

- SYS-L/A/M
- TIM DE ZITTER

19/11/2024

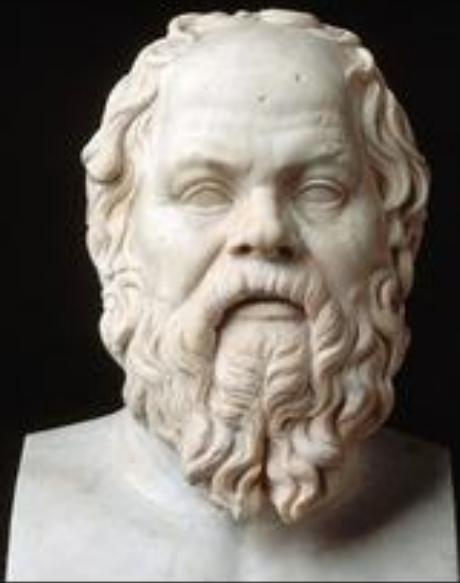


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What is a Loitering Munition?

A proposition for a NATO definition by the LCG DSS - LCMR&LM SG
Land Combat Missiles, Rockets and Loitering munitions Sub Group



The beginning of wisdom is a definition of terms.

~ Socrates

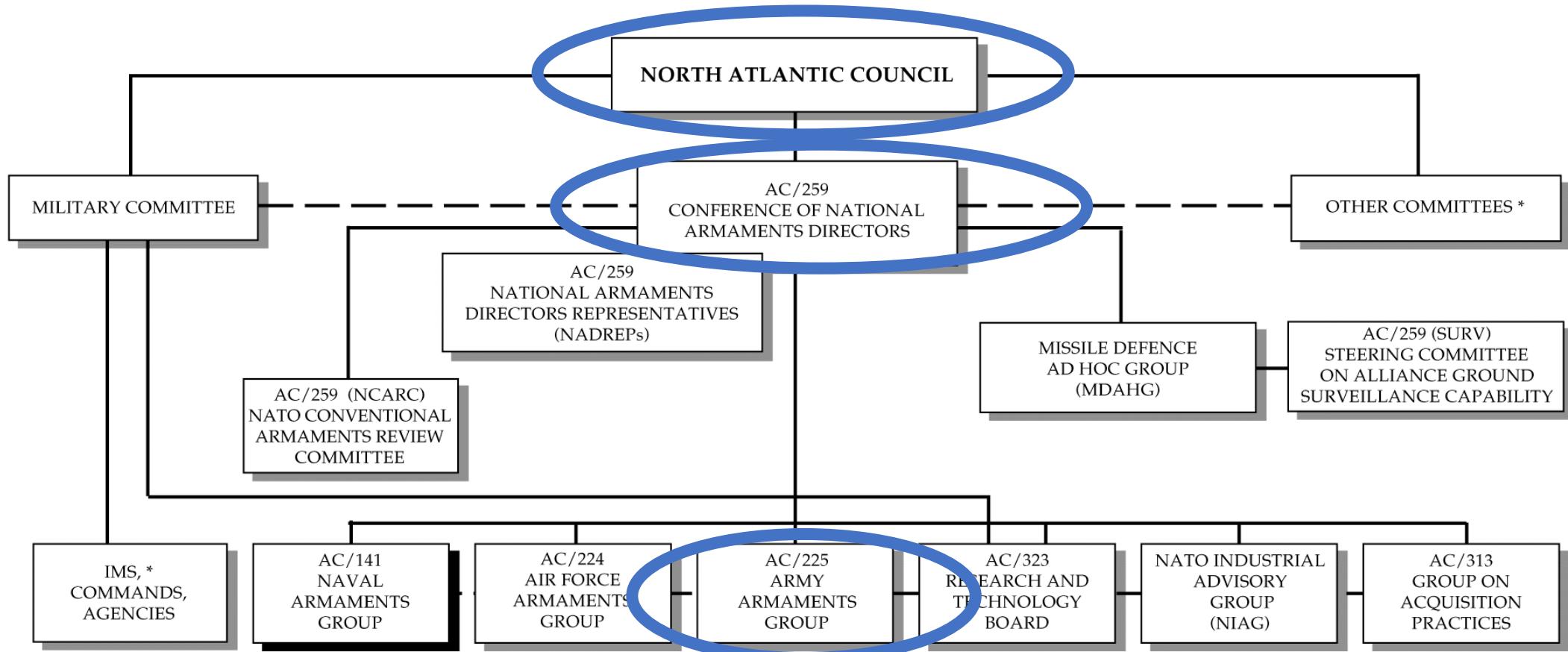
AZ QUOTES



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■ The group

CNAD Organization and its relationships with other NATO Bodies



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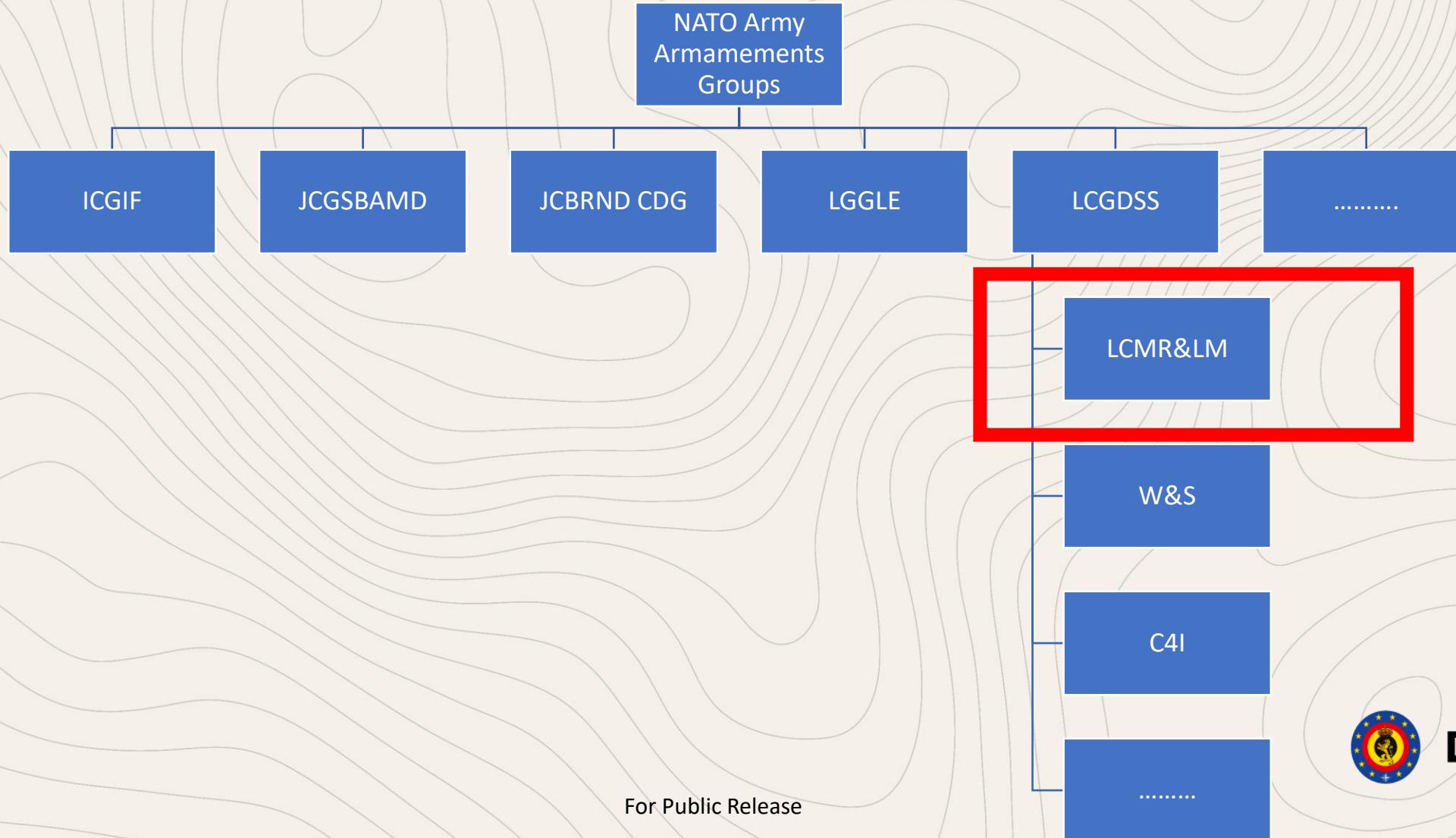
- DIRECTION AND CONTROL
- — LIAISON

