDT

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Chief of Space Operations at US Space Force General John W. Raymond.

The Department of Defense believes that Russia may have tested out a new technology in space that could be used to destroy other satellites already in orbit. This particular test didn't destroy anything, but military officials are worried it could be used to target US satellites in the future.



# 17/05/2020: 3rd X-37B launch

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## Here's How the X-37B Spaceplane 'Disappears'

The winged spacecraft can alter its orbit to confound adversaries.



BY KYLE HIXSON JUL 24, 2019



U.S. DOD / GETTY IMAGES

Former Secretary of the Air Force Heather Wilson revealed to an audience last week that the X-37B spaceplane can pull off maneuvers in space that drives potential adversaries "nuts." Although maddeningly unspecific, experts believe she was referring to the X-37B's ability to change its orbit, throwing off both amateur and professional satellite watchers and making the spacecraft unpredictable.

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# GNSS Jamming

Hacking

## When evidence

In June, 37,000  
evidence poi

Home / News / Global Europe / Defence and security / Norway at odds with Russia over GPS jamming

### Norway

By Alexandra Brzoz



Norwegian Minister of

Languages: Deut

Norway says it  
NATO exercises  
country's defens

Finland and Norw  
before and durin  
traffic in the regio

## THE WARZONE

### New Type Of GPS Spoofing Attack

CHINA-US NEWS

## US Hardens GPS Satellites After

### FORTU

future tense

THE CITIZEN'S GUIDE TO THE FUTURE

OCT. 19 2015 12:26 PM

## Mys are indu

For the glob  
disaster wa

BY KATHERINE JONN

January 22, 2020 12:30 PM GMT+1

## Naval Academy Brings Back Celestial Navigation Training in Case of a Cyberattack on GPS

By Lily Hay Newman



# We're in 1914 and it's no good news...





# Strategic Context



Space is a  
strategic  
enabler



Fragile  
component  
of  
technology-  
dependant  
forces



Complex,  
congested,  
contested



Essential  
domain to  
express  
warfare  
supremacy



Difficult  
reading of  
emerging  
actor  
strategies



Lacunary  
international  
law

**War will extend in space**



# Military use of Space



Space-based  
Intelligence



