

**Space Mission Planning Advisory Group
(SMPAG)
Status Report**

Gerhard Drolshagen, Detlef Koschny

06 February 2020

SMPAG formation and meetings

- **The SMPAG was officially established in February 2014**
- **SMPAG Terms of References were finalized in June 2014**
- **SMPAG has established a work plan in November 2015 which is a living document**
- **The most recent SMPAG meetings:**
 - **Feb 2019 at STSC in Vienna**
 - **Sep 2019 at ESO in Garching, Germany**
- **This is the 14th SMPAG meeting**

SMPAG Membership

(Status 06 Feb 2020)

Official members with nominated delegations:

AEM (Mexico)	ISA (Israel)
ASI (Italy)	JAXA (Japan)
Belspo (Belgium)	KASI (South Korea)
CNES (France)	NASA (USA)
CNSA (China)	
Czech Republic	ROSA (Romania)
DLR (Germany)	ROSCOSMOS (Russian Federation)
ESA	SSAU (Ukraine)
FFG (Austria)	SUPARCO (Pakistan)
IAWN (ex officio)	UKSA (UK)

Permanent Observers: ASE, IAA, IAU, UNOOSA, ESO, COSPAR

SMPAG work plan

A list of 11 activities has been identified by SMPAG:

- **5.1: Criteria and thresholds for impact threat response actions. (Lead: NASA)**
- **5.2: Mitigation Mission Types and technologies to be considered (Lead: UKSA)**
- **5.3: Mapping of threat scenarios to mission types (Lead: ESA)**
- **5.4: Reference missions for different NEO threat scenarios (Lead: ASI)**
- **5.5: A plan for SMPAG action in case of a credible threat (Lead: NASA/IAA)**

SMPAG work plan, cont.

- **5.6: Communication guidelines in case of a credible threat (Lead: NASA)**
- **5.7: Roadmap for future work on planetary defense (Lead: DLR)**
- **5.8: Consequences, including failure, of NEO mitigation space missions (Lead: ESA)**
- **5.9: Criteria for deflection targeting (Lead: ROSA)**
- **5.10: Study the nuclear device option (all)**
- **5.11: Toolbox for a characterization payload (Lead: CNES)**

All work plan items are ongoing

SMPAG achievements and status

- **Recommendations were issued to:**
 - **Perform a demonstration of an asteroid deflection mission (DART/HERA now ongoing)**
 - **Perform a rapidly deployable flyby or rendezvous mission**
- **A brochure was produced**
- **Several presentations and publications on IAWN/SMPAG were made**
- **Intermediate reports and results have been delivered for several work plan items**

SMPAG achievements and status, cont.

Threshold criteria recommendations of IAWN and SMPAG

- **Issue warnings if object**
 - has an impact probability $> 1\%$
 - is $>$ ca 10 m in diameter

- **Prepare for civil protection measures if object**
 - has an impact probability $> 10\%$ within 20 years
 - is $>$ ca 20 m in diameter

- **Start to assess space mission options if object**
 - has an impact probability $> 1\%$ within 50 years
 - is $>$ ca 50 m in diameter

SMPAG achievements and status, cont.

- **An ad-hoc working group on legal issues (SMPAG Legal WG) was officially established during the 7th SMPAG meeting in Oct 2016**
- **The ToR of the Legal WG were approved by SMPAG at the 9th meeting in Oct 2017**
- **The Legal WG made a major effort to review and assess existing space laws relevant for planetary defence**
- **A draft Report of the Legal WG entitled ‘**Planetary Defence, Legal Overview and Assessment**’ has been produced and delivered to SMPAG**