



Introduction to IAWN and UNCOUOS

UN Recommendations for an international response to the NEO Impact Threat

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Cambridge, MA, 13 – 14 January 2014



Outline of presentation

Recent agreement by the General Assembly of the United Nations that paves the way to prepare for an international response in case of a threat of a NEO impact on Earth

Background, motivation and results

- Origin of dealing with the NEOs item in the United Nations
- Establishment of the Action Team on NEOs (AT-14) by the United Nations Committee on the Peaceful Uses of Outer Space
- Universality and governmental recognition of work by AT-14
- The importance of the work of AT-14 (bottom up approach)
- The recommendations made by AT-14 to the United Nations
- Recommendations adopted by the United nations
- Work to be done



The setting

The United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) is an intergovernmental body with a Scientific and Technical Subcommittee (STSC) and a Legal Subcommittee (LSC)

All three bodies work on basis of consensus

The NEOs issue was dealt with by the STSC, mainly through a Working Group on NEOs, **established in 2007**, and its work was endorsed and guided by COPUOS

The Action Team on NEOs was established by COPUOS **in 2001** and mandated to report to the STSC



GA Omnibus Resolution on space - 2014

In December 2013 -

[The General Assembly,]

[...]

8. Welcomes with satisfaction the recommendations for an international response to the near-Earth object impact threat, endorsed by the Scientific and Technical Subcommittee at its fiftieth session and endorsed by the Committee at its fifty-sixth session

What does this mean?

Note: the recommendations were made by the WG on NEOs of the STSC on the basis of the recommendations of AT-14



Origin of NEOs issue in the United Nations UNISPACE III - 1999

A/Conf.184/6

- The Space Millennium: Vienna Declaration on Space and Human Development, Resolution 1 , para (1) (c)

Recommendations:

- (i) To improve the scientific knowledge of near and outer space by promoting cooperative activities in such areas as astronomy, space biology and medicine, space physics, **the study of near-Earth objects** and planetary exploration;
- (iii) **To improve the international coordination of activities related to near-Earth objects**, harmonizing the efforts directed at identification, follow-up observations and orbit prediction, while at the same time giving consideration to **developing a common strategy that would include future activities related to near-Earth objects.**



Establishment of Action Teams

- United Nations mechanism to implement some recommendations of UNISPACE III: **Action Teams**, each on a specific item
 - **2001**: agreed by the **Scientific and Technical Subcommittee** (STSC) through its Working Group of the Whole, (A/AC.105/761, annex II, paras. 3-14)
- Establishment of the Action Teams agreed to:
 - **2001**: **United Nations Committee on the Peaceful Uses of Outer Space (COPUOS)** (A/56/20, paras 44 – 61)
 - Note: All reports referenced in this presentation can be found on the web site of the United Nations Office for Outer Space Affairs (UNOOSA) at <http://unoosa.org>



Mandate of Action Team on NEOs (AT-14)

Establishment (2001) and terms of reference (2002) of Action Team on NEOs (AT-14)

(Reports of STSC and COPUOS – 2001 and 2002)

Mandate

- (a) Review the content, structure and organization of ongoing efforts in the field of near-Earth objects (NEOs);**
- (b) Identify any gaps in the ongoing work** where additional coordination is required and/or where other countries or organizations could make contributions;
- (c) Propose steps for the improvement of international coordination** in collaboration with specialized bodies.

Open-ended membership: including intergovernmental, governmental and non-governmental space-related institutions



Relationships: AT-14, STSC, COPUOS, General Assembly (**Importance of AT-14**)

- AT-14: Technical body, open-ended; composed of government and non-government experts (27 members; entities)
 - Works intersessionally
 - **Prepared interim and final reports for STSC**
- STSC: considers NEOs; agenda item (74 Member States; Dec. 2013)
 - in Plenary
 - **through its Working Group on NEOs** (governments)
- COPUOS considers report on NEOs of STSC and sets new mandate
 - Set multi-year work plans for STSC (2009 – 2011, 2012 - 2013)
- General Assembly endorses report COPUOS; sets new mandates for COPUOS, STSC and LSC (193 MS)



