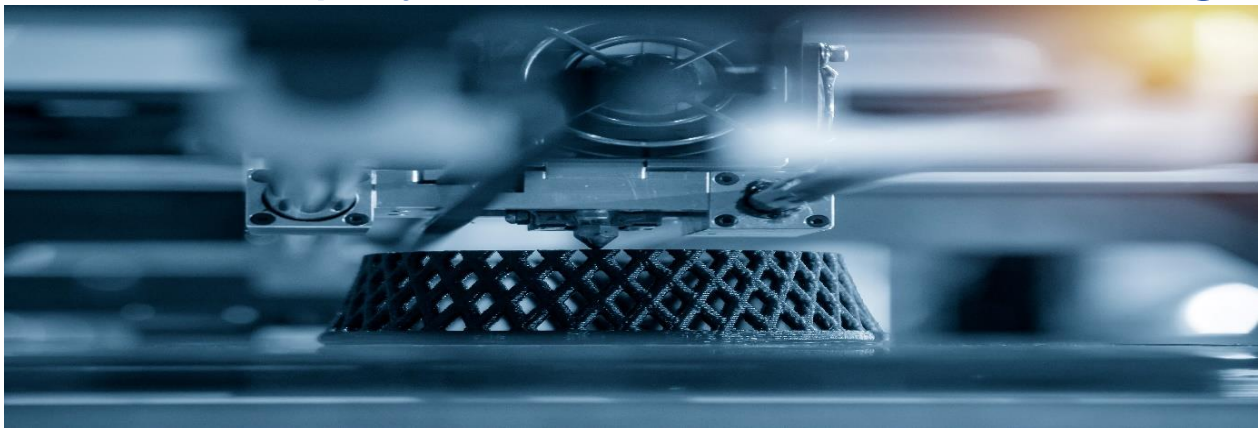


Incubation Forum for Circular Economy in European Defence (IF CEED)

Project idea

Circular deployable Additive Manufacturing



Context

Military assets for all armed forces (army, air force and navy) are potentially vulnerable in terms of operational readiness when spare parts are missing or cannot be provided in due time. Decentralised and on-demand manufacturing can fulfil the dual purpose to serve objectives of missions and reduce the footprint of the military.

Deployable Additive Manufacturing (AM) solutions can be suitable to enable the manufacturing of spare parts or provide expedient repairs on site. Indeed, they can bring the flexibility to produce, on demand, individual products or provide tailored repair while meeting the requirements of operations.

While AM allows to **optimise the use of materials** thanks to its specific freedom of design, deployable solutions are a way to **reduce emissions linked to the transportation of spare parts** needed to maintain the readiness of equipment.

Last but not least, coupling manufacturing with circular management of resources contributes to **self-sufficiency** of missions by limiting the feedstock needed to perform the required operations.

Objectives

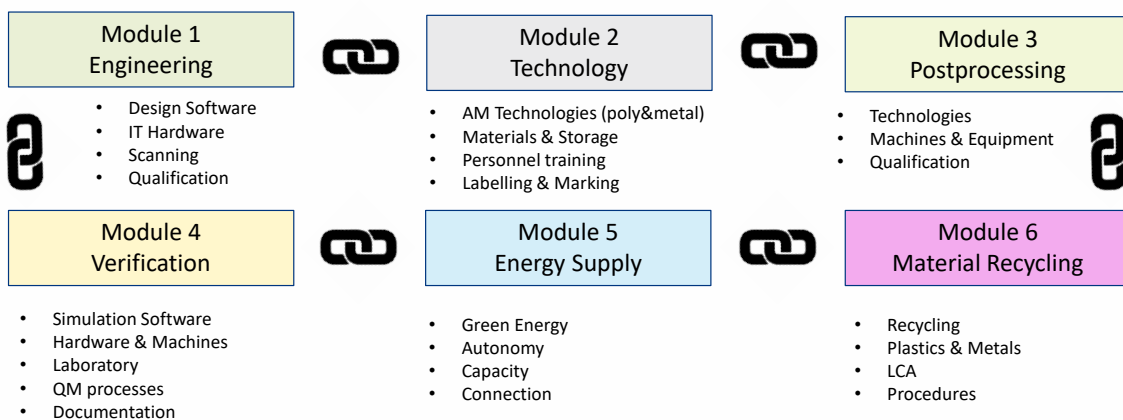
The project idea “Circular Deployable Additive Manufacturing” aims at providing the required functions for on-site manufacturing, repair and circularity of materials via a holistic approach based on capability modules.

The specific objectives are to:

- Validate circularity of materials in the context of deployable AM use cases, for metals, polymers and composites.
- Develop/validate a deployable AM set-up incorporating recycling, engineering, manufacturing, post-processing and verification capabilities.

- Develop, in the context of the deployable AM set-up, digital concept and dedicated tools for material and parts' library, file sharing, stock management, manufacturing, including cyber security aspects, possibility for remote assistance and intellectual property aspects.
- Elaboration of a validated production standard for deployed AM micro factories.

Methodology – Capability modules



Stakeholders

- Entities engaged in the IF CEED Project Circle “Circular Additive Manufacturing”.
- Ministries of Defence, industry, research-and-technology-organisations.

Timeline & Milestones

- The project duration is 36-48 months.

Expected Outcome

- Demonstration of materials' loops in deployable context for military applications.
- Operational capability modules (at prototype level).

Operational benefits

- Reduction of the logistic footprint on military missions.
- Increase of operational readiness.
- Compilation of modules tailored to the mission.
- Self-sufficiency of missions.

Budget & funding

Type of project: collaborative project

Budget: EUR 5 000 000 to 10 000 000