Earth &  
Space  
Environment  
Monitoring



SATCOM



Position  
Navigation  
Timing



Ballistic  
Missile  
Defense

Space Domain Awareness

Defensive Space Control

Offensive Space Control

# Space Command & Space Forces

Russian Space Forces



2001

PLA Strategic Support Forces



2015

US Space Force



2019

French CIE

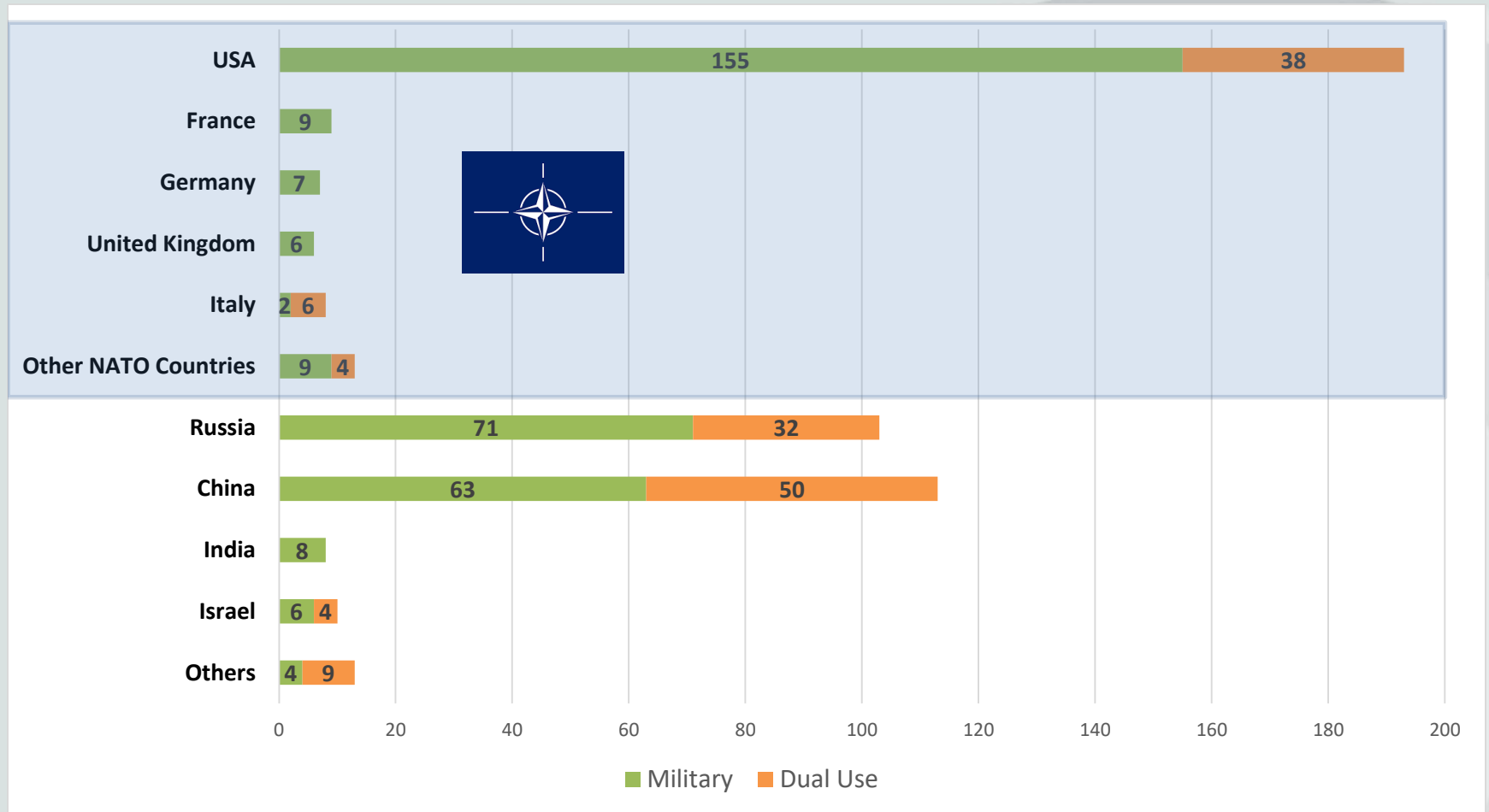


2020



Smaller scales initiatives in many countries

# Military\* satellites landscapes



Source: Union of Concerned Scientists, 01 APR 2020

\*Declared as such @ UNOOSA

# NATO :



## Space as an Operational Domain

- Space has been declared as an Operational Domain during London NATO Summit in Dec 2019
- Same criteria used for Cyber in 2016 (many similarities)
- Inherently global environment requiring unique capabilities to operate
- Any conflicts that extends to space has the potential to affect all users of space
- Free access, exploration & use of outer space for peaceful purposes is the common interest of all nations
- Space is essential to Alliance deterrence & defence



# NATO Overarching Space Policy



# EU: More Space Security



- EU Space Program: 500 M€ to develop new security components
  - GOVSATCOM
  - EU SSA
- Creation of DG DEFIS
- European Defense Funds: several space-related programs
- Space as Capability Devp Priority @ European Defense Agency
- EEAS 3SOS Initiative

Safe, secure, sustainable and resilient space environment that allows Belgian economic, industrial, academic, public & defense stakeholders and citizens to fully exploit the benefits of space.







# Conclusions

**Think Security  
from design**

**Build resilience**

**Increase  
awareness &  
intelligence**

**Cooperation,  
cooperation &  
more cooperation**



**Philippe Goffin** ✓

@PhGoffin

I attended the plenary session of the #BBESpaceConf Brussels.

✈️ The security and defence dimension of space is becoming increasingly important. #EUspace

Risks threaten our space infrastructures. The EU needs to be clear-sighted and determined in the face of these risks.

Traduire le Tweet



Belgium MFA et 9 autres

5:18 PM · 21 janv. 2020 · Twitter Web App





QUESTIONS ?

# Join us ! [www.mil.be](http://www.mil.be)

Reservist

420 posts  
in 2021

Military

2300 posts  
in 2021

Civilian

150 posts  
in 2021

*Media removed*