IDEA Spark Cantabria 2019

Reference #	12961933
Status	Complete
Login Username	pedraja
Login Email	jpedraja@hvvaldecilla.es
Project Title	Business plan for the design of hyper-realistic and personalized synthetic anatomical organs for surgical training
Short project title (max 20 alpha-numeric characters)	RESIMO
How long have you (or your team) been working on this project?	1 year
How many people are on your project team? (Count only those who will be involved in doing the work of the program and/or those you would like included on any email communications from the program. Note that each person will need to submit a registration form; instructions will be provided after this application is submitted.)	7
Applicant name:	Juan Pedraja
Applicant E-mail address (when you submit, a copy of your entry will be sent to this email)	jpedraja@hvvaldecilla.es

Project Description:
Provide a brief overview of your project. Please comment on the problem you propose to solve and the potential societal impact of solving it. This should be understandable and compelling to someone not skilled in the art.

Surgery is increasingly complex because patients present with many types of diseases in different stages, and demand minimally invasive surgical techniques and good results. In order to guarantee patient safety, surgeons need to train new techniques using new technology before operating on patients. Currently, training for the use of this technology can be done in three different ways: animals and corpses and virtual simulators.
The first two are conditioned by a powerful ethical view focused on the use of animals and corpses for surgical training and their increasingly stronger commitment to reduce their use.
In addition, the use of virtual simulators has not landed in a solid way in the surgical sector, since the haptic sensation does not encourage a realistic learning.
However, the biggest challenge that surgical training has faced for many years is the impossibility of training specific pathologies, which means that current training is based on the assumption that a corpse or an animal has a specific pathology. This fact limits further the training of robotic surgery since it is used to intervene complