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ΕΣΠΑ 2021-2027
Βιώσιμη Ανάπτυξη για Όλους
Partnership Agreement 2021-2027

Programme: "CENTRAL MACEDONIA" 2021–2027"
Action: "Innovation Investment Plans"

<u>Project Title:</u> «BladeWorks – Design and Strength/Aesthetic Control Platform for Cutting Personalized Blades»

<u>Project Summary:</u>

The Centre for Research and Technological Hellas (CERTH) is participating in the "Central Macedonia" Program of the NSRF 2021–2027, through the "Innovation Investment Plans" Action, co-financed by the European Union and National Resources.

The project titled "BladeWorks – Design and Strength/Aesthetic Control Platform for Cutting Personalized Blades" aims to develop an innovative new application for designing and manufacturing a range of personalized (do-it-yourself) knives. The application will include initial design and customization through searching and classifying existing knife designs or, alternatively, using photos uploaded by the user, from which the initial outline of the knife (top view) will be extracted. The design can then be further customized by the end user (buyer).

Indicative expected benefits of this project, through its various components, include:

a) Increase in pre-orders by the end of the project.
b) Increase in website traffic for Knifeprint.
c) Increase in Knifeprint's turnover.
d) Reduction in product cost prices.
e) For CERTH, the project is expected to transfer and combine expertise from three scientific domains into a new field, creating new job opportunities. Additionally, it aims to strengthen its collaboration with industries in relevant sectors and expand its network of partners.

The goal of the project is to support the Knifeprint application for designing and manufacturing personalized knives by introducing advanced tools to the platform and integrating it with research and innovation. Specifically, the project will enhance and improve Knifeprint's DIY knife design tool by offering the following additional features and services: (a) Development of advanced algorithms for faster and more efficient data processing (image analysis, deep neural networks, etc.), (b) Development of advanced image processing algorithms (segmentation, reading, isolation, etc.) to extract the object's outline in an editable format, (c)

Development of a simulation environment where users can easily choose materials, usage, design, etc., and test the mechanical strength at pressure points of the knife, as well as its usability, (d) Integration of a tool in the simulation environment that extracts conclusions and suggestions for improving the object, and finally, (e) The option for the user to 3D print the knife in polymer or metal to create a prototype and verify if the aesthetic and functional results meet expectations, before approving final CNC production. Additionally, during the project, the company will also be supported on the business side, with an updated business plan from the beginning of the project. The ultimate goal of the project is to make the design tools easier to use, thereby increasing user satisfaction, incorporating more graphics and decision-support tools, and saving money for both the company and the end user.

Total project budget: 112.667,03€
CERTH budget: 96.094,03€