* SOME BODIES SUCH AS THE DEFENCE REVIEW COMMITTEE REPORT TO THE DEFENCE PLANNING COMMITTEE WHICH IS COMPOSED OF REPRESENTATIVES OF THE COUNTRIES WHICH TAKE PART IN NATO'S INTEGRATED DEFENCE.

** INCLUDING MAS



Where is this group situated?





■ Scope of the LCGDSS LCMR&LM

- Three types of systems/weapons
 - Shoulder launched weapons
 - Guided anti-tank and/or multipurpose weapons
 - Loitering munitions **limited to Man Portable and Man Transportable**
- **Joint** approach





The ToE's

Terminology	Coordination with NAAG ICGIF
Architecture & Standardisation	Coordination with AC326
Common Requirements	Dormant awaiting initial output of ToE Terminology and Architecture & Standardisation
Doctrine & Concept of Employment / Operational Use	Ongoing
Legal, "Ethical" and Regulatory Frameworks	Ongoing
Joint Concept - Test & Evaluation Centers Loitering Munition	Ongoing





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■ Definition



Loitering Munition -Definition

From the actual agreed upon NATO definition

A munition able to remain in position over a target area following an aborted target and to be reassigned a target whilst in flight.

To:

An Aerial Loitering Munition is a munition following an operator influenced flight path (which can include to remain over a certain position) and is capable of non/beyond line-of-sight target verification and precision attack, has the ability to abandon an attack, can be re-assigned and is destroyed by functioning of its payload.



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Loitering Munition - Definition

An **Aerial Loitering Munition** is a **munition** following an operator influenced **flight path** (which can include to remain over a certain position) and is capable of non/beyond line-of-sight target verification and **precision attack**, has the ability to abandon an attack, can be re-assigned and is destroyed by functioning of its payload.

- **Munition:** (NSO)
A complete device charged with explosives, propellants, pyrotechnics, initiating composition or chemical, biological, radiological, or nuclear material, for use in military operations, including demolitions.
- **Flight path:** (NSO)
The line connecting the successive positions occupied, or to be occupied, by an aircraft, missile or space vehicle as it moves through air or space.
- **Precision Attack** (NSO)
An attack that provides the ability to destroy or neutralize targets with a high degree of lethality, discrimination and accuracy.



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■ Loitering Munition - Definition

A **Ground Loitering Munition** is a self-propelled **munition** following an operator influenced path (including idle periods) and is capable of non/beyond line-of-sight target verification and **precision attack**, has the ability to abandon an attack, can be re-assigned and is destroyed by functioning of its payload.

