

Recommendations of the Action Team on NEOs for an International Response to the Near-Earth Object Impact Threat

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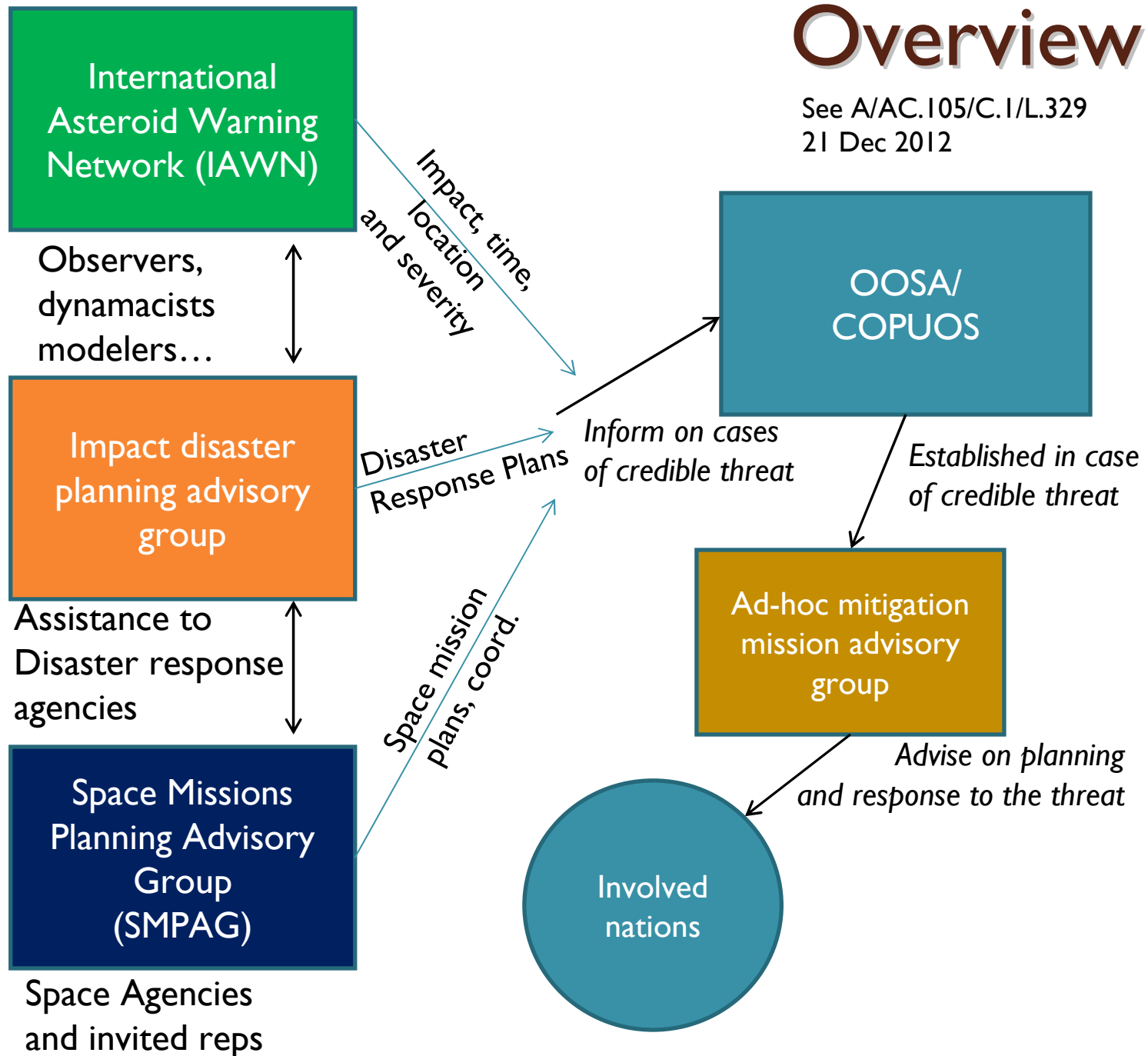
Introduction

- Many experts and assets already exist
 - For Detection, Tracking and Characterization:
 - Minor Planet Center, NASA, ESA and other telescopic surveys, follow-up observatories, optical and radar observations for characterization, space missions, impact effects modeling...
see T. Spahr's MPC/IAWN presentation
 - For Deflection mission options:
 - Technology studies (space agencies; NEOShield...)
see L. Drube's NEOShield presentation
- The proposal of the Action Team on NEOs for an impact threat response is based on utilizing what already exists as much as possible
- Other nations and entities with assets encouraged to join with these efforts

Overview

See A/AC.105/C.1/L.329

21 Dec 2012





International Asteroid Warning Network (IAWN)

Observers,
dynamacists
modelers...

