



Pulsate

Funded by



PHOTONICS PUBLIC PRIVATE PARTNERSHIP

In partnership with



PAN-European Network for Laser-Based Advanced and Additive Manufacturing

January 2024

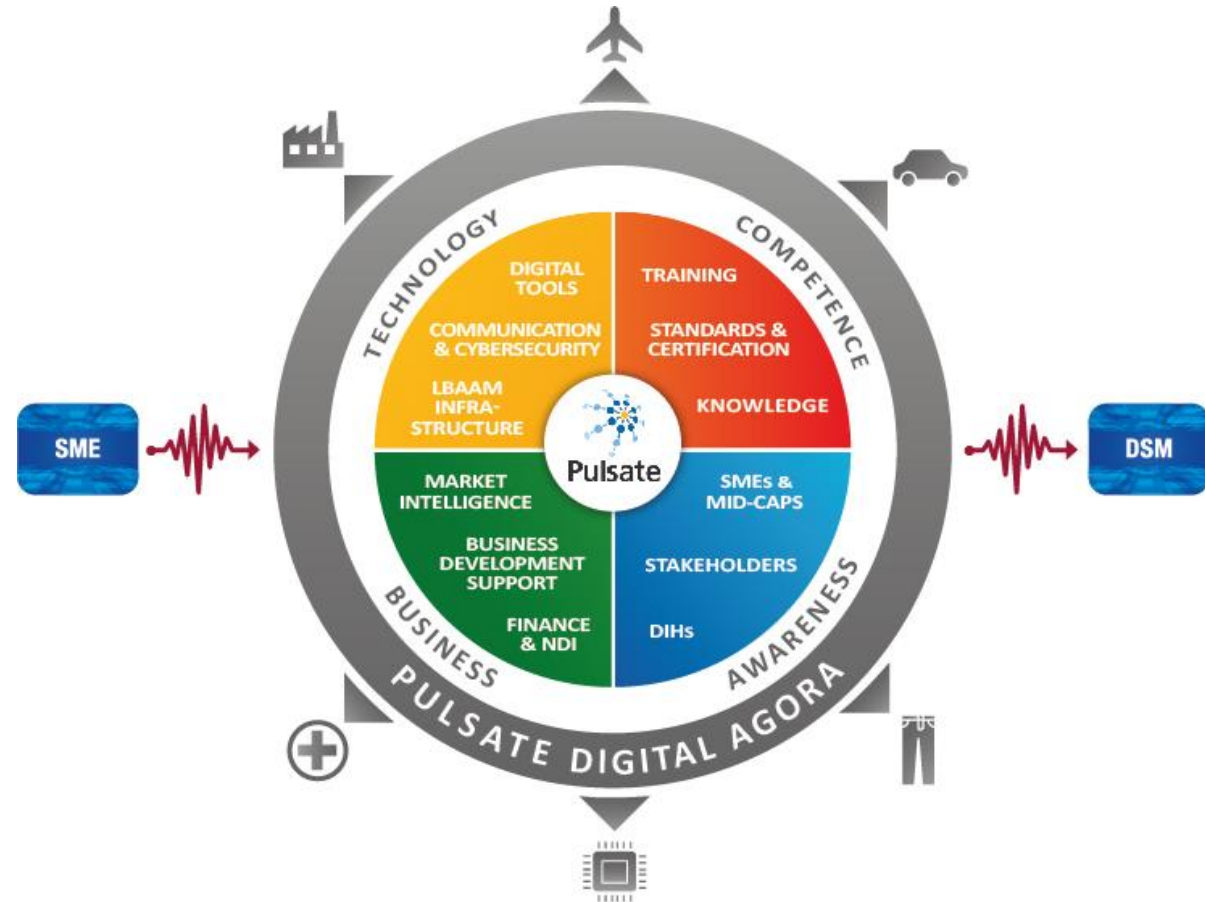


About PULSATE

PAN-European Network for Laser-Based Advanced and Additive Manufacturing

The main objective of PULSATE is to set up and consolidate a robust and open PAN European Network, sustainable beyond the project timeframe, to promote and facilitate the adoption of Laser-Based Advanced Additive Manufacturing (LBAAM) technologies by SMEs and Mid Caps.

The network will connect DIHs, top class Competence Centres, Public Institutions, Standardization Organizations, Financing and Business Development entities through a Single Entry Point.