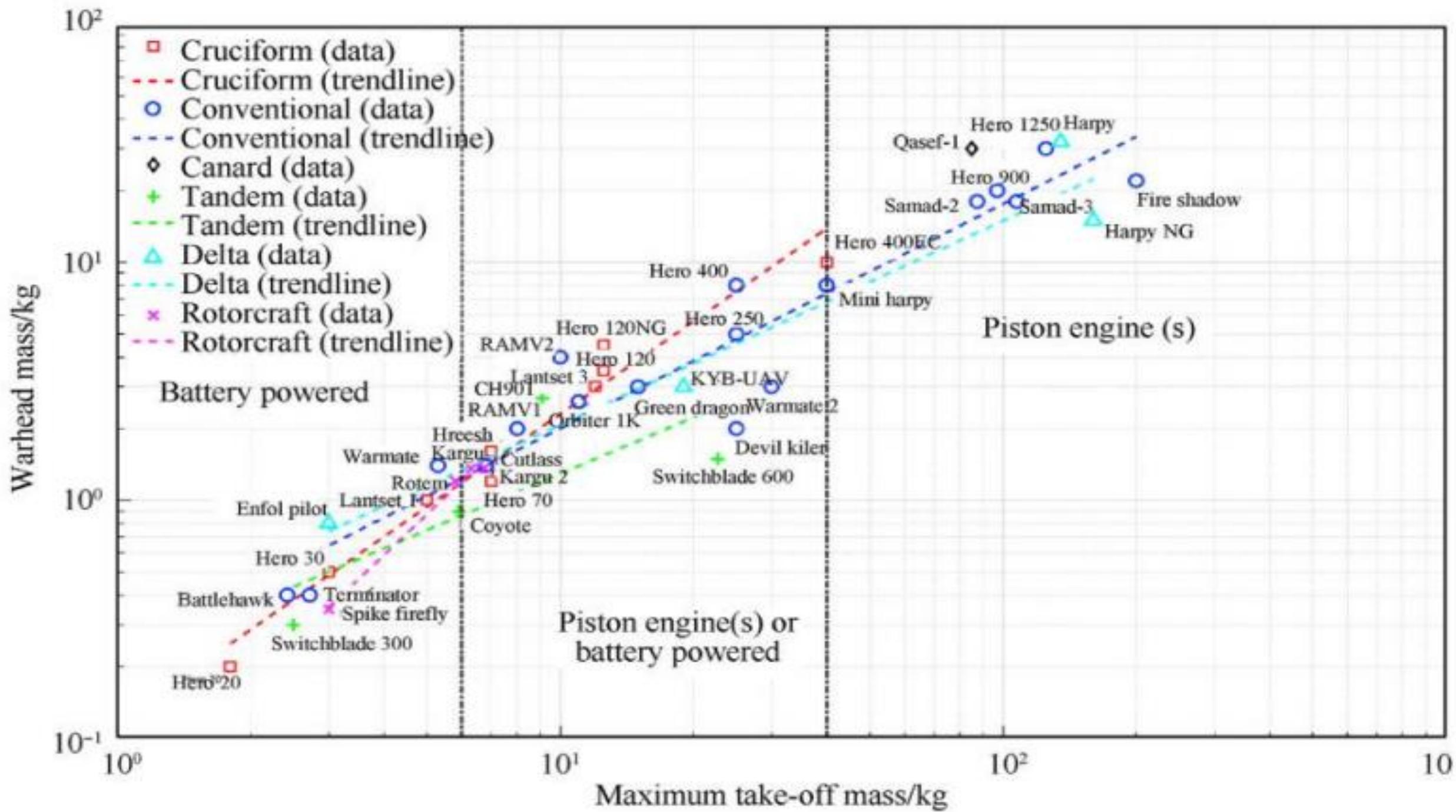


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■ Categorization



Categorization

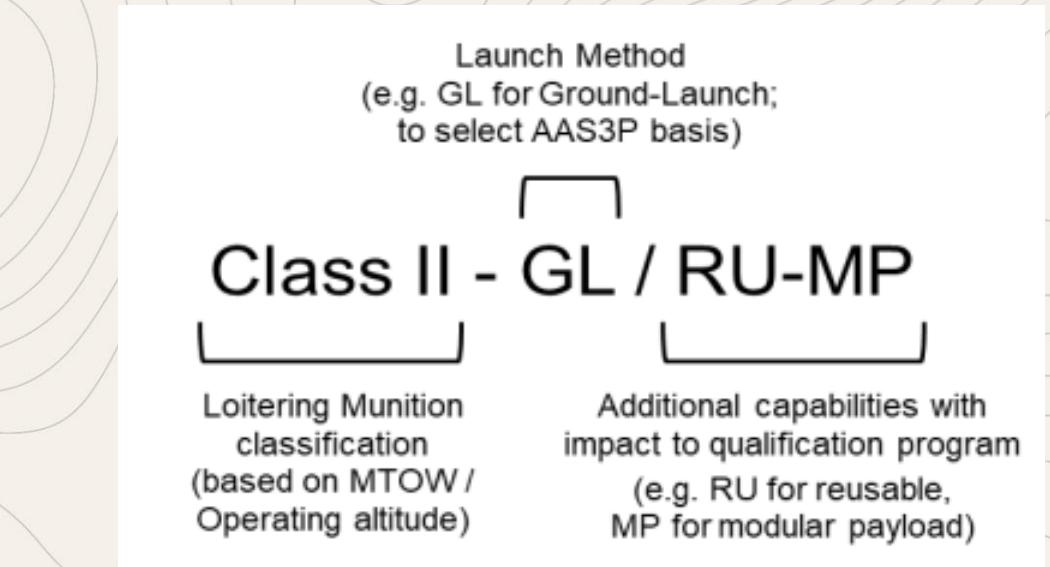
LM class	MTOM	Rec. max. op. alt.	Subcategory	Ref. UAS standard (adapted to LM)	Exemplary system
Class I Nano	< 4 kg	300 m AGL	Fixed-Wing	DoD UAS/Group 1 [21] STANAG 4670/I Micro [20] STANAG 4703/AEP-83 [35] EASA specific/cert. [22]	Aerovironment Switchblade 300 [11]
			Rotary-Wing		Raphael Spike Firefly [14]
Class I Micro	4 – 9 kg	300 m AGL	Fixed-Wing	DoD UAS/Group 1 [21] STANAG 4670/I Mini [20] STANAG 4703/AEP-83 [35] EASA specific/cert. [22]	WB Warmate [4]
			Rotary-Wing		IAI Rotem [24]
Class I Mini	9 – 15 kg	1100 m AGL	Fixed-Wing	DoD UAS/Group 2 [21] STANAG 4670/I Mini [20] STANAG 4703/AEP-83 [35] EASA specific/cert. [22]	IAI Green Dragon [12]
			Rotary-Wing		Diehl Libelle [5]
Class I Small	15 – 25 kg	1100 m AGL	Fixed-Wing	DoD UAS/Group 2 [21] STANAG 4670/I Small [20] STANAG 4703/AEP-83 [35] EASA specific/cert. [22]	UVision Hero 120 [3]
			Rotary-Wing		-
Class II	25 – 150 kg	5500 m MSL	Fixed-Wing	DoD UAS/Group 2 [21] STANAG 4670/I Mini [20] STANAG 4703/AEP-83 [35] EASA specific/cert. [22]	Elbit Skystriker [7]
			Rotary-Wing		-
Class III	150 – 600 kg	5500 m MSL	Fixed-Wing	DoD UAS/Group 3 [21] STANAG 4670/II [20] STANAG 4671 [34] EASA certified [22]	MBDA Fireshadow [6]
			Rotary-Wing		-

ToE on Terminology

Recommended Strategy

- Tag System to identify S3 relevant capabilities