Impact, time,
location
and severity



Overview

See A/AC.105/C.1/L.329

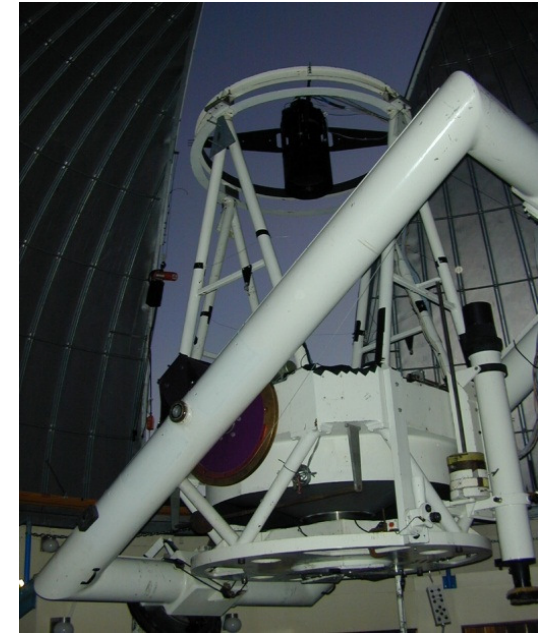
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International Asteroid Warning Network (IAWN)

Tasks

- Discover, track and observe NEOs, coordinated internationally
- Find them as early as possible**
- Process the observations, provide orbit predictions and any potential impact warnings
- Prepare public communications
- In case of credible impact threat:
 - Ensure that more information on object is gathered expeditiously
 - Inform COPUOS,

Predicting impact probabilities:
JPL NEO Program,
NEODyS, Uni Pisa



Survey telescope,
Catalina Sky Survey
Arizona

Sponsored by

Near Earth Objects - Dynamic Site

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RISK PAGE > RISK LIST

Intro

Risk list

Past impactors

References

Notes

[Last updated: 2013-02-13 10:52:54 UTC](#)

There are currently **363 NEAs** in the NEODyS risk list. Please, use the links above the table to display all or part of the list. The list can be sorted by clicking on the table headers.

[\[All\]](#)
[\[Special\]](#)
[\[Observable\]](#)
[\[Possible recovery\]](#)
[\[Lost\]](#)
[\[Small\]](#)

Designation	H	P _{max}	A	T _{max}	Status	Comp. start	Comp. end	Notes
(101955) 1999RQ36	20.8	-1.52	n/a		Special			Risk estimated with a mass from physical observations
2007VK124	22.0	-1.61	1		Possible recovery	2014-03-24	2014-05-13	Big telescopes needed
2009FD	22.1	-1.90	n/a		Possible recovery	2014-02-14	2014-04-09	
2013CT62	18.2	-2.08	0		Observable			
2013BP73	20.2	-2.65	0		Possible recovery	2017-09-23	2017-09-28	Possible accidental recovery
2008CK70	25.2	-3.07	0		Possible	2022-07-20	2022-07-20	Big telescopes needed

International Asteroid Warning Network (IAWN)

- **Members**

- Observers, astrodynamics experts, object characterization modelers
- Assistance by public communications experts

- **Organization**

- Network of existing assets, experts
- Steering group as focus point
- Yearly summary report to COPUOS



