

Technical presentation on
**The Global Space Situational Awareness Sensor Database: A
New Tool for Collaboration and Cooperation**
Given at the United Nations Committee on the Peaceful Uses of Outer Space
Scientific and Technical Subcommittee
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**The Global Space Situational Awareness
Sensor Database**

A new tool for collaboration and cooperation

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UN COPUOS STSC, Vienna, Austria
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swfound.org

Thank you Mr. Chairman. Distinguished delegates, it is my privilege to have the opportunity to speak to you today to announce the launch of a new project by Secure World Foundation directly related to the long-term sustainability of space activities, and specifically improving space situational awareness.

- All space sustainability efforts rest on the foundation of Space Situational Awareness (SSA)
- Most space actors do not have the resources or capacity to provide their own SSA
- Achieving “good” SSA requires a large network of geographically distributed sensors and information from satellite owner/operators
 - Cannot be done by any one country working alone
- SSA collaboration, cooperation, and sharing is necessary for the long-term sustainability of space activities

Space situational awareness – broadly defined as characterizing the space environment and its effects on activities in space – is fundamental to space sustainability. SSA provides knowledge essential to understanding the problem, identifying potential solutions, and even monitoring developments. However, most space actors do not have the resources or capacity to provide even a basic level of space situational awareness for themselves, and achieving truly “good” SSA requires both a large network of geographically distributed sensors and combining the data from that network with data provided by the owners and operators of active satellites. This is an undertaking that no one country can accomplish alone, especially in this era of fiscal austerity. Thus, some level of collaboration, cooperation and sharing between space actors is needed to provide the SSA necessary to support space sustainability.

- SWF has developed a website for crowd sourced, publicly available information about global SSA sensors
 - <http://globalSSAsensors.org>
 - Combines Google Maps, Google Earth, and wiki technology
- Goal is to increase knowledge and awareness of existing SSA resources and potential opportunities for collaboration and cooperation
- Working with partners, we have uploaded a basic set of starting data on global SSA sensors
 - Ultimate goal is to foster a community of users to update, edit, and curate the website

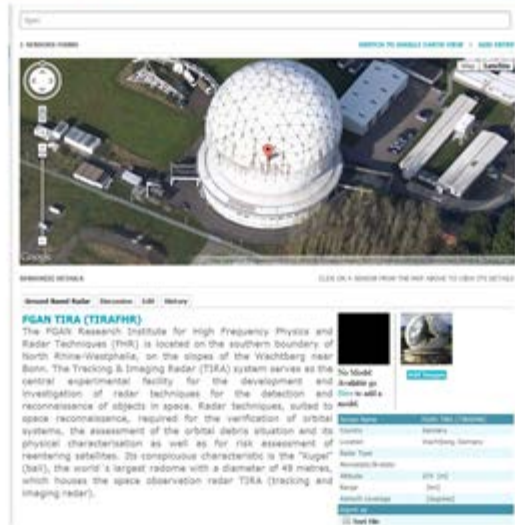
Today, Secure World Foundation is proud to announce the launch of a website dedicated to helping solve this problem. Over the past year, we have developed a website to serve as a crowd sourced repository of publicly available information about SSA sensors around the world. The website, found at globalSSAsensors.org, combines elements of Google Earth, Google Maps, and wiki technology to present information about the location, history, and technical details of various SSA sensors, including those operated by space agencies, militaries, scientific institutions, and private enterprise.

The goal of developing this website is to increase knowledge and awareness of existing SSA resources around the world and potential opportunities for collaboration and cooperation. We believe that this should be the first step towards improving global SSA for on-orbit safety and space sustainability.

Working with partners, we have uploaded a basic set of publicly-available information on SSA sensors around the world. Our ultimate goal is to foster a community of users to update, edit and curate the information on the website.

The screenshot displays the 'View - All Sensors' page of the Global SSA Sensor Database. At the top left is the Secure World Foundation logo with the tagline 'Promoting Cooperative Solutions for Space Situational Awareness'. The main header area includes the 'GLOBAL SSA SENSOR DATABASE' logo and a search bar. A navigation menu contains links for HOME, ABOUT, SSA SENSORS (highlighted), SSA NETWORKS, SSA BY COUNTRY, RESOURCE LIBRARY, FAQ, and FORUM. Below the menu is a search bar with the text 'SEARCH FOR SSA SENSORS' and a search button. The main content area shows '215 SENSORS FOUND' and a world map with numerous red location pins. A 'SWITCH TO GOOGLE EARTH VIEW' link and an 'ADD ENTRY' button are visible. At the bottom of the map area, there are links for 'SENSORS DETAILS' and a note: 'CLICK ON A SENSOR FROM THE MAP ABOVE TO VIEW ITS DETAILS'. The footer contains the text 'UN COPUOS STSC, Vienne, Austria', 'Feb 13, 2012', the page number '4', and the website 'swfound.org'.

This screen shot shows the initial set of 215 sensors in the database. This information primarily came from research done by David Vallado at the Center for Space Standards and Innovation in the United States, and was published in a paper last year at the annual Spaceflight Mechanics Conference of the American Astronautical Society and the American Institute for Aeronautics and Astronautics.



