

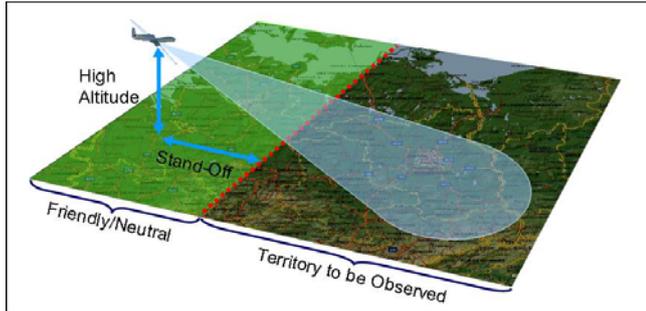


# Alliance Ground Surveillance (AGS)



## Introduction

The NATO owned and operated AGS Core (AGS Core) capability will enable the Alliance to perform persistent surveillance over wide surface areas from high altitude, long endurance unmanned air platforms operating at considerable stand-off distances and in any weather or daylight condition. Using advanced radar sensors, the AGS Core will continuously detect and track moving objects throughout the observed areas, as well as providing radar imagery of areas and non-moving objects.



*AGS Core wide-area stand-off ground surveillance.*

The collected surveillance data will be disseminated in near-real-time (NRT) to AGS Core ground stations through line-of-sight and beyond-line-of-sight data links for exploitation, use, and further distribution to interoperable NATO and national command, control, intelligence, surveillance and reconnaissance (C2ISR) systems.

## AGS Core Overview

The AGS Core will be an integrated system consisting of an air and a ground segment.

The air segment will be based on the Block 40 version of the US RQ-4B Global Hawk high altitude, long endurance unmanned aerial vehicle (UAV). The UAV will be equipped with the state-of-the-art multi-platform radar technology insertion program (MP-RTIP) ground surveillance radar sensor, and with an extensive suite of line-of-sight and beyond-line-of-sight long-range wideband data links.



*Global Hawk being towed (left) and taking off (right).*

The ground segment will provide an interface between the AGS Core system and a wide range of C2ISR systems to interconnect with and provide data to multiple deployed and non-deployed operational users, including reach-back facilities remote from the surveillance area.

The primary ground segment component will consist of a number of ground stations in different configurations, such as mobile and transportable, which will provide data link connectivity, data processing and exploitation capabilities, and interfaces for interoperability with C2ISR systems. The AGS Core ground segment will also include dedicated

mission support facilities at the main and forward AGS Core operating bases, and ground stations for flight control of the UAV component of the system.



*AGS Core mobile and transportable ground stations.*

The composition of the AGS Core system will provide NATO with considerable flexibility in employing its surveillance capabilities in a manner that can be tailored to the needs of any emerging situation.

## Mission and Mission Planning

The mission of the AGS Core is to support civilian and military authorities at multiple echelons with continuous information in NRT in order to enhance situational awareness concerning friendly, neutral, and opposing ground forces with a level of quality adequate to support targeting operations.

The AGS Core will be an integral part of the Combined Joint Task Force (CJTF) or NATO Response Force (NRF) commander's intelligence, surveillance, and reconnaissance (ISR) battle plan at the operational and tactical levels. Collection requirements apportioned to the system will include standing, ad-hoc and dynamic requirements. The AGS Core will be expected to provide information for processes ranging from intelligence to targeting, and to simultaneously support multiple commanders.

Fulfilling the AGS mission will enable NATO to respond with the right capability at the right time and in the right place. The AGS Core will be critical to the future Alliance capabilities, and will provide an essential capability supporting the transformation of NATO.

The AGS Core mission will be complementary to the missions of the NATO Airborne Early Warning and Control (NAEW&C) system.

## The AGS Force

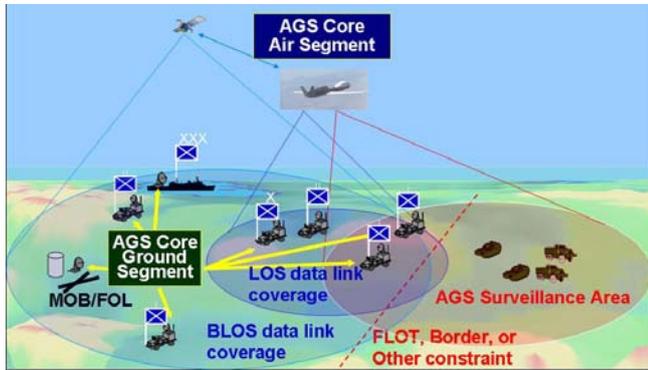
The AGS Force will be composed of the AGS Core and national ISR systems assigned to NATO. The AGS Core will be both a High Readiness Force and a Deployable Force, enabling a rapid response to any NATO contingency.

When fully operational, the AGS Core will be capable of simultaneously maintaining continuous two orbits in different geographic locations over extended periods of time. In time of crisis or war, national ISR systems may be assigned to NATO to augment the AGS Force through the force generation and activation process.