Survey telescope,
Optical Ground Station,
Tenerife

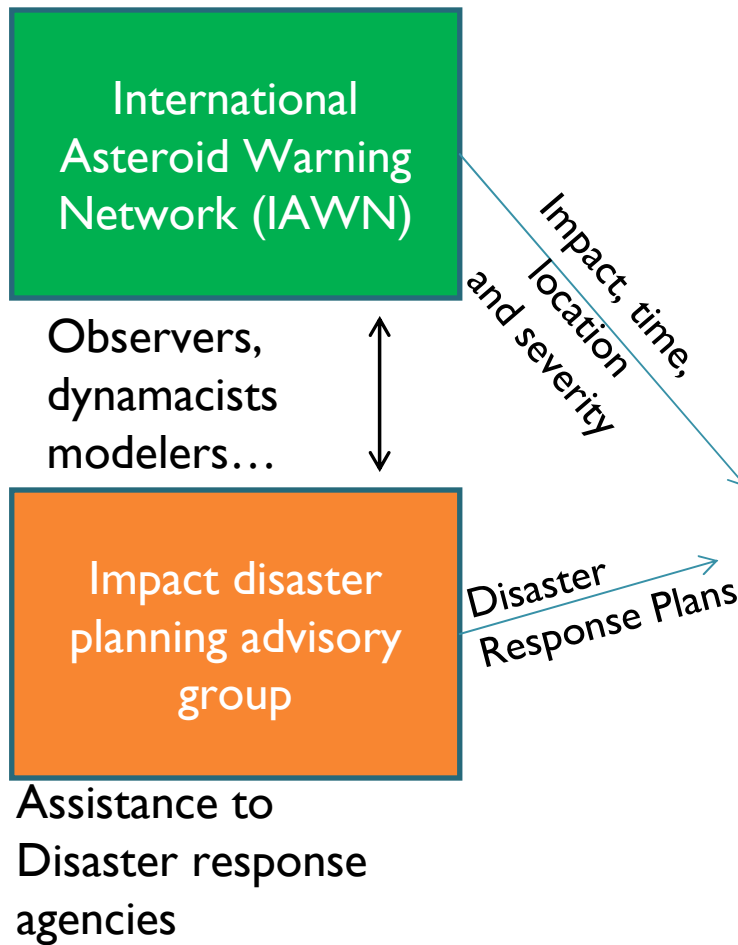
Study of Shape, Size, Motion and mass of
near-Earth object 66391 (1999 KW4)



Overview

See A/AC.105/C.1/L.329

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Impact Disaster Planning Advisory Group

Tasks

- Review lessons learned from other large-scale natural disasters
- Prepare coordinated response plans and exercises to address both predicted and unpredicted impact disasters
- Recommend and promote research related to the topic
- Develop representative timelines and procedures for evacuations



Carancas – a 1-m impactor creates a 14-m sized crater in Peru, 2007

Siberia – a ~40-m object explodes in the air and flattens 2000 km² of forest, 1908

Impact Disaster Planning Advisory Group

- Members
 - Representatives to existing national and international disaster response agencies
- Organization
 - Initiated by IAWN
 - Coordinated with UN-SPIDER, UN-ISDR, OCHA, other relevant international and regional entities

