

## **European satellites for military use and migration control**

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In July 2016, at the Warsaw Summit, the European Union issued a Joint Declaration with the North Atlantic Treaty Organization (NATO), which says: “[...] *we have to step-up our efforts: we need new ways of working together and a new level of ambitions [...] because we have to make the most efficient use of resources. A stronger NATO and a stronger EU are mutually reinforcing. Together they can better provide security in Europe and beyond. [...] In fulfilling the objectives above, we believe there is an urgent need to: [...] Develop coherent, complementary and interoperable defence capabilities of EU Member States and NATO Allies [...].*”<sup>1</sup>

This statement is consistent with the ongoing militarization of the European Union as laid down in the Lisbon Treaty of December 2007: “*Article 42(1): The common security and defence policy shall be an integral part of the common foreign and security policy. It shall provide the Union with an operational capacity drawing on civilian and military assets. [...] (3) Member States shall make civilian and military capabilities available to the Union for the implementation of the common security and defence policy, to contribute to the objectives defined by the Council. [...] Member States shall undertake progressively to improve their military capabilities. [...]*”

The decision to expand the scope of EU politics to the military field dates back to 1992. Then, at the Petersberg Hotel (close to Bonn, Germany), the summit of the Western European Union (then the military arm of the EU) formulated the »Petersberg Tasks«: humanitarian and rescue; peacekeeping; combat forces in crisis management, and peacemaking – the latter including peace enforcement (i.e. war fighting). Five years later, these tasks were incorporated into the Treaty of the European Union, and eventually the WEU became obsolete, because the European Defence Agency was established. At about the same time, a re-definition of the word »peaceful« could be observed: everything is now considered »peaceful«, as long as it is not »aggressive« in the meaning of starting a war.

Also in the Lisbon Treaty of 2007, the European Union agreed to a common space policy (Article 189) and laid the basis for „*establish[ing] any appropriate relations with the*

*European Space Agency*“. Since then the ESA – founded in 1975 for „*for exclusively peaceful purposes*“ (Article II of the ESA Convention) and not an agency of the European Union (unlike NASA and the US) – was drawn into the EU’s sphere of action. In November 2012, the European Commission proposed that ESA should become „*an intergovernmental organisation under the authority of the European Union (following, to a certain extent, the model of the European Defence Agency), or transforming ESA into an EU agency*“ and suggested that „*ESA should continue to develop into an organisation with an intergovernmental and an EU dimension in which military and civil programmes can coexist.*“<sup>2</sup>

About ten years ago, MEP Karl von Wogau stated in a report for the European Parliament that “*The satellite-based systems in the field of Earth observation and reconnaissance, telecommunications, navigation, positioning and timing, are the »eyes and ears« of those who possess them. These can have military or civilian character. Therefore it is crucial for the EU countries to have access to data acquired by such systems [...].*”<sup>3</sup> Last year, the European Commission confirmed a prominent role of space for »defense«: “*Space is [...] of strategic importance for Europe. It reinforces Europe’s role as a stronger global player and is an asset for its security and defence.*”<sup>4</sup> And not long ago, Rini Goos, a representative from the European Defence Agency (EDA), was reported as saying that the European Union needed space systems to be able to “*intervene successfully*”.<sup>5</sup>

### **Military uses of space and dual-use**

The European Parliamentary Research Service has summed up the manifold military uses of space technology: „*Space-based capabilities and services play an increasingly critical role in security and defence posture and as such are both an asset and a potential source of vulnerability. Satellite reconnaissance is the key function allowing states to gather information about military build-up worldwide [...], strengthening significantly their situational awareness (predicting weather conditions, imagery intelligence, measurement and signature intelligence or signals intelligence). Enhanced security of satellite communications makes them invaluable at the highest political and military levels, as well as for tactical communication between military units in the field. Development of precision-guided munitions, missile warning and launch detection, and space-based missile defence systems are other examples of space-enabled defence capabilities. Due to the importance of space*

*capabilities as a »force multiplier«, there is an increasing risk of them becoming targets for other states. During a conflict, disabling satellite capabilities of another actor (e.g. through a cyber-attack or jamming) can provide an important tactical advantage. [...] Consequently, the issue gained importance in the context of the Common Security and Defence Policy, in particular with regard to space-based communication, situational awareness, and navigation and earth-observation capabilities.* “<sup>6</sup>

