Accueil > ... > H2020 >

An advanced 3D simulator to generate 3D-personalized tissue and organ models for diagnosis, planning and pre-treatment of medical vascular interventions

# An advanced 3D simulator to generate 3D-personalized tissue and organ models for diagnosis, planning and pre-treatment of medical vascular interventions

## Rapports

### Informations projet

**MedicalPhant**

N° de convention de subvention: 816658

Site Web du projet ↗

**DOI**
10.3030/816658 ↗

Projet clôturé

**Date de signature de la CE**
4 Mai 2018

**Date de début**
1 Juin 2018

**Date de fin**
30 Septembre 2018

**Financé au titre de**
INDUSTRIAL LEADERSHIP - Innovation In SMEs

**Coût total**
€ 71 429,00

**Contribution de l'UE**
€ 50 000,00

**Coordonné par**
VALIDA INNOVATION SOCIEDAD LIMITADA
🇪🇸 Spain

## Periodic Reporting for period 1 - MedicalPhant (An advanced 3D simulator to generate 3D-personalized tissue and organ models for diagnosis, planning and pre-treatment of medical vascular interventions)

**Période du rapport:** 2018-06-01 au 2018-09-30

## Résumé du contexte et des objectifs généraux du projet ⌄

Cardiovascular diseases are the first cause of deaths globally and an economic burden and they are commonly treated by surgery. However, surgeons still lack precise knowledge about what they will face in the operating room, increasing medical errors and associated morbidity and mortality. MedicalPhant is a new system for the printing of the most accurate customized 3D replicas of complex cardiovascular pathologies and structures. It uses CT/MRI/Echo images from a patient to virtual modelling and to print a 3D model with suitable materials. Our system can greatly reduce medical errors, times, hospitalization and costs of cardiac surgery and improve final outcomes, specialists' performance and patient's quality of life. MedicalPhant is at a TRL6, preliminary developed and validated, and now we aim to optimized it and validate it in a clinical study, scale-up the production, establish a sales team and reach potential users (hospitals, MedTech companies, etc.). We plan to obtain part of the necessary founding by applying to a H2020 SME-Instrument Phase 2 grant.

## Travail effectué depuis le début du projet jusqu'à la fin de la période considérée dans le rapport et principaux résultats atteints jusqu'à présent ⌄

Currently, we have been able to apply MedicalPhant system to produce personalized valves and specific pathologies in real cases, with a high level of detail and with their successful application in diagnosis clarification and surgery planning and training. For arteries and veins, we have fruitfully developed 3D models with the same 3-layers composition at micron thickness (not possible with existing technologies). For cardiac valves, we have developed replicas of pathologies, such as leaks, aortic fistulas, pulmonary stenosis or prolapse in mitral valve, and improved surgeries as TAVI. Also, our vascular models have been placed on a simulator with a peristaltic pump controlled by an electrical system, which simulates the heart function.

## Progrès au-delà de l'état des connaissances et impact potentiel prévu (y compris l'impact socio-économique et les conséquences sociétales plus larges du projet jusqu'à présent) ⌄

Personalized anatomical replicas remain as a poorly exploited area of application because it is difficult to realistically mimic complex structures and tissues or obtain functional replicas. MedicalPhant is a system to produce the most similar 3D models and simulators of complex cardiovascular pathologies and structures in a personalized manner, to be used to: better understand a pathology, refine diagnosis, choose the best procedure and device/implant, better plan an intervention, practice to improve surgeon's skills, avoid errors and reduce risks, reduce surgery time and related costs, improve post-surgery recovery and benefit all players in the healthcare system.

Valida Innovation Logo

**Dernière mise à jour:** 26 Février 2022

**Permalink:** https://cordis.europa.eu/project/id/816658/reporting/fr

European Union, 2025