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Military electronics

A fast-changing landscape

7 September 2021

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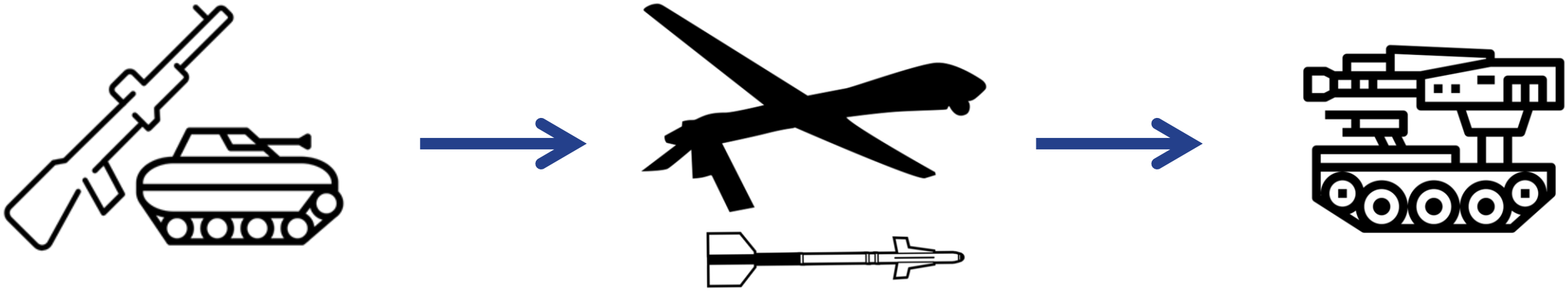
Introduction: increasing role of electronics

- The defense sector has seen changes many changes in the last 50 years which have also influenced the composition of the companies and industries which form the sector.
- One fact is the growing importance of the electronics industry. Today electronic components are part of almost all weapons systems and pieces of equipment.
- The ongoing innovation in weapon technologies is characterized by an even faster growing impact of IT, computer and electronics in general. The use of drones and autonomous weapons, the potential of the internet and progress in smart electronics are transforming warfare on a fundamental level.
- Electronics provide the technologies that are critical to defence requirements. The functions of weapons systems are increasingly dependent upon the electronics subsystems for guidance, communications and control.

Military electronics change weapon technologies and warfare



- Modern battlefield has evolved from guns and tanks to long-range missiles and drone warfare, and autonomous and robotic warfare are likely to take over in the near future.
- Today electronic components are part of virtually all weapons systems and pieces of equipment.
- Electronics provide the technologies that are critical to new weapon systems for guidance, communications and control.

Importance of military electronics for future weapon platforms

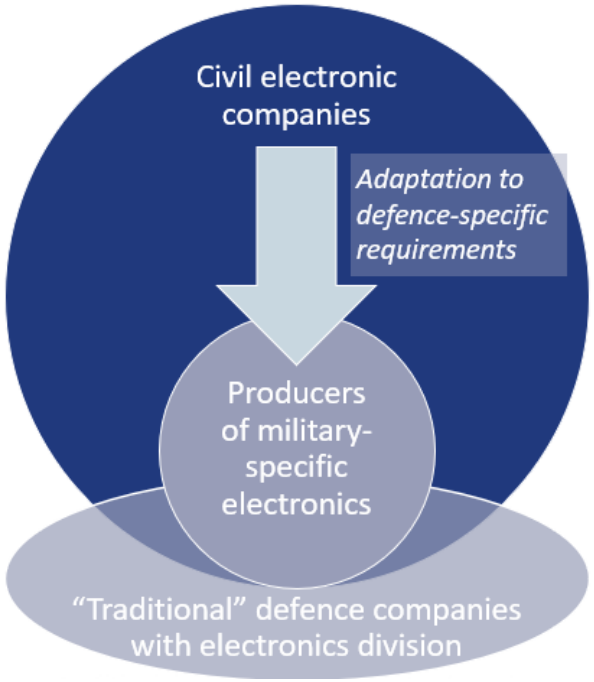
- Military electronic equipment is not only produced as stand-alone sets of equipment but is increasingly integrated in all forms of weapon systems as Command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) technologies .
- New technological developments offer new options for military defense. This include capabilities for electronic warfare, development of combat robots, drone swarms and all kind of scenarios for automated battlefields.
- Consequences are:
  - The battlespace will expand and become increasingly transparent.
  - Weapons will have increasing range, precision and lethality.
  - There will be a rise of autonomous systems including armed drones.
  - Data and digital networks will be key

How to define military electronics?

- The defence electronics sector of the industry can be separated in three parts:
  - first, producers of military-specific electronic items (such as avionics and precision guidance systems),
  - second, large defence system providers which have build up own capacities in electronics
  - third, supplier of commercial products which are modified for military requirements or without any changes integrated in military systems (in weapons, logistics or other military operations)
- Any mapping of the industry is confronted with two problems: there exist no official definition of the military electronics industry and there are no “official” lists of electronic defence components.
- European companies with product solutions and know how in this field include BAE, Thales, Hensoldt AG, Leonardo S.p.A., Safran, Rheinmetall AG, SAAB
- In the U.S. important players are General Dynamics, Lockheed Martin, Raytheon, Northrop Grumman, Litton, L3 Communication and Honeywell

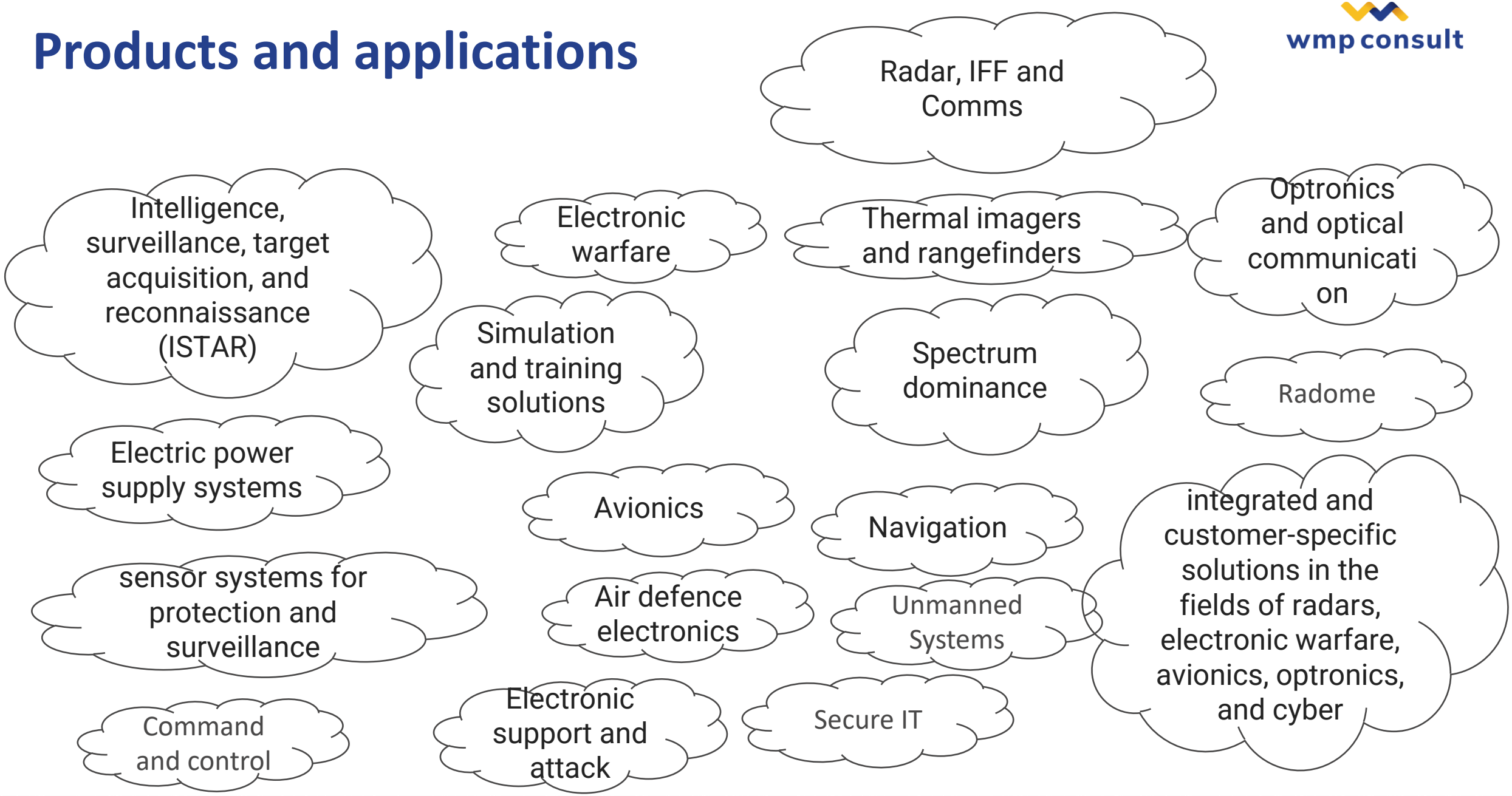
The blurry boundaries of the military defence sector

- With the growth in importance comes growth in complexity in the military electronics industry itself. The industry is characterized by an increasingly complex landscape with a supply chain which is in many parts also dominated by civil technology providers.

