

AGA 1: Verification, Space Surveillance and Early Warning

Zeit: Mittwoch 14:00–16:00

Raum: VMP 9 HS

Hauptvortrag AGA 1.1 Mi 14:00 VMP 9 HS
From Data Acquisition via a Common Operational Picture to Space Situational Awareness — ●GUIDO BARTSCH — FGAN-FHR, Dept. Radar Techniques for Space Reconnaissance (RWA), Neuenahrer Straße 20, D-53343 Wachtberg-Werthhoven

A widely spread misunderstanding concerning the formation of Space Situational Awareness (SSA) is that its indispensable prerequisite, a common space situational picture, is already available after gathering data from different sensor and non-sensor sources. Even though assumed valuable data may already be available at this point, additional steps have to be performed.

Endsley stated in his theory of situation awareness in dynamic systems [1] that one needs three steps to form Situational Awareness (SA): Perception, comprehension, and projection. These three steps can be adopted to the process forming Space Situational Awareness (SSA). An example which underpins this statement is e.g. the analysis of potential threats which come from foreign space objects. One typical question in this context is: Has any of the foreign objects non-peaceful capabilities and will they likely be applied against me? To answer this question, one needs much more than just images of these space objects: One important follow-up process is the image analysis or, to be more precise, the space object's capability analysis based on space object imaging. Together with the outcome of additional processes, e.g. the analysis of abnormality (behavioural analysis) and the assessment of the political circumstances, one can develop a situational picture to support the formation of space situational awareness. This talk will give a survey on the SSA needs, methods as well as a review about existing and planned subsystems.

[1] M. R. Endsley, "Toward a Theory of Situation Awareness in Dynamic Systems", *Human Factors*, Vol. 37, No. 1, 1995, pp. 32-64.

AGA 1.2 Mi 15:00 VMP 9 HS
Verifikation der Rüstungskontrolle im Weltraum — ●JÜRGEN SCHEFFRAN — University of Illinois at Urbana-Champaign, USA

Nach dem Ende der Bush-Administration bestehen neue Chancen, dass die Rüstungskontrolle im Weltraum ernsthaft angegangen wird. Das Spektrum der Optionen reicht von Verkehrsregeln für den Weltraum bis zu einem vollständigen Verbot von Weltraumwaffen, eingebettet in ein umfassendes kooperatives Sicherheitsregime für den Weltraum. Eine der Schlüsselfragen ist die Verifikation eines möglichen Weltraum-Rüstungskontrollabkommens. Um eine ausreichende Überprüfung sicherzustellen, sind Prinzipien, Regeln und Verifikationsmittel bereit-

zustellen, die das Destruktivpotenzial von weltraumbezogenen Systemen eingrenzen und das Risiko bewaffneter Einsätze begrenzen. Hierzu ist eine Analyse der Multi-Funktionsfähigkeit und Doppelverwendbarkeit von Weltraumobjekten ebenso erforderlich wie der für Weltraumeinsätze nutzbaren Trägersysteme. Besondere Problembereiche sind die Miniaturisierung, das Manövrierpotenzial und die Verwundbarkeit von Satelliten, die Entwicklung von Raketenabwehrsystemen, das Destruktivpotential von Lasersystemen und die Ähnlichkeit von ballistischen Raketen und Weltraum-Trägerraketen. Aus möglichen Abgrenzungen ergeben sich Anforderungen an die Verifikation und dafür erforderliche Mittel, insbesondere für Satellitenbeobachtung, Weltraum-Tracking-Systeme und Inspektionen von weltraumrelevanten Anlagen. Dies ist eine Voraussetzung für eine vorbeugende Rüstungskontrolle im Weltraum, die Risiken, Kosten und Effizienz von Abkommen in den Kontext sicherheitspolitischer Bewertungen setzt.

AGA 1.3 Mi 15:30 VMP 9 HS
Constellations of a possible European Missile Early Warning System — ●MARCEL DICKOW¹ and GEOFFREY FORDEN² — ¹Institut für Friedensforschung u. Sicherheitspolitik (IFSH), Hamburg, Germany — ²Science, Technology and Global Security Working Group, Massachusetts Institute of Technology, USA

Missile early warning systems played (and still play) an important role in the concept of nuclear deterrence during the cold war. Providing intelligence and surveillance data space-based sensors guaranteed capabilities of both parties to initiate a retaliation strike before own ICBMs would have been destroyed. Together with submarine second strike capability missile early warning was a major security asset both parties agreed on to be necessary for political stabilization.

As the now Russian system struggles with financial obstacles the U.S. system components have been partly integrated into the Space Surveillance Network (SSN) providing not only reconnaissance but Space Situational Awareness (SSA) data for civil and military purposes. A European Missile Early Warning System with global coverage is not a topic in national or EU space policies. However ESA and the European Defence Agency (EDA) drive SSA programs and the European space industry recently proposed missile early warning systems, mostly to spur on discussion.

The talk investigates possible constellation for these systems using visible and infrared surveillance, presents deliberations on coverage, detection times and probabilities and pulls together political implications for European policies and international security.