Space technology has an inherent dual-use character, i.e. most of it is useful for both civilian and military purposes, which allows the European Union to sell its space programs to the public as »strictly civilian« while supporting the military dimension. In July last year, the European Parliament urged the relevant European Union bodies to „ensure that European space programmes develop civilian space-based capabilities and services with relevance for European security and defence capabilities, [...]“ because it „believes that dual-use capacity of space capabilities is important in order to make the most effective use of resources [...] Stresses that space programmes have security and defence benefits that are technologically linked to civil benefits and highlights in this connection the dual-use capacity of Galileo and Copernicus; believes this capacity should be fully developed in the next generations [...]; notes the need for better interaction between drones and satellites; [...]considers that future space features of the current European systems should be set according to the [Common Security and Defence Policy] requirements and covering all above related aspects“.<sup>7</sup> It is also noteworthy that the space and cyberspace dimension are increasingly connected in European policies and that the European Parliament formulated a clear future vision for the issue of security and defense as it: “[...] points out that in the long term the EU must have its own instruments establishing a Defence Union; [...]”<sup>8</sup>

## **Copernicus and Galileo**

Copernicus and Galileo are the two »flagship« space programs of the European Union, run in cooperation with the European Space Agency (ESA). Under the European research program »Horizon 2020« for 2014-2020, seven billion Euros is provided for Galileo, 4.3 billion Euros for Copernicus, and 1.3 billion Euros for other space research.<sup>9</sup>

**Copernicus**<sup>10</sup> – formerly GMES, Global Monitoring for Environment and Security - is the European Earth observation and monitoring program and consists of »Sentinel« satellites, Sentinel instrument packages on other satellites, and ground-based components. One of the Copernicus services will be reserved for applications such as border surveillance, EU »external actions« and maritime surveillance.

To give you an idea of the technology used for Copernicus: Two of the Sentinel satellites (1A und 1B) carry a high-resolution synthetic aperture (SAR) radar to image the surface of Earth even through cloud and rain and regardless of whether it is day or night. The satellites are on a polar orbit at an altitude of approx. 700 km, i.e. they revisit each area on Earth every six days. The main contractor companies are Thales Alenia Space (Italy, satellite) and Airbus Defence and Space (Germany, radar). One of the downlink stations for the radar data is situated on the Norwegian island Svalbard in the Arctic Ocean. The tracking and telemetry data are transmitted to and from the Kiruna satellite station in northern Sweden.

As an example of the »security« aspect of Copernicus - consider the area of border surveillance. One of the main objectives here is to reduce the number of immigrants entering the European Union »illegally«. In November 2015, the European Commission entrusted the European Border and Coast Guard Agency FRONTEX with the border surveillance component of Copernicus. FRONTEX (headquartered in Warsaw, Poland) supports the European Border Surveillance System (Eurosur), a surveillance system of the European Union (EU) that uses drones, reconnaissance aircraft, offshore sensors and satellite remote sensing to track illegal immigration into the member states of the EU.<sup>11</sup> The preparatory work for this complex border surveillance system was developed under from the “Seventh Framework Programme”, the EU’s Research and Innovation funding program for 2007-2013. As you can see, the securitization and militarization of the European Union is like a kraken: it is omnipresent and penetrates all aspects of European activities and policies.

In addition, the Copernicus service in support of EU External Actions is operated by the European Union Satellite Centre. The Centre is situated in Torrejón de Ardoz, close to Madrid (Spain). It provides the EU with satellite and aerial imagery for the monitoring of events or activities outside Europe in support of the Common Foreign and Security Policy (CFSP), in particular the Common Security and Defence Policy.<sup>12</sup>

The **Galileo** satellite system, expected to reach its full operational capacity in 2020, will consist of 24 satellites (plus six reserve) manufactured by OHB System (Bremen, Germany) and Surrey Satellite Technology Limited (SSTL; Guildford, UK). 18 satellites are already in space and provide initial Positioning, Navigation, and Timing applications. Galileo will work independently while at the same time complementing other navigation systems, like GPS (United States), GLONASS (Russia), and Beidou (China).

Navigation and timing signals are used in industry, farming, transportation, etc. as well as for scientific purposes. And they play a crucial role in modern warfighting. Satellite navigation is used by military aircraft, ships, vehicles, and personnel. It has changed weapons targeting, and command and control, provides guidance for unmanned systems (drones), and makes it easier to deliver supplies to the battlefield.

The European Union insists that Galileo is a civilian system, arguing that it is under civilian control. The character of Galileo has, however, shifted over time. In its 2016 resolution on »Space capabilities for European security and defence«, the European Parliament noted unambiguously *“the importance of Galileo’s Public Regulated Service (PRS) for navigation and guidance of military systems.”*<sup>13</sup>

Satellite systems like Galileo always have a space segment – the satellites - and a ground segment. The Kiruna satellite station at Esrange Space Center, operated by the Swedish Space Corporation, is one of two telemetry, tracking and command station for Galileo. Its task is to monitor and control the Galileo constellation in space, to receive navigation signals from Galileo satellites, and to transmit navigation and integrity messages to the satellites. Another Nordic station is the Galileo Uplink and Sensor station at Svalbard in the Arctic Ocean.