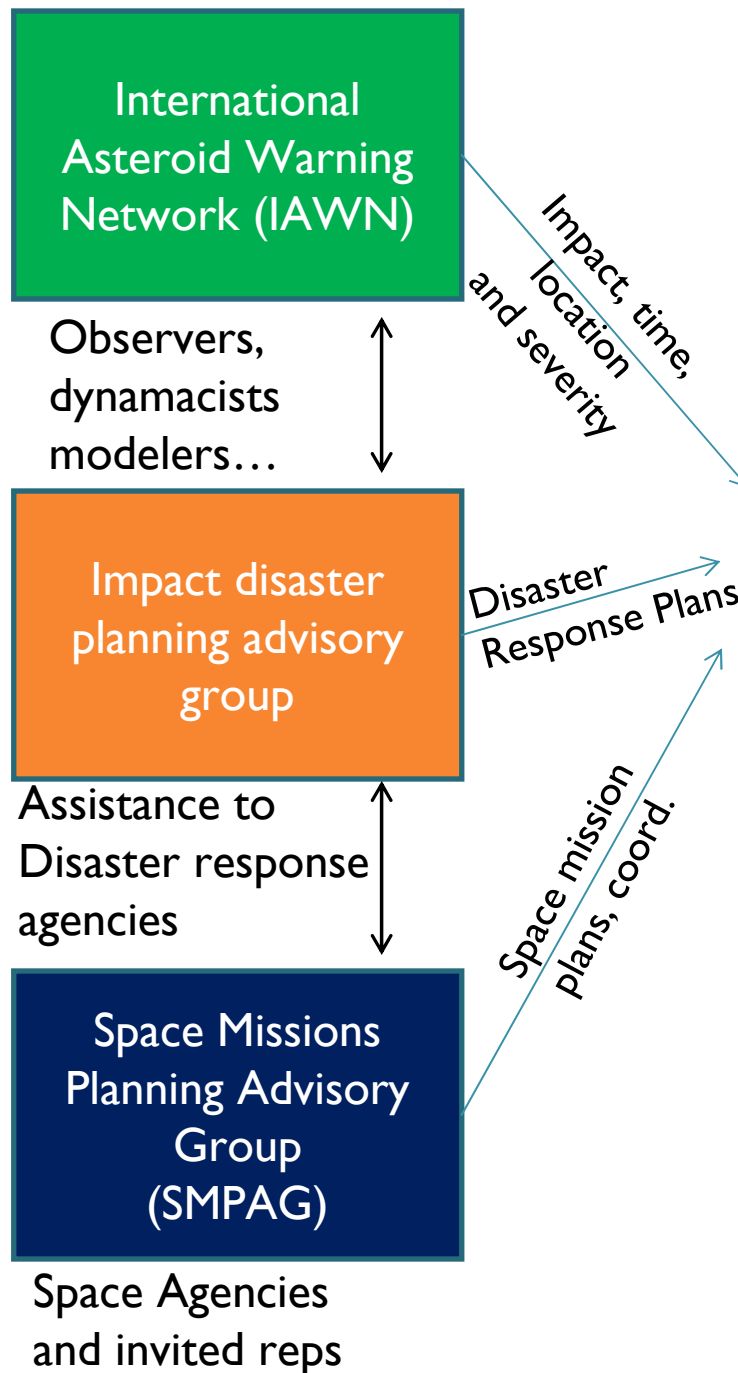


Tsunami effects in
2004

Overview

See A/AC.105/C.1/L.329

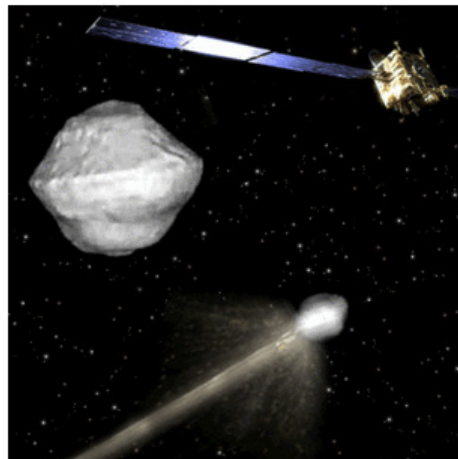
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Space Mission Planning Advisory Group (SMPAG)

- Tasks
 - Recommend and promote mitigation mission-related research and studies on an international and cooperative level
 - Develop and adopt a set of reference missions – both on technical detail and operational level
 - Develop applicable decision criteria/thresholds and timelines

