IMEMG MURAT
EUROPEAN MANUFACTURERS GROUP

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Session chair
Serge Bordachar

SESSION 2

REGULATION & LEGAL FRAMEWORK

IM Policies & Implementations

Overarching Framework

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NATO Working Group on IM and Hazard Classification

Phil Cheese
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18 May 2018

Introduction

- AC/326 Main Group (MG) has approved the creation of a Working Group (WG) to refresh NATO policy and guidance on Insensitive Munitions (IM), Hazard Classification (HC) and Explosives Risk Assessment (RA).
- Brent Knoblett and Phil Cheese have been appointed to lead the WG, with substantial support provided by MSIAC
- Five meetings have been held to define scope, develop proposals and test our thinking.
- Here I present current thinking on document structure and work programme, and seek engagement and support from the wider community

(Some) Motivations

- Nations sometimes classify/assess munitions differently (HC/IM).
- Time and money is wasted through duplication of effort.
- IM signature and HC are inadequate for risk assessment
- UN manual of tests and criteria development on UN TS 6 are driven by civil side and are seen as diverging from military needs.
- IM & HC are not the same!

HC vs. IM

	Hazard Classification	Insensitive Munitions
Authority	United Nations	NATO AC326
Process	UN Test Series 6 & 7	AOP-39
Intent	Manage the hazards presented by individual explosive articles and substances in transportation	Develop munitions that are as insensitive to accidental and hostile stimuli as reasonably practicable
Metric	**Consequence**s The maximum possible response from a group of munitions in terms of the overall hazard - fragmentation, blast, heat	**Rate of reaction of energetic material in an individual munition** Detonation, explosion, deflagration, burning
Comparing	All Munitions across the inventory	Individual munitions – old vs. new
Impact	Local - logisticians, first responders	Inventory wide - Acquisition organisations

Risk Assessment

- For each specific munition/packaging combination, the IM signature and HD classification are snapshots that often tell us very little about the real risk.

- To assess the possible reaction of munitions throughout the lifecycle, the following information is needed:

  - The nature, magnitude and frequency of the threats the munition may be exposed to;
  - The variations in response as the magnitude of the stimuli varies;
  - Any inherent variability of explosive response at each stimulus level;
  - The consequences of any possible explosive event.

WG intent

- Clarify the relationship between IM, HC, and risk.
- Exploit the IM 'Whole Body of Evidence' approach for HC and *consequence/frequency analysis*
  - Improve consistency, coherency and interoperability
  - Take the opportunity to address other issues affecting a standardized approach to hazard classification and IM assessment
  - *Improve inputs to risk assessment*
    - Providing granularity in data to inform designers and users
    - Understanding of variability and uncertainty
- Minimize bureaucracy by limiting scope to munitions that will benefit from IM policy and/or enhanced HC assessment process

Aim

To standardize, harmonize and streamline IM and HC policy on requirements and assessment and enshrine this in UN international policy (legislated):

- Reaffirming and clarifying the purposes of the IM and HC policy;
- Building on IM and HC methodology to improve munition *consequence/frequency analysis* for unplanned stimuli;
- Developing a single document to deliver these:

Policy and process for Hazard Classification, Insensitive Munitions and consequence/frequency analysis:
Safety of munitions exposed to extreme but credible accident environments or enemy action