### **A host of other military satellite programs**

The European Union has other space programs of military relevance:

- The **European Data Relay System (EDRS)** is the most sophisticated laser communication network ever designed and currently comprises two payloads on geostationary satellites. It was initiated by the European Space Agency and the European Commission, with Airbus

Defence and Space (Germany) as prime contractor. All EDRS ground stations are in EU countries, thus making the European Union independent from foreign ground stations that are not under European control. The »Space Data Highway« will relay information and data between other satellites or spacecraft, ground stations – and drones.<sup>14</sup>

- The European Defence Agency supports the **Multinational Space-Based Imaging System for Surveillance, Reconnaissance and Observation (MUSIS)** that allows participating European countries (Belgium, France, Germany, Greece, Italy, Poland, Spain, and Sweden) to share imagery from their dedicated military satellites. One of the roles of the European Defence Agency in this project is specifically to seek synergies with Copernicus and other Earth observation programs.<sup>15</sup>
- Yet another »flagship program« of the European Defence Agency is **Governmental Satellite Communications (GovSatcom)** *“to support institutional users in the execution of security missions and the protection of critical information infrastructure”*. This project is seen as *„critical to support the implementation of EU policies and protect its infrastructures for border and maritime control, civil protection, air traffic management or drones.”*<sup>16</sup>
- Another issue is the ability to launch space missions independently from other countries. Elements of this are the Ariane space launchers and the spaceport (Guiana Space Centre) at Kourou in French Guiana. Frequently, EU documents *“Note[] the strategic importance of independent access to space and the need for dedicated EU action, including with regard to security and defence, since this capacity would allow Europe to gain access to space in the event of a crisis.”*<sup>17</sup>

In addition to such European projects, individual member countries have dedicated military or dual-use projects. A very interesting example is Tandem-X and Terra-SAR-X – two radar satellites that have scanned an extremely high-resolution picture of Earth – ideal topography data for flight control of aircraft, cruise missiles, or drones. But time here is limited, so I will stop at that.

Thank you for listening!

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<sup>1</sup> Joint Declaration by the President of the European Council, the President of the European Commission, and the Secretary General of the North Atlantic Treaty Organization. 8 July 2016, Warsaw/Poland.

<sup>2</sup> Communication from the Commission to the Council and the European Parliament - Establishing appropriate relations between the European Union and the European Space Agency. 16 November 2012, COM(2012) 671 final.

<sup>3</sup> European Parliament, Committee on Foreign Affairs: Report on space and security (2008/2030(INI)). Rapporteur: Karl von Wogau, 10.6.2008; document A6-0250/2008.

<sup>4</sup> European Commission: Space Strategy for Europe. 26.10.2016, COM(2016) 705 final, p. 2.

<sup>5</sup> Tim Reynolds: A Kingdom Divided – Whither EU Space Systems? gpsworld.com, Jun 29, 2016.

<sup>6</sup> EU space policy: Industry, security and defence. posted at the European Parliamentary Research Service Blog, November 16, 2016; ephinktank.eu.

<sup>7</sup> Space capabilities for European security and defence. European Parliament resolution of 8 June 2016 (2015/2276(INI)).

<sup>8</sup> Ibid.

<sup>9</sup> EU space policy: Industry, security and defence. posted at the European Parliamentary Research Service Blog, November 16, 2016; ephinktank.eu.

The European Space Agency is not funded by the European Union and has its own budget.

<sup>10</sup> The information on Copernicus is from various flyers and brochures published by the European Commission and the European Space Agency (ESA) and the copernicus.eu website.

<sup>11</sup> Information for FRONTEX from frontex.europa.eu, for Eurosur from Wikipedia.

<sup>12</sup> Information from satcen.europa.eu and copernicus.eu.

<sup>13</sup> European Parliament resolution of 8 June 2016; op.cit.

<sup>14</sup> European Space Agency: EDRS – The European Data Relay System. Brochure, May 2015.

<sup>15</sup> European Defence Agency: New EDA Project on Space-Based Earth Surveillance System. Press release, 5 March 2009.

<sup>16</sup> European Commission, Directorate General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW): DG GROW meeting with Member States in preparation of Space Strategy. 8.7.2016.

<sup>17</sup> European Parliament resolution of 8 June 2016, op.cit.