Relationships: AT-14, STSC, COPUOS, General Assembly (**Importance of AT-14**)

Bottom up approach

- AT-14 provides input to STSC
- Work agreed upon by STSC and its subsidiary bodies (i.e. its Working Groups) is normally endorsed by COPUOS
- Because COPUOS works by consensus and each Regional Group is represented in the work of COPUOS, normally, the General Assembly (193 MS) adopts the report of COPUOS (and its recommendations) **without a vote**.
- AT-14 → STSC → WG on NEOs → STSC → COPUOS → GA
- Thus, the **GA endorses the work of experts on an item**



Report by ASE's International Panel on Asteroid Threat Mitigation

2008



ASTEROID THREATS: A CALL FOR GLOBAL RESPONSE

A report on the need to develop an international decision-making program for global response to Near Earth Object threats. Submitted for consideration and subsequent action by the United Nations, its goal is to assist the international community in preventing loss of life and property resulting from an asteroid impact on Earth.

25 September 2008

30 September 2008 - Report presented to AT - 14

November 2008 - Summary of recommendations integrated into AT - 14 Interim report to STSC

February 2009 - STSC agrees on multi-year workplan to prepare a proposal for international response to an NEO threat

- Information, Analysis and Warning Network
- Mission Planning and Operations Group
- Mission Authorization and Oversight Group



Work of the STSC

- **STSC 2009 - 2013**
- – Reports by international organizations, regional bodies, Member States
- – Presentations by permanent observers (ASE, IAA, IAU, SWF, ...)
- – Presentations by Member States
- – Interim rept - Action Team on Near-Earth Objects (2008-2013)
- – Information on research by MS, int'l orgs & others
- NEOs process under a **work plan – 2009 to 2013**
- – Work carried out by STSC (and its WG) & COPUOS
- – Intersessionally by AT-14



Drafting of international procedures for handling the NEO threat

STSC 2009

- NEOs process under a **work plan – 2009 to 2011**
 - Work carried out by STSC (and its WG) & COPUOS
 - Intersessionally by AT-14

Working Group (2009)

[...] Action Team tasked to,

- (b) Review of policies and procedures related to the handling of the NEO threat at the international level and drafting of international procedures for handling the NEO threat;



Results & Work of AT-14 for 2012 - 2013

- Final report of the Action Team on Near-Earth Objects – (A/AC.105/C.1/L.330).

Factual report; contains up-to-date information on:

- activities and issues relating to the NEO hazard,
- the current understanding of the risk posed by NEOs
- the measures required to mitigate that risk

- **Recommendations of the Action Team on NEOs (AT-14) for an International response to the NEO impact threat (A/AC.105/C.1/L.329)**



Recommendations - International response to the NEO impact threat (A/AC.105/C.1/L.329)

Findings

- Many of the elements needed for an international response to the near-Earth object impact threat **already exist**.
- Three primary components of threat mitigation: a) discovering hazardous NEOs and identifying those requiring action; b) planning a mitigation campaign (deflection and/or disruption actions and civil defense activities); and, c) implementing a mitigation campaign, if the threat warrants it.



Recommendations - International response to the NEO impact threat (A/AC.105/C.1/L.329)

Three overarching recommendations:

- An **International Asteroid Warning Network (IAWN)** should be established
- A **Space Mission Planning Advisory Group (SMPAG)** should be established
 - o (Framework, timeline and options for initiating and executing response activities);
- An **Impact Disaster Planning Advisory Group (IDPAG)** should be established [**NOT ACCEPTED by WG on NEOs**]
 - o (Inform the civil defense community of nature of impact disasters and incorporate that community into overall mitigation planning process)



Recommendations - International response to the NEO impact threat (A/AC.105/C.1/L.329)

Two supporting recommendations:

- Action Team on NEOs should continue to support establishment of IAWN, SMPAG and IDPAG
- Establishment and work of IAWN, SMPAG, IDPAG facilitated by the United Nations on behalf of the international community
 - o Annual reports on work by IAWN, SMPAG, IDPAG to STSC/COPUOS (item on agenda of STSC)
 - o **All recommendations to be implemented at no cost to the United Nations**



Recommendations made by the Working Groups on NEOs (February 2013)

(a) **An international asteroid warning network (IAWN), open to contributions by a wide spectrum of organizations, **should be established**** by linking together the institutions that were already performing, to the extent possible, the proposed functions, including discovering, monitoring and physically characterizing the potentially hazardous NEO population and maintaining an internationally recognized clearing house for the receipt, acknowledgment and processing of all NEO observations. Such a network would also recommend criteria and thresholds for notification of an emerging impact threat.