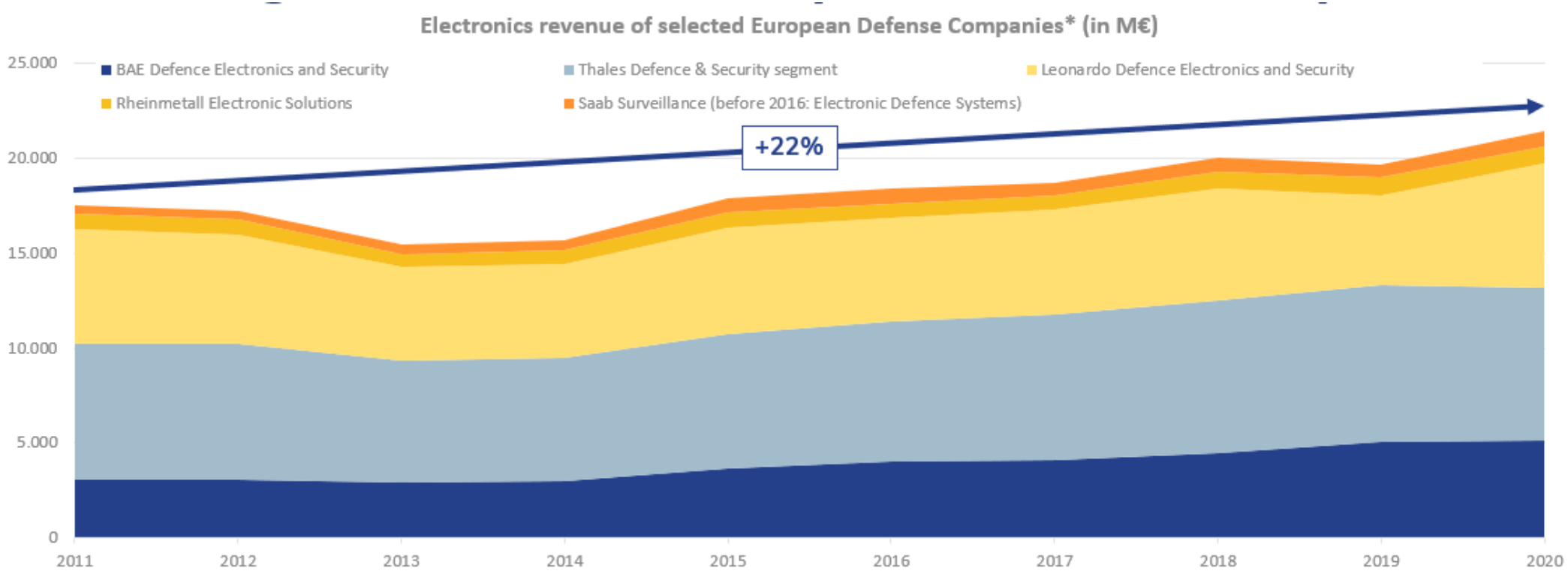


- Civil electronic companies often offer specific products to the defence industry.
- Many of the big players in the defence industry have acquired and/or developed specialised electronic divisions that provide goods and services to the mother company and external actors.

Products and applications



In the past ten years, electronics have generated increasing turnover for Europe‘s defence companies



* Five largest European defence companies with dedicated electronics division and published accounts.
Source: Annual Reports

Why the expenditure for military electronic solutions will continue to grow

- There exist several reasons why the expenditure for military electronic solutions will continue to grow. Of utmost importance are:
  - The role of command, communication, control and intelligence in modern warfare has become dominant since WW II. The share of these systems in all large weapons platforms like fighter aircrafts, naval and land systems has grown to at least 30% of the total cost of the weapon system.
  - The future options for automatic battlefields will increase the importance of electronic capacities in weapon systems.
  - New capabilities for “electronic warfare” as a military option will change at least the scenarios for those conflicts which include the use of advanced weapons systems.
  - The innovation circles in information technologies and electronics also will lead to faster innovation circles in weapon systems.

Questions:

- How competitive is the European arms industry in offering military electronic solutions?
- How much cooperation exist between the European companies in this field?
- Are traditional arms producing companies sufficiently prepared for change and integration of information technologies and electronics?

Many thanks for your attention!

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