ASTEROID IMPACT & DEFLECTION ASSESSMENT (AIDA) STUDY

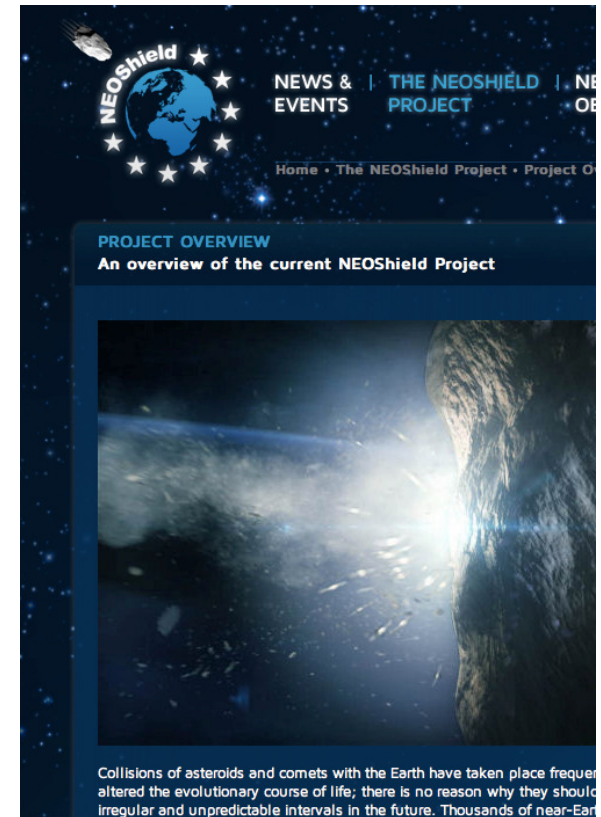


AIDA mission concept



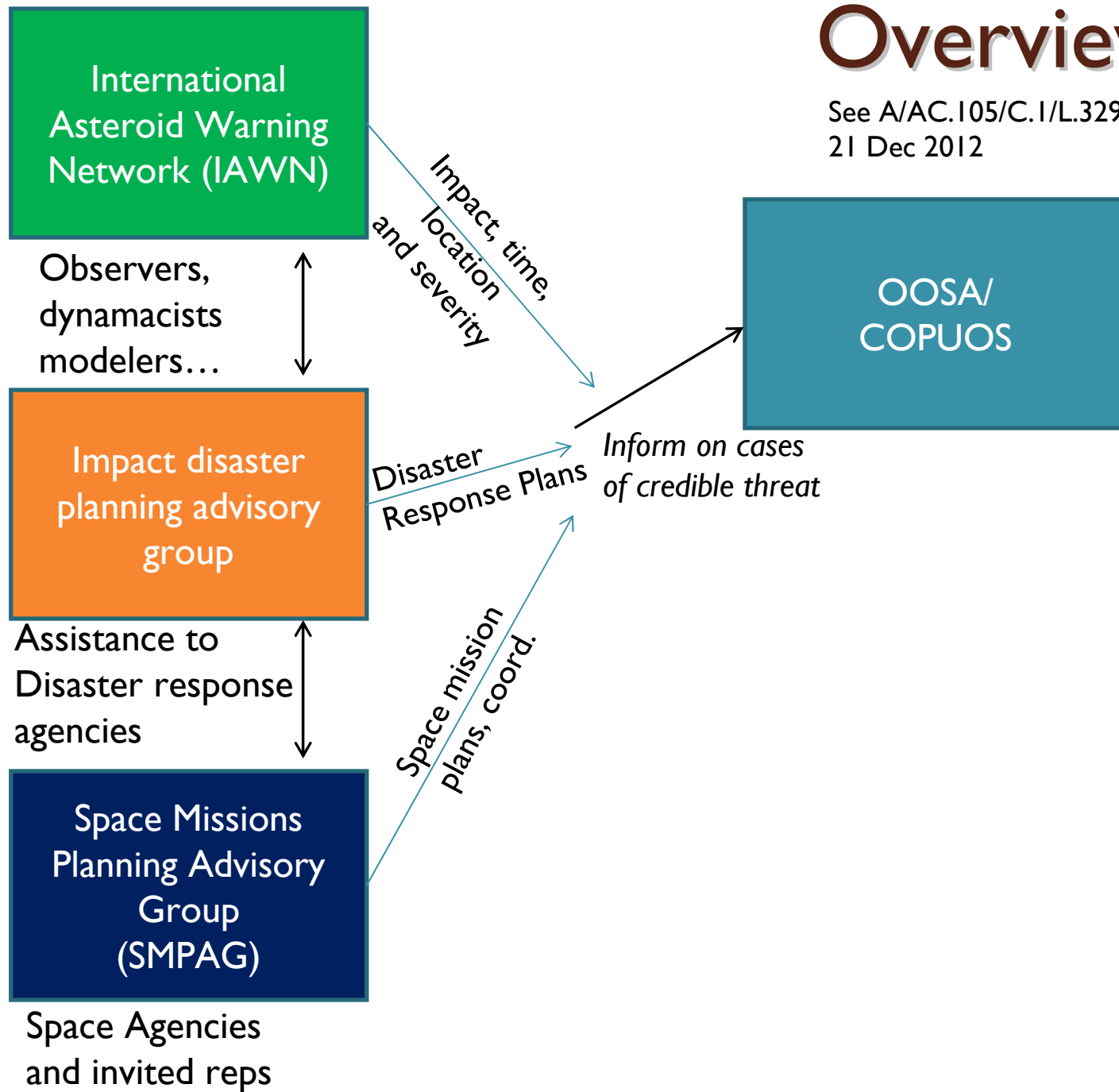
Space Mission Planning Advisory Group (SMPAG)

- Members
 - Voluntary representatives of space-faring nations
 - Technical experts and other relevant entities as needed
- Organization
 - Meet once per year linked to an international conference
 - Similar in operation to the Inter-Agency Space Debris Coordination Committee
 - Yearly summary report to COPUOS