Recommendations made by the Working Groups on NEOs (February 2013)

(b) The international asteroid warning (IAWN) network should interface with the relevant international organizations and programmes to establish linkages with existing national and international disaster response agencies **to study and plan response activities for potential NEO impact events** as well as to recommend strategies using well-defined communication plans and procedures to **assist Governments in their response to predicted impact consequences**. This does not limit **the possibility of organizing, In this respect, additional international specialized advisory groups**, if necessary.



Recommendations made by the Working Groups on NEOs (February 2013)

(c) **A space mission planning advisory group (SMPAG) should be established by Member States of the United Nations that have space agencies.** The group should include representatives of spacefaring nations and other relevant entities. Its responsibilities should include laying out the framework, timeline and options for initiating and executing space mission response activities. The group should also promote opportunities for international collaboration on research and techniques for NEO deflection.



Recommendations made by the Working Groups on NEOs (February 2013)

Two supporting recommendations:

1) The groups recommended above should have their work facilitated by the United Nations **on behalf of the international community.**

Future Work

2) The Working Group recommended that the Action Team on Near-Earth Objects should assist in the establishment of IAWN and SMPAG. The Action Team should inform the Subcommittee of the progress in the establishment of both groups. Once established, IAWN and SMPAG should report on an annual basis on their work.



Functions proposed by Action Team on NEOs for the IAWN (A/AC.105/C.1/1029)

Work to be done (in the coming years)

33. An international asteroid warning network (IAWN) should be established by linking together the institutions that are already performing **many of the proposed IAWN functions, including the following, and adding capabilities as needed:**

- (a) To discover, monitor, and physically characterize the potentially hazardous NEO population using optical and radar facilities and other assets based in both the northern and southern hemispheres and in space;
- (b) To provide and maintain an internationally recognized clearing house function for the receipt, acknowledgement and processing of all NEO observations;
- (c) **To act as a global portal**, serving as the international focal point for accurate and validated information on the NEO population;



Functions proposed by Action Team on NEOs for the IAWN (A/AC.105/C.1/1029)

Work to be done (in the coming years)

- (d) To coordinate campaigns for the observation of potentially hazardous objects;
- (e) To recommend policies regarding criteria and thresholds for notification of an emerging impact threat;**
- (f) To develop a database of potential impact consequences, depending on geography, geology, population distribution and other related factors;
- (g) To assess hazard analysis results and communicate them to entities that should be identified by Member States as being responsible for the receipt of notification of an impact threat in accordance with established policies;
- (h) To assist Governments in the analysis of impact consequences and in the planning of mitigation responses.



Functions proposed by Action Team on NEOs for the IAWN (A/AC.105/C.1/1029)

Work to be done (in the coming years)

34. Several institutions are currently engaged in NEO detection, tracking, cataloguing, impact prediction and notification of threats exceeding established risk thresholds. [...]

35. To avoid miscommunication, IAWN should **develop a strategy using well-defined communication plans and protocols**, grounded in the science of risk communications and psychology. [...]

36. In order to inform the public about the risk of NEOs, IAWN should encourage the **development of an education plan** [...]

37. Continued research will be essential for the efficient functioning of IAWN. [...]



Functions proposed by Action Team on NEOs for the IAWN (A/AC.105/C.1/1029)

Work to be done (in the coming years)

38. IAWN should emphasize the value of finding hazardous NEOs as soon as possible in order to obtain precision tracking data, thus **avoiding the considerable costs of unnecessary NEO threat mitigation missions**. This strategy requires upgraded NEO search and tracking capabilities:

(a) Rapid enhancements to current detection and tracking systems are a wise investment. [...]

(b) Priority NEO research should include an analysis of the value of spacebased detection and tracking [...]