- Tag catalogue to be enhanced in the future

Tag	Category	Description
ML	Launch	Man or hand launched system Apply AAS3P-10 (for soldier-mounted launch systems) or AAS3P-26 (for soldier-thrown/started systems; aft. promulgation)
GL	Launch	Ground, sea or underwater launched system (e.g., man-portable tube, or catapult launch); Apply AAS3P-11
VL	Launch	Vehicle launched system (ground/sea/underwater; e.g., vehicle tube launcher); Apply AAS3P-11
AL	Launch	Aircraft launched system (e.g., drop launch); Apply AAS3P-12
LC	Launch	Large-Caliber gun launched (>40 mm); Apply AAS3P-20
MC	Launch	Medium-Caliber gun launched (20...40 mm); Apply AAS3P-21 (after promulgated)
SC	Launch	Small-Caliber gun launched (<20 mm); Apply AAS3P-22
RT	Capability	Retrievable; Fuzing safety for transport required
RU	Capability	Directly or indirectly reusable; Implies RT cap.; Hazard and reliability measures required
MP	Capability	Modular interchangeable payloads with non-destructive characteristics (e.g., Warhead replacement by additional battery); High probability of UAS-certification necessity
SP	Capability	Safe Passage capability; Fuzing safety for overflying own forces required
WO	Capability	Wave-off capability; Disarming and Rearming required
AT	Capability	Participation in Air-Traffic; High probability of UAS-certification necessity
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Status of the ToE's

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■ PoCs