Implementing Services

Through our PAN-European Network for Laser-Based Advanced and Additive Manufacturing PULSATE has:

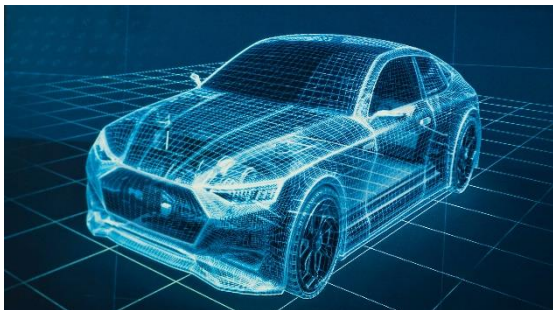
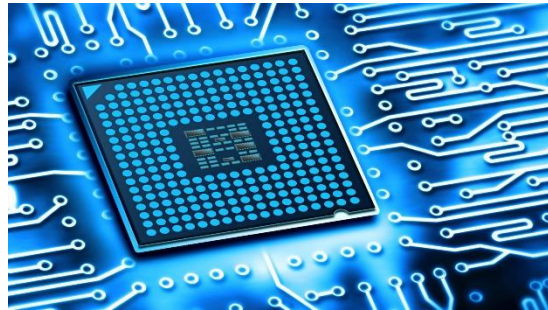
- Mobilised at least 200 SMEs to participate in open calls:
 - 20 Technology Transfer Experiments (TTEs)
 - 42 Adopters Use Cases (AUCs)
- Consolidated technological and business offering by providing at least 5 LBAAM access to infrastructure, 4 software services and 8 business support services.
- Consolidated digital competency by offering a minimum of 6 digital maturity assessment and 6 LBAAM technology knowledge development services.
- Delivered at least 6 specific technical webinars, 2 info-days, 4 general webinars and 11 specific brokerage and matchmaking events.
- Delivered at least 30 courses offering on training in LBAAM and publish at least 20 training materials.
- Successfully delivered training to 1,000 trainees in LBAAM technologies.
- Achieved a minimum of 500 community members/ users and a wide catalogue of services.



Revolutionising Markets

LBAAM provide maximal benefits towards flexible manufacturing and highly digitalized production environments

LBAAM technology is particularly beneficial for sectors like aerospace, automotive, medical devices, industrial machinery, customised electronics, and textiles & clothing.



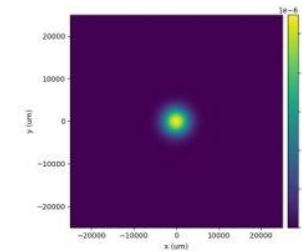
Voucher system

Discover PULSATE's innovative voucher mechanism! Designed to fund services for SMEs

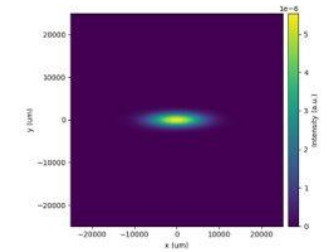
- Join the Digital agora on the website: www.pulsate.eu
- Explore an expanding catalog of services.
- Directly request services or use the "matches" feature for comprehensive implementation packages, highlighting mentoring and consulting.
- Issue an "Expression of Interest" form for potential funding.
- Our Evaluation Committee reviews requests swiftly on a "first come-first served" basis.
- Enjoy the benefits:
 - Dedicated mentoring from an expert.
 - Faster processing - less than 1 month vs. 8 months in traditional mechanisms.
 - Greater flexibility in service requests tailored to your unique needs.
 - Empower your business with PULSATE today!

Success stories: AMLABS - Additive Manufacturing with Laser Beam Shaping

- **Aim:** Beam shape optimization to increase productivity and material processability of the LASER Powder Bed Fusion Additive Manufacturing Process (LPBF).
- **Technology:** LPBF is a promising additive manufacturing technology, but with two main limits: very low productivity and a high number of non-processable materials. These can be tackled by beam shaping optimization.
- **Results:** A plug-in mechanism was developed to change between different beam shapes. Three different beam shapes (elliptical, ring, and top flat) have been tested, the best results have been obtained with top flat.