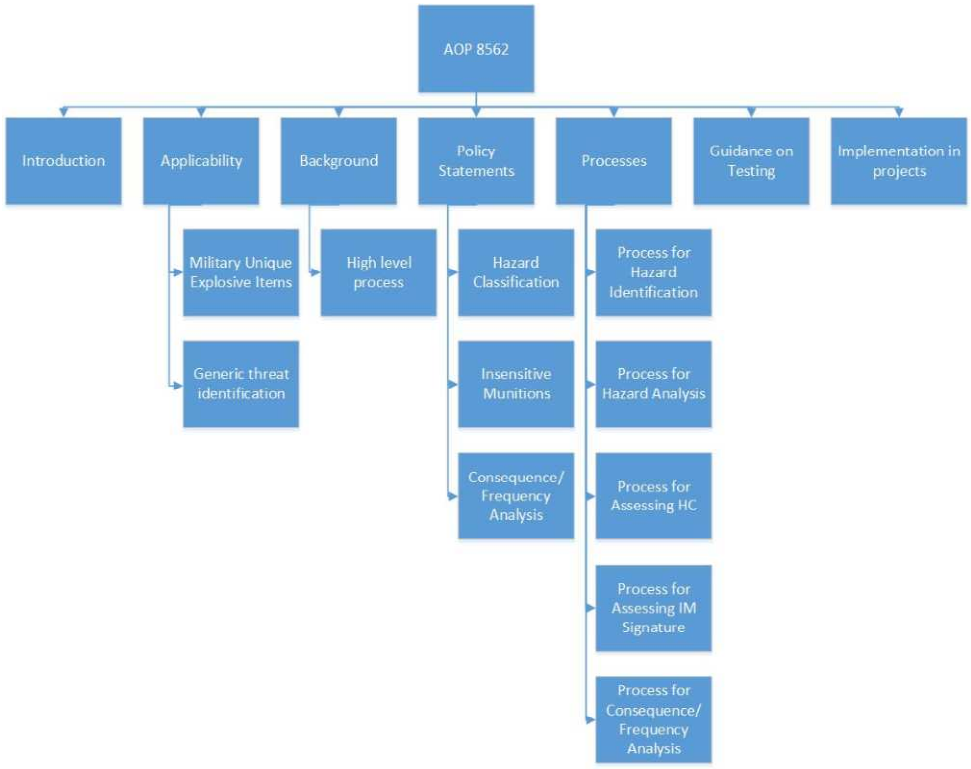
Existing documents

Policy		Guidance		Area
STANAG 4439	POLICY FOR INTRODUCTION AND ASSESSMENT OF INSENSITIVE MUNITIONS	AOP-39	GUIDANCE ON THE ASSESSMENT AND DEVELOPMENT OF INSENSITIVE MUNITIONS	IM
UN Hazard Classification System		Transport of Dangerous Goods - Manual of Tests and Criteria & Model Regulations Part 2 Classification		HC (Transport)
STANAG 4123	Determination of the Classification of Military Ammunition and Explosives	AASTP-3	MANUAL OF NATO SAFETY PRINCIPLES FOR THE HAZARD CLASSIFICATION OF MILITARY AMMUNITION AND EXPLOSIVES	HC (Transport & Storage)
STANAG 4441	ALLIED MULTI-MODAL TRANSPORTATION OF DANGEROUS GOODS DIRECTIVE	AASTP-2	Manual of NATO Safety Principles for the Transport of Military Ammunition and Explosives	HC (Transport)
STANAG 4440	NATO GUIDELINES FOR THE STORAGE OF MILITARY AMMUNITION AND EXPLOSIVES	AASTP-1	NATO GUIDELINES FOR THE STORAGE OF MILITARY AMMUNITION AND EXPLOSIVES	HC (Storage)
STANAG 4442	Application of Risk Analysis to the Storage and Transportation of Military Ammunition and Explosives	AASTP-4	MANUAL ON EXPLOSIVES SAFETY RISK ANALYSIS	RA (Storage & Transport)
STANAG 4297	Guidance on the Assessment of the Safety and Suitability for Service of Non-Nuclear Munitions for NATO Armed Forces	AOP-15	Guidance on the Assessment of the Safety and Suitability for Service of Non-Nuclear Munitions for NATO Armed Forces	RA