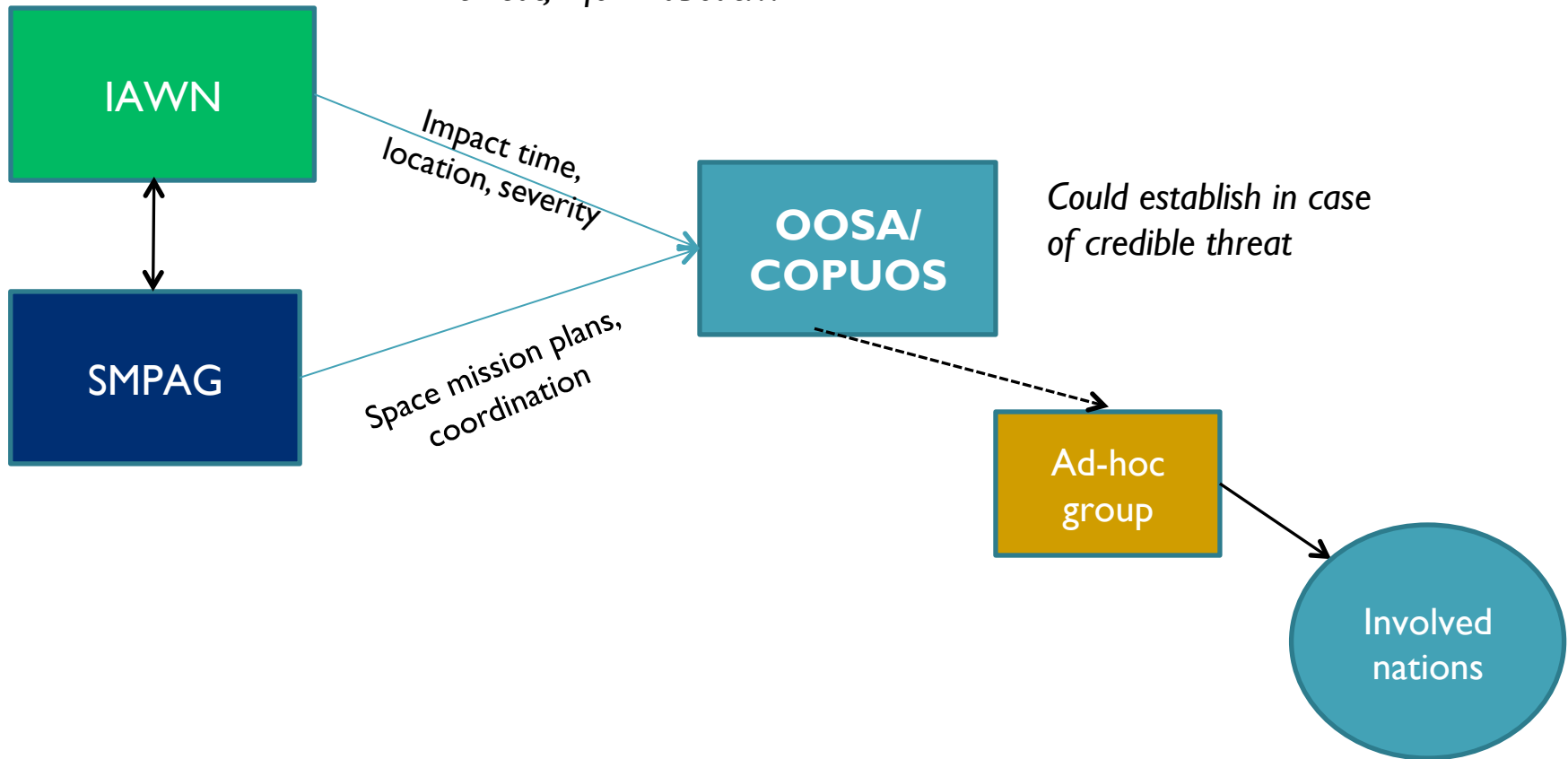
Work to be done (ASAP)

39. A steering group, composed of IAWN members, should be created to propose and assist the long-term development of the IAWN function



Still to be further determined

In cases of credible threat, inform about...





Thank you

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