

ISADARCO Winter Course 2016, Andalo, Italy, 8-15 January 2016
**“Advanced and cyber weapons systems:
Technology and Arms control”**

**Autonomous weapons systems as WMD vectors
– a new threat and a potential for terrorism?**

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NATO Headquarter International Staff, January 2017

Agenda



- Antipasti
- Primo Piatto
- Secondo Piatto
- Dolci

Antipasti (1): New Risks and Technological Developments

- ❑ **Hybrid Warfare** is blurring the distinction between war and peace and complicates the Alliance decision making.
- ❑ **Increased access** of non-state actors to restricted and sensitive information or technology.
- ❑ Possible **Cyber Attacks** on nuclear power and industrial plants or other critical infrastructure
- ❑ Threats posed by **drones combined with CBRN material**.
- ❑ The **constant evolution of weapons, materials, and technologies** makes dissuasion, detection, deterrence, and defense more difficult.



Antipasti (2) Introduction



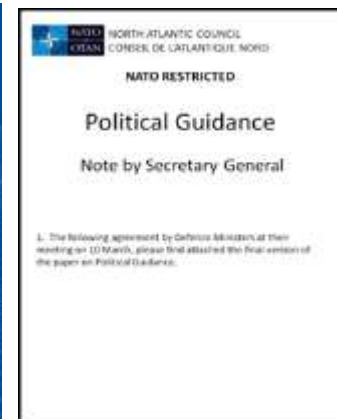
- Use of new technologies, UAV's and UGV's (Unmanned Ground Vehicles) by non-state actors, Examples:
- <http://warontherocks.com/2016/10/flying-ieds-the-next-big-threat/>
- <http://www.abc.net.au/news/2015-04-22/ukraines-diy-drone-war/6401688>
- <http://www.wired.co.uk/article/iraq-isis-war-consumer-drones>
- <http://aranews.net/2016/11/isis-deployed-drones-with-chemical-gas-to-defend-positions-in-mosul-official/>
- most probable scenario for non-state actors: using UAVs as aerial reconnaissance and fire support/guidance; rare and rather incidental cases of use as flying IED or CBRN/WMD vector.



Primo Piatto (1st plate):

➤ Risk assessment of new technologies:
Definitions, methods and NATO approach

- Bottom-up
- Top down



➤ Autonomous, semi-autonomous, automatic?

- State of play
- Emerging technologies or innovative combinations of existing technologies and systems applications?
- Human dominance vs. machine control
- Loss of control risks (Cyber attacks)



Secondo Piatto (Main plate)

- New technologies a game changer for terrorism or more of the same? Revolution or evolution?
- Low or High tech?
- Problems and roadblocks for a potential use:
 - Small payloads – dispersion
 - Completely autonomous UAVs not publicly available
 - Swarm technologies out of reach for terrorist purposes
- But...

Dolci (Conclusions and Recommendations) (1)

➤ Questions that need to be addressed:

- Autonomy an advantage for the attacker?
- Would autonomy of unmanned systems used by terrorists increase their threat?
- From where could terrorists acquire autonomous systems?
- Crucial technological advancements that need to be watched?
- Countermeasures (jamming/disabling technology, security against abuse on the manufacturing level)?
- Can access to autonomy software or autonomous systems be restricted?
- Risks of emerging low and high tech. Do they need different measures for control?

Dolce (Conclusions and Recommendations) (2)

- **How to address the threats with Arms and Export control instruments; Control vs. prohibition?**
 - Export controls?
 - Arms control arrangements?
 - Are new arms control regime(s) needed?



Dolce (Conclusions and Recommendations) (3)

NATO ...

- Observes and assesses proliferation & security risks, including those associated with new technologies or new uses;
- Facilitates joint consultations among Allies on political and military efforts to improve the overall response to new risks;
- Works with partners, international organizations and civilian entities to prevent proliferation;
- Has and if necessary develops the capabilities to protect its forces, population and territory.





WMD Non-Proliferation Centre *...strengthening arms control, disarmament and non-proliferation*

Promotes a common understanding on challenges posed by WMD and their means of delivery and seeks to enhance cooperation and coordination of all WMD-related defence and political activities at NATO. Supports defence efforts to improve preparedness and improve intelligence and information sharing amongst Allies on WMD and proliferation issues.

problem
challenge
NATO
both sides

Thank you for your attention!

It operates within the NATO Response Force or as required, helping civilian authorities in NATO member countries.

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* NATO's Comprehensive, Strategic-Level Policy for Preventing the Proliferation of Weapons of Mass Destruction (WMD) and Defending Against Chemical, Biological, Radiological and Nuclear (CBRN) Threats

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