The Supreme Allied Commander, Europe (SACEUR) will have operational command (OPCOM) of the AGS Core, while operational control (OPCON) will rest with the NATO AGS Force Commander.

## Employment

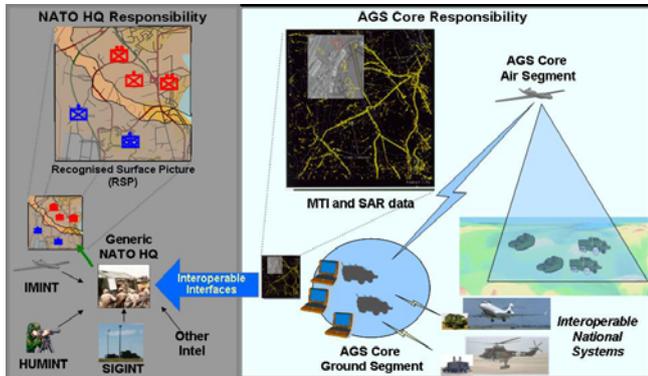
The AGS Core ground stations will be part of organic NATO HQs, and will process the received surveillance data for further analysis and use by the associated HQs. The ground stations will also, directly or via NATO networks, interface and exchange information with the CJTF/NRF, component commands, tactical operations centres, joint command centres, and exploitation centres.



*AGS deployment and interconnectivity.*

The AGS Core will provide surveillance data directly to users from NATO strategic commanders and down to the brigade level. Distribution to lower echelons is also being considered as part of the ongoing transformation of NATO.

Being continuously updated and disseminated in NRT, the AGS information will be an essential contribution to the recognised surface picture (RSP) produced in the HQ, providing NATO commanders with up-to-date situation awareness to enable faster and more accurate reactions to critical situation developments.



*AGS inputs to the RSP.*

## C2ISR Integration

The AGS Core will be part of a system of systems, and will be designed to interoperate with a wide range of current and future NATO and national C2ISR systems, including integration with the emerging NATO network-enabled capabilities (NNEC).

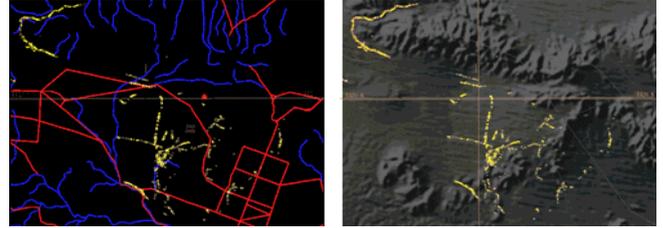
Currently planned interactions include major NATO systems such as the bi-strategic command automated information system (Bi-SC AIS), the air command and control system (ACCS), the land command and control information system (LC2IS), and the maritime command and control information system (MCCIS). The AGS Core will also be interoperable with national ISR systems, enhancing the ability of the Alliance to collaboratively and efficiently exploit and use the capabilities available.

## AGS Core Surveillance Data

The AGS Core will provide the users with several types of surveillance data and information, in particular:

### *Ground Moving Target Indicator (GMTI) data*

GMTI provides continuously updated radar detections of moving or stationary rotating targets within the field of view of the radar sensor and in any weather condition, enabling users to track moving objects over time and to assess movement characteristics and trends.

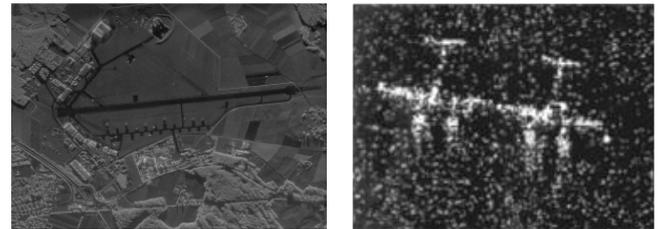


*GMTI detections overlaid different map backgrounds.*

GMTI is typically used to enhance situational awareness with up-to-date information on movements within a wide area, and may be used to cue other ISR capabilities or even weapon systems onto objects of interest.

### *Synthetic Aperture Radar (SAR) imagery*

SAR imagery is radar-generated images of stationary ground features and targets of interest in a specific area at a specific time. Although similar in appearance to other imagery types, SAR is independent of weather and light conditions, and may contain non-visible information enabling processing algorithms e.g. to detect changes over time or to find concealed objects.



*SAR images of different size and resolution.*

SAR imagery is often generated in response to cueing by other information, such as GMTI data or intelligence reports indicating suspicious activities in specific locations.

### *Exploited information*

Exploited information is produced through analysis of NRT or archived data produced by the AGS Core or received from interoperable systems. Exploitation may range from automatic processing, e.g., correlating subsequent GMTI detections to track the movements of an object over time, to manual analysis using exploitation workstations, e.g., comparing SAR images of the same area taken at different times to detect changes indicating build-up of forces.

The exploitation results may have several forms depending on their intended use, for example annotated imagery, tracks, text reports or voice messages.

## Schedule

NATO aims towards achieving initial operational capability (IOC) for the AGS Core in the 2012-13 timeframe. Subsequently, full operational capability (FOC) is expected around 2015-16.