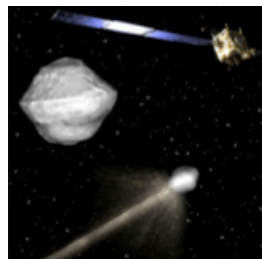
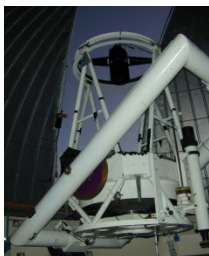
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Response to Credible Impact Threat

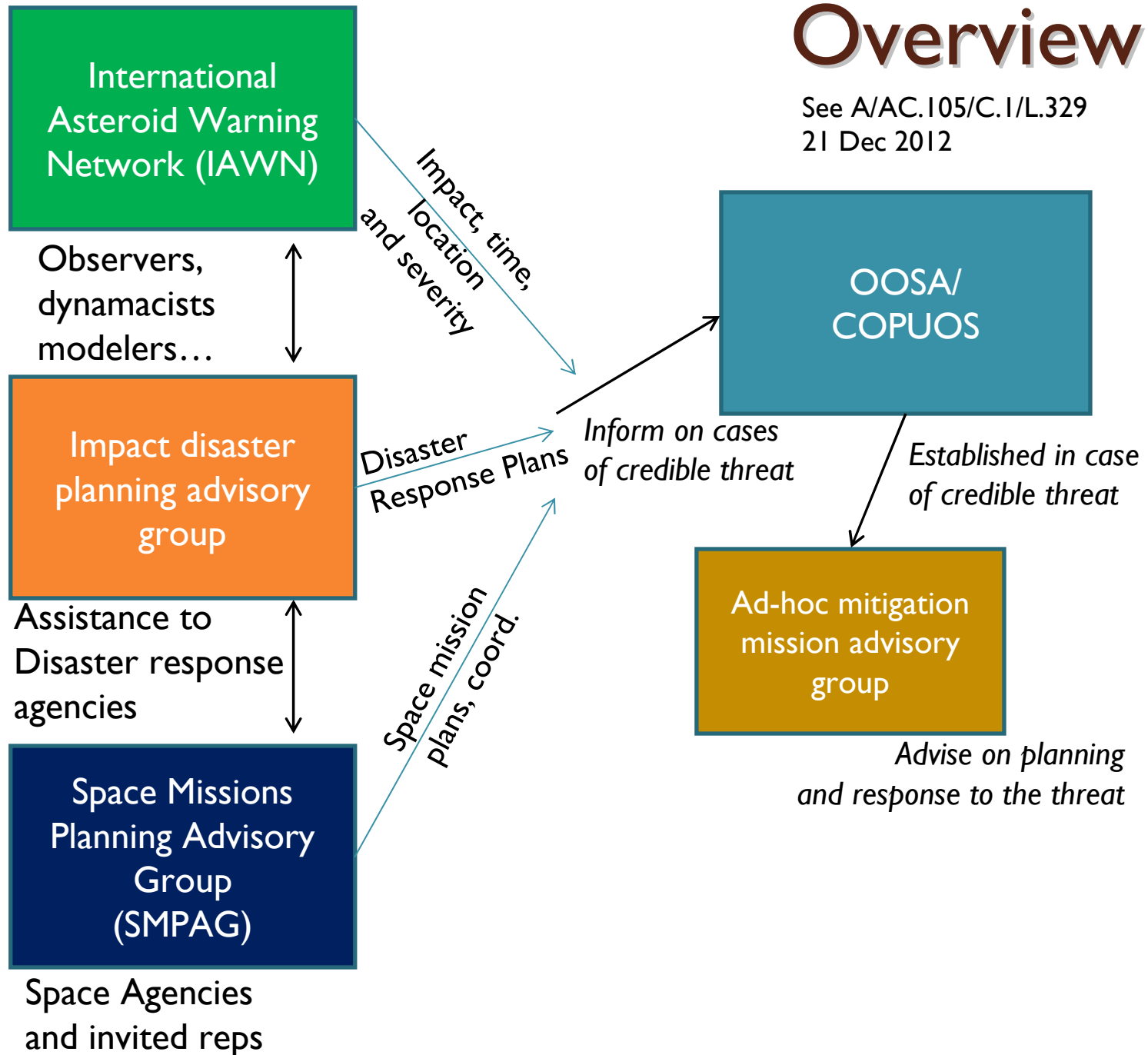
- IAWN provides all available information and updates to COPUOS by way of the UN Office of Outer Space Affairs
- Impact disaster planning advisory group works with disaster response groups in nations that would be affected
- SMPAG coordinates space mission planning among space-capable nations
- COPUOS may choose to appoint ad hoc mitigation advisory group to work with response teams



