UBORA: A digital infrastructure for collaborative research and development of open-source medical devices

Digital infrastructures are already making a real impact in the way we develop innovative products. Platforms for sharing computer-aided designs have emerged in parallel to the maker movement with the advent of rapid prototyping by 3D printing. Besides, manufacturers of industrial components are also keen to share the CAD files of their products, so as to support designers with engineering design. However, in the biomedical field and in bioengineering research information sharing is not so common, in some cases due to patient privacy protection, but in most cases due to industrial growth strategies, in spite of the benefits that collaborative approaches and the related promotion of open-innovation could bring to patients and society.

The UBORA digital infrastructure, presented in this study, has been developed to promote collaborative research and developments in biomedical engineering, especially regarding the collaborative engineering design of biomedical devices. This infrastructure includes: a) A section for promoting open-innovation, in which healthcare professionals and patients can propose needs for novel medical devices. b) A section for project development, through which designers can showcase their proposals or select those from healthcare professionals and develop them, in a guided way, as projects in collaboration with members of the UBORA community. c) A library in form of "wiki" for sharing all the information of the developed biomedical device projects, hence fostering open-source strategies. d) A section providing resources for supporting project development and bioengineering design education for all.

UBORA has already enabled the creation of a community of more than 200 developers of biomedical devices and showcased around 10 complete projects and 40 concepts of innovative biodevices and the community and wiki are continuously growing. Main conceptual decisions, taken during the design of this digital infrastructure and key decisions during implementation, together with current challenges, are presented.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731053