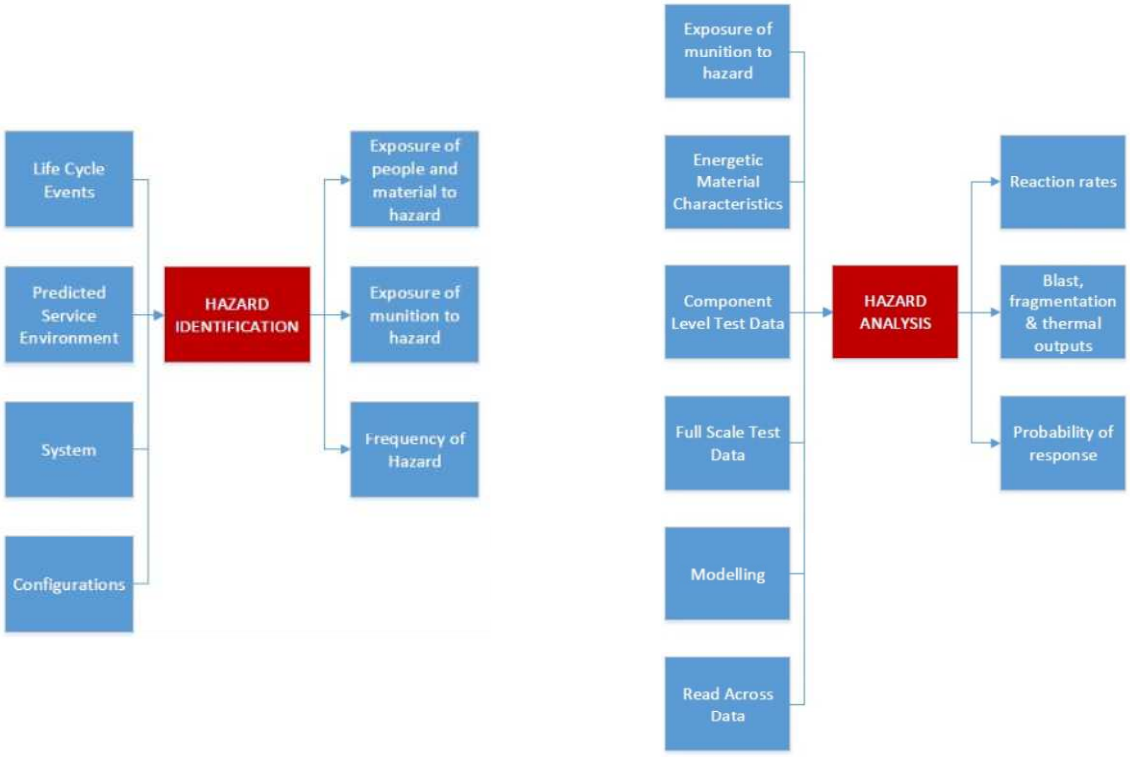
Planned activities

- Develop a single document including
  - HC, IM and *consequence/frequency* policy & requirements
  - Integrated end-to-end process
  - Guidance on testing and assessment
- Develop a methodology for quantitative risk assessment for situation specific risk across the munition lifecycle
- Undertake a review of evidence to support assessments
  - Identify and address harmonization issues (including tests)
  - Develop protocol for HC 1.1, 1.2, 1.3, 1.4 and 1.6
  - Develop Whole Body of Evidence (WBOE)
- Draft proposals for UN manual of tests and criteria (UN TS7).