FGAN TIRA (TRAPHR)

The FGAN Research Institute for High Frequency Physics and Radar Techniques (FHZ) is located on the southern boundary of North Rhine-Westphalia, on the slope of the Wachtberg near Bonn. The Tracking & Imaging Radar (TIRA) system serves as the central experimental facility for the development and investigation of radar techniques for the detection and reconnaissance of objects in space. Radar techniques, suited to space reconnaissance, required for the verification of orbital systems, the assessment of the orbital debris situation and its physical characterization as well as for risk assessment of reentering satellites. Its conspicuous characteristic is the "Ranger" (RAR), the world's largest radome with a diameter of 48 metres, which houses the space observation radar TIRA (tracking and imaging radar).

Property	Value
Country	Germany
Location	Wachtberg, Germany
Radio Type	
Frequency Range	
Wavelength	210 cm
Range	1000 km
Antenna Diameter	48 metres
Operating Mode	
OS Link File	

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The entire database on the website is searchable, allowing users to find and view each sensor individually. Here you see a screenshot of the details for a specific sensor, in this case the FGAN tracking radar located in Germany. The upper part of the page shows a close-up view of the sensor's location in Google Maps or Google Earth. Beneath that is a section on the left with some details about the sensor and on the right some technical details. All of this is editable by users in the same way as articles on Wikipedia, although we do not allow anonymous edits and we do have an editor providing some oversight of the content.

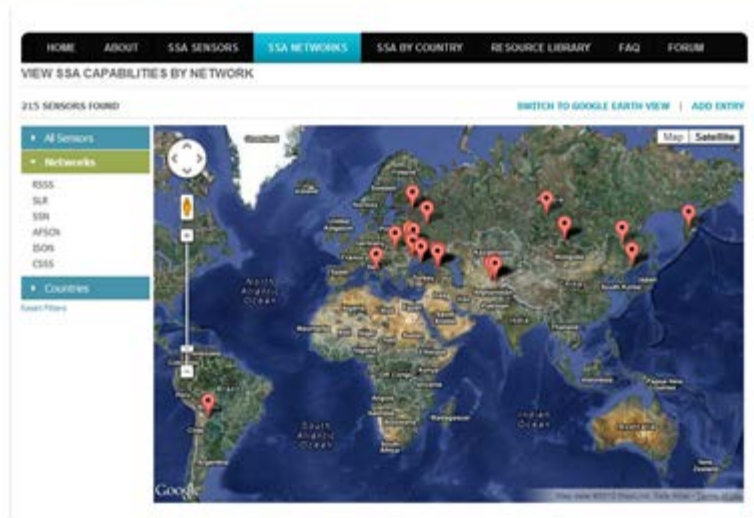


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Users can also use free tools provided by Google to create and upload 3-D models of sensors, which can be viewed in a Google Earth window. Here you can see a model of the Milstone tracking radar located near Boston in the United States. There is an existing database of such 3-D models for tens of thousands of buildings and other objects, all of which were created by users and are viewable in Google Earth.



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Users of the website also have the ability to view SSA sensors by network or specific countries. In this example, you can see all of the telescopes that are currently part of the International Scientific Optical Network (ISON), which is coordinated by the Russian Academy of Sciences.

- As of today, the website is officially open to the public
 - Currently in beta with a limited set of features
- We encourage all States with SSA capabilities to contribute to the website and ensure that the data on their sensors is accurate
- Working with LTSSA Expert Group B to identify and encourage technical experts that can help build a community of knowledgeable users
- Welcome comments and suggestion for improving the website

As of today, the website is officially open to the public, although it is currently in beta with a limited set of features. Over the next year, we will be hard at work improving the website and welcome feedback and suggestions for features.

We also encourage all States with SSA capabilities to contribute to the website and help ensure that we have the most accurate and up to date information possible. Secure World Foundation will be consulting with Expert Group B from the Working Group on the Long-term Sustainability of Outer Space Activities on identifying technical experts to assist in curating the information in the database, and discussing how the website can contribute to the efforts of the Expert Group.

- David Vallado, Center for Space Standards and Innovation (CSSI).
 - Published paper with the original set of data used to build the website
- Queen Tech Solutions, Cairo, Egypt
 - Lead web developer
- Center for International and Security Studies at Maryland (CISSM), University of Maryland
 - PhD Candidate Jaganath Sankaran, lead editor

Secure World Foundation would also like to acknowledge the hard work of some of our partners. In particular: David Vallado from the Center for Space Standards and Innovation who did much of the initial research on existing sensors, Queen Tech Solutions from Cairo, Egypt, who is our lead web developer; and the Center for International and Security Studies at Maryland at the University of Maryland, who are assisting with editing of the website.



Thank You

Access the Website:

<http://globalSSAsensors.org>

Comments and suggestions:

info@globalSSAsensors.org

In summary, Secure World Foundation would like to reiterate the importance of improving the space situational awareness of all space actors as the foundation of the long-term sustainability of space activities. We hope that this new website will increase knowledge and awareness of existing SSA resources around the world as well as potential opportunities for collaboration and cooperation, and we encourage all States to contribute to this effort.

Mr. Chairman, thank you for this opportunity, and I invite any questions at this time.