Input beam

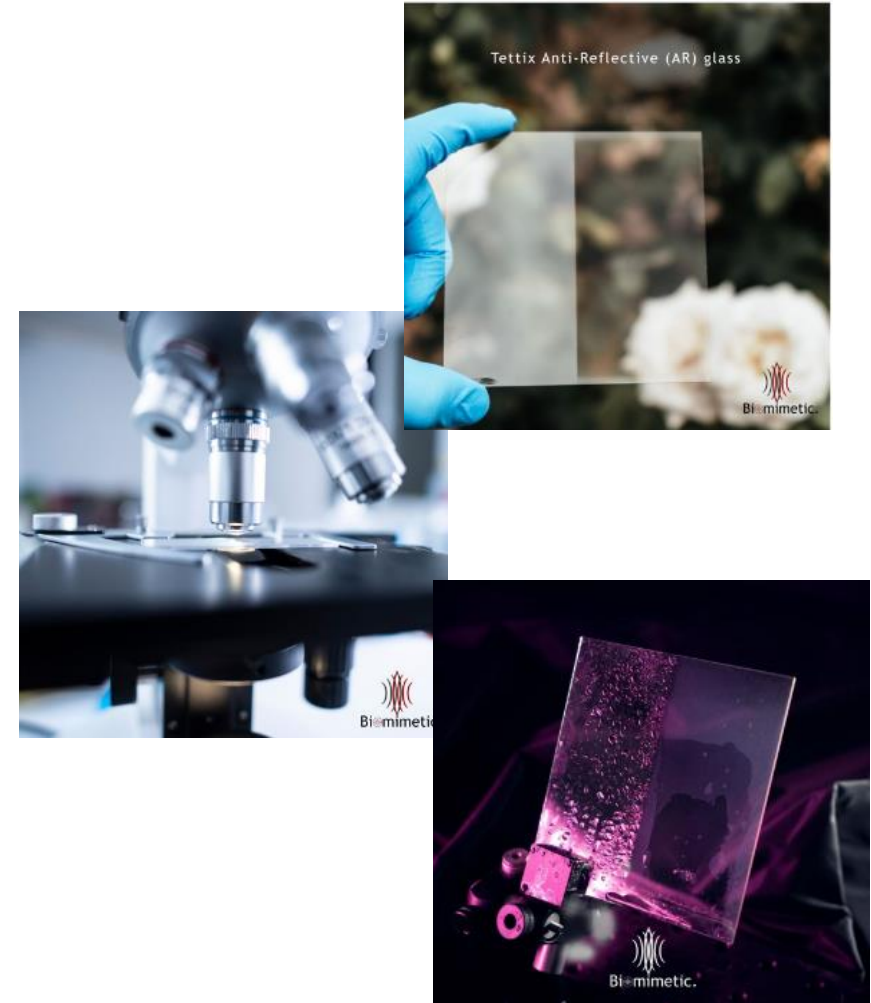


Output beam



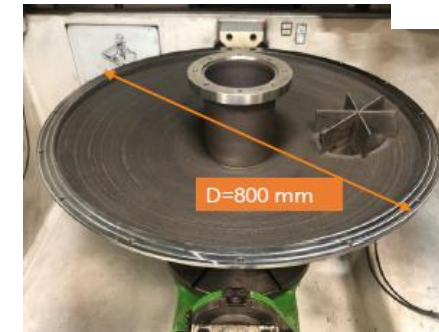
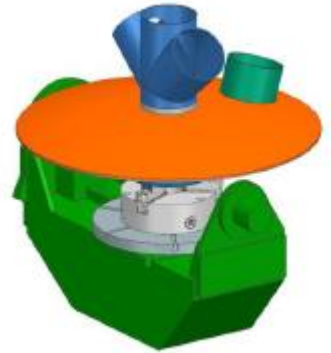
Success stories: SUBAR - Scale up of biomimetic antireflective surface laser structuring

- **Aim:** The assessment of Biomimetic's Tettix AR glass treatments in real imaging applications related to optical microscopy.
- **Technology:** An anti-reflective or anti-reflection coating is an optical coating applied to the surface of optical elements to reduce reflection and improve quality. Usually, developing anti-reflective coatings for new materials is a long and challenging process with many iterations to reach the desired properties.
- **Results:** Automated and sustainable AR treatment of curved optical elements with direct laser nano-texturing, which can reduce the reflectivity <math><1\%</math> for broad spectra of the visible and the NIR.



Success stories: SUPER MAM - SimUlation of DED ProcEss foR the Additive Manufacturing of lArge and coMplex parts

- **Aim:** Development of an industrial simulation tool to estimate residual stresses and deformation that will lead to Optimization of manufacturing parameters. The second objective is to manufacture a first-time-right part (controlled costs + competitive manufacturing), accelerating the industrialization phase for DED AM parts.
- **Technology:** During DED manufacturing, distortions and cracks can be created in parts due to residual stresses (thermal cycling). SUPER MAM will employ a macroscale approach using cutting-edge technology. Through the development of an industrial simulation tool (by optimizing critical manufacturing parameters like power, material, dwell time, strategy, and geometry), they will not only estimate residual stresses but also aid in manufacturing or repairing parts with precision using DED technology
- **Benefits:** With a macroscale approach and a practical tool, SUPER MAM will provide comprehensive and industrial responses to new manufacture or repair requests using DED technology.
 - Works on pre-industrialization of small series, looking for performance repeatability and reproducibility
 - Use of simulation to validate the DED process and integrate it into production cycles
 - Reduce the industrialization time by decreasing the number of test error cycle





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