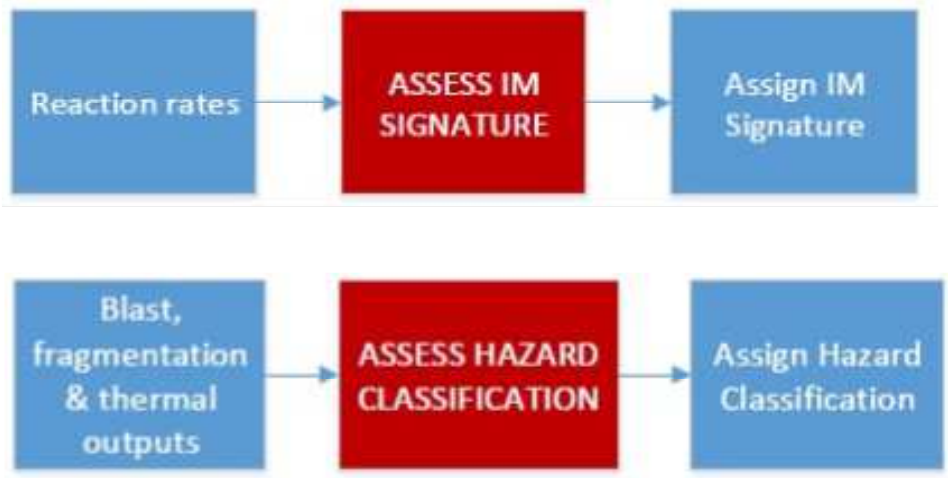
Proposed document structure



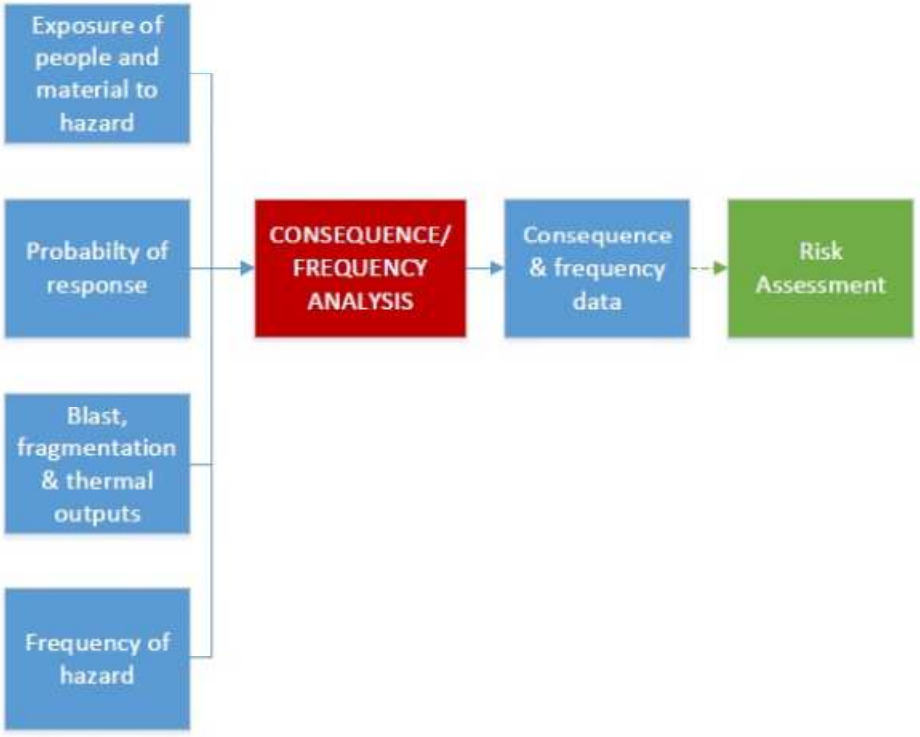
End to end process (1)



End to end process (2)



End to end process (3)



“Military Unique Explosive Items”

PROPOSAL: MILITARY UNIQUE EXPLOSIVE ITEMS are those that:

- Fall within Class 1 Explosives as defined by the UN and;
- Are non-nuclear munitions introduced into service by nations;

And to which one or both of the following applies:

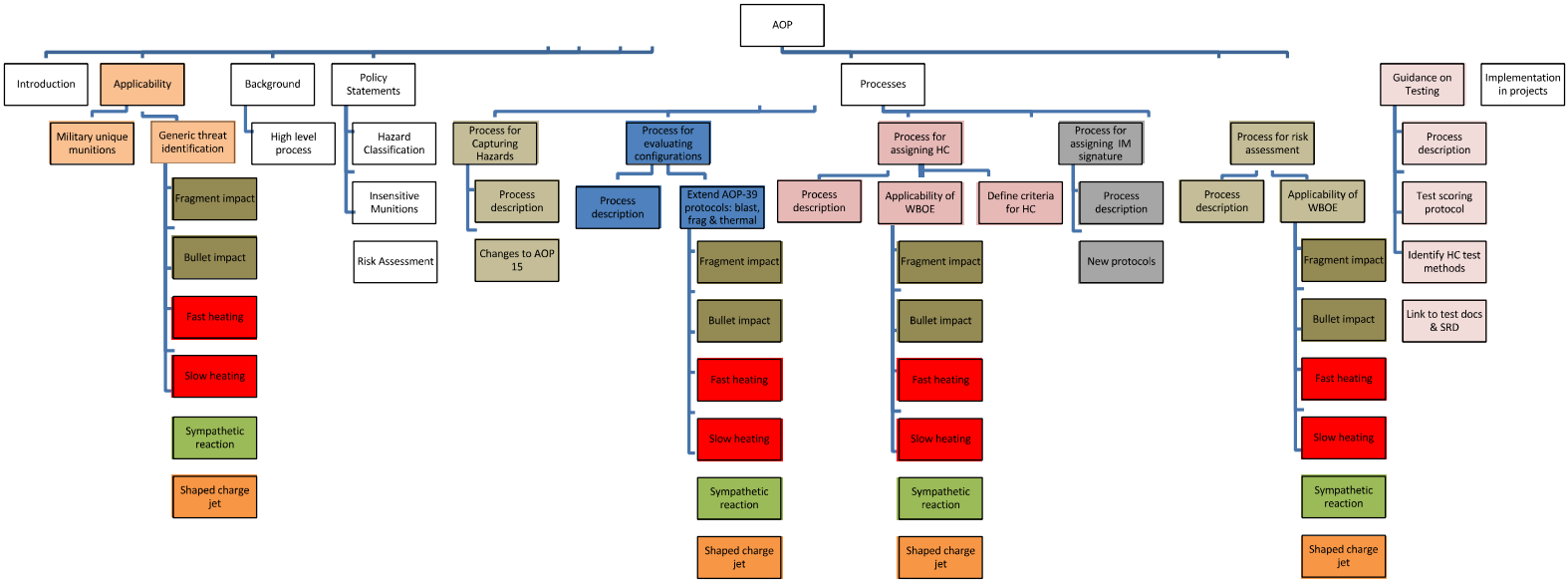
- **Making design changes to reduce the hazard presented by the item will not incur a disproportionate cost;**
- **Applying the whole body of evidence approach provides increased confidence in IM, HC and Risk assessment.**

Items which are not Military Unique Explosive Items are not subject further application of to the IM Policy.

Military Unique Explosive Items may be assigned to Hazard Divisions using enhanced WBOE approach

National Authority(s) for IM Policy and Hazard Classification shall determine if an item is Military Unique.

Work Breakdown Structure



Timeline

- Five management group meetings held so far to define scope, develop proposals on document structure, and prepare programme of work.

- 2017 to 2018 – WG and technical groups address aims
- Workshop in 2018 to consolidate and further efforts
- 2018 - initiate approval/ratification of Allied Publication(s) incorporating WG's output
- Dec 2018 - solicit UN TDG/GHS Committee agreement to include TS 7 revision within their 2019-20 biennium POW
- 2019-2020 - get UN orange book TS 7 changes accepted by EWG/TDG/GHS

Summary

- An opportunity to improve NATO approach to IM, HC and Risk has been identified

- The NATO WG has developed outline proposals for a simplified document structure, new improved content, and the work programme needed to deliver these.

- **We are now seeking comment, engagement and support from the wider IM and HC community for what is an ambitious and complex undertaking: to standardize, harmonize and streamline the NATO approaches to IM, HC and Risk Assessment.**