Overview

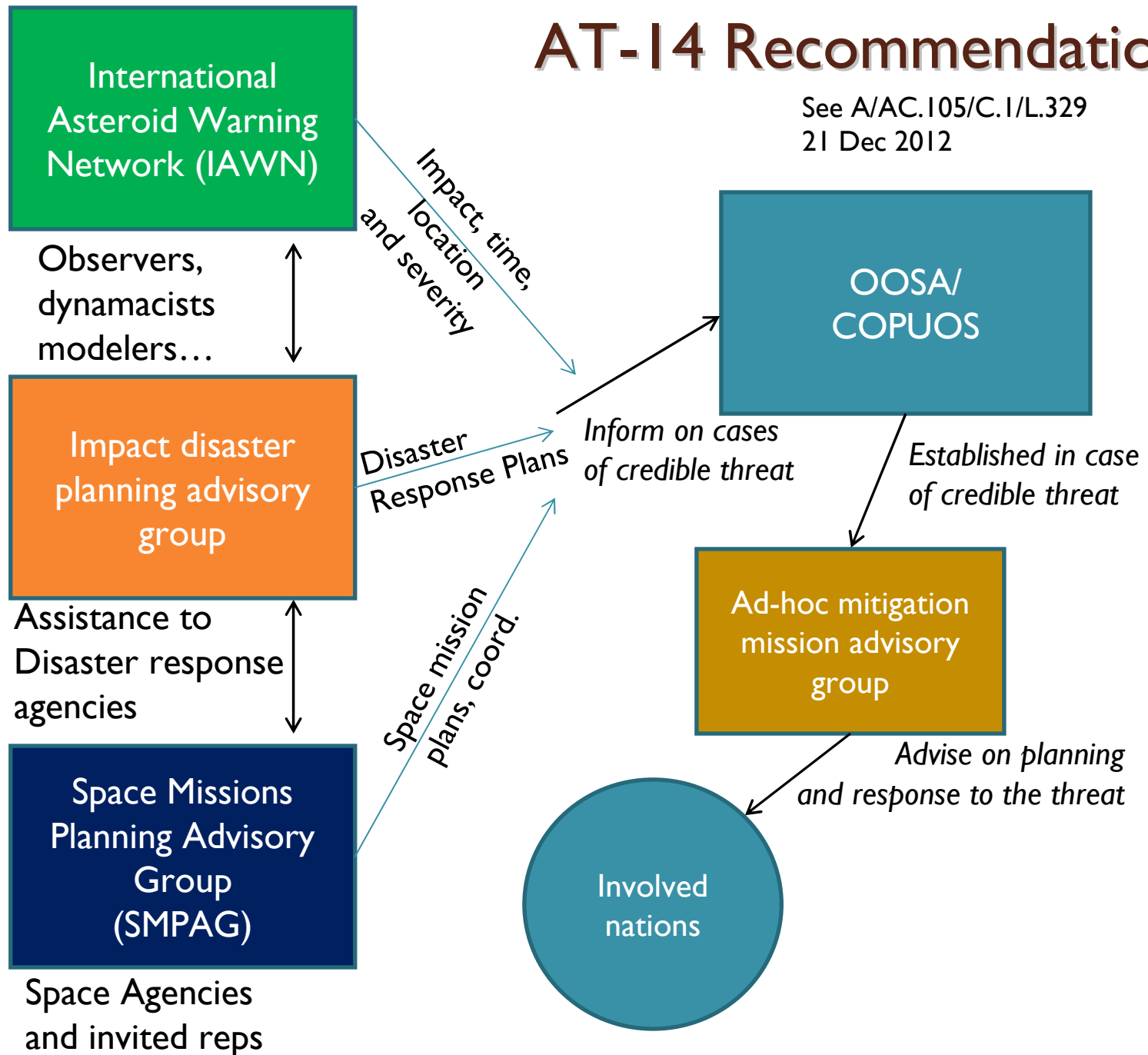
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AT-14 Recommendation

See A/AC.105/C.1/L.329
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Future Work

- Finalize establishing IAWN steering group
- Set up Impact disaster planning and advisory group functionality
- Establish SMPAG
 - Draft of Terms of Reference (ToR) is available
 - Meeting to finalize ToR at June 2013 COPUOS
- Action Team #14 can support establishment of these groups