EUROPEAN DEFENCE AGENCY

Fact sheet

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Additive Manufacturing (3D-Printing) Feasibility Study & Technology Demonstration

The rise of Additive Manufacturing (AM, better known as 3D printing) technologies has created a variety of possibilities and potential benefits for the defence community. The "Additive Manufacturing Feasibility Study & Technology Demonstration" was initiated in the framework of the CapTech Materials & Structures, within the EDA Research & Technology (R&T) domain. Raising awareness and promoting a better understanding of AM's application and potential in different military contexts will contribute to its timely and effective implementation in defence specific areas.

Key Enabling Technology

Additive Manufacturing (AM) has been identified as one of the key enabling technologies to improve European industrial competitiveness. Although AM technologies have been developed in the civil sector, it is considered that there is significant potential for AM technologies to enhance defence capabilities. Among them, the most likely are mobility, sustainability, ensuring platform availability, effect and protection through e.g. on-site and on-demand field repair & maintenance, reduced logistic burden of deployments and improved sustainability in warfighting and peacekeeping missions. Substantial economic benefits are also expected.

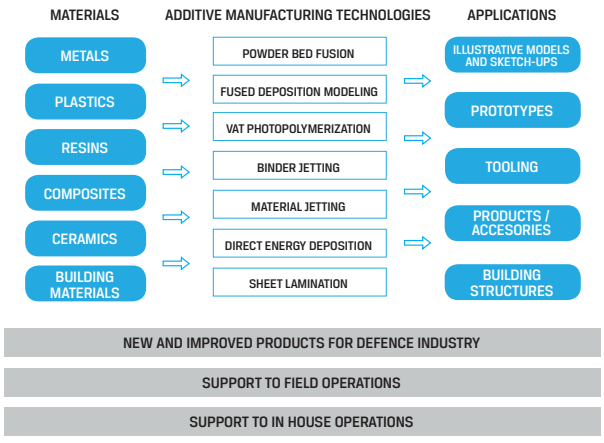
To identify and explore areas where additive manufacturing will have a wider impact, the European Defence Agency (EDA) has commissioned Fundación Prodintec (www.prodintec.es) and MBDA FR (www.mbda-systems.com) to conduct a project on "Additive Manufacturing Feasibility Study & Technology Demonstration", with expected delivery in December 2017. The study targets the entire spectrum of European defence and AM stakeholders, at all levels of defence and AM supply chains.

Project Work Strands

The project is composed of three work strands with specific and intertwined objectives:

1. Desktop study

A desktop study to place additive manufacturing and its potential in a defence context. This work summarises the state of the art of relevant additive manufacturing technologies and compare this with existing R&T and manufacturing capabilities in Europe. The main outcome of this work strand is (i) the identification of opportunities and weaknesses for AM in the European defence sector, and (ii) to highlight technology and non-technology factors delaying or preventing European defence forces from benefiting from the technology. An indication of what defence capability and economic benefits may be expected in the near-term, mid-term and long-term is also provided.



2. Technology demonstration

The second work strand is a technology demonstration of additive manufacturing in a simulated deployed scenario, the third European Advanced Airlift Tactics Training Course for 2017 (EAATTC 17-3), in order to increase the level of operational experience at European level. The objective is to (i) demonstrate the feasibility of deploying these technologies in support of a military operation and (ii) to demonstrate the operational utility of the technology.

3. Exhibition

The conclusions of this feasibility study, including the equipment used and typical objects and materials produced is presented in an exhibition to senior military staff. The objective of this activity is to (i) raise the military awareness of additive manufacturing technology and their defence potential, (ii) exemplify how the technology could change the way operations, logistic support or maintenance of platforms is performed and (iii) discuss the possible impact on defence capabilities and outline the way ahead at European level to ensure their full implementation in defence.

AM DEFENCE Exhibition Gijón 12/09/17

Results

This study has the objective of raising awareness in the defence community and of promoting a better understanding of the potential held by these technologies, thereby stimulating their implementation in defence specific areas. By doing so, not only the R&T community is informed, but also other potential beneficiaries of the technology, linked to the EDA capabilities mentioned above. This creates a synergy between the Materials R&T community and the operational staff, helping the R&T community to understand the requirements from the operational side. The main conclusions are:

- While there are different available AM technologies, current technical capacities and cases of application are wide and varied, showing a promising future for their implementation in the Defence.
- Non-technical factors (IPR, training, standardization and certification, health and safety, etc.) represent solid limitations for AM implementation, stronger in fact than technical ones.
- Although it is remarkable how some organizations taking part on Defence activities currently have earned a significant experience on AM, overall Defence sector experience still needs to increase in order to achieve a broader perspective over the impact of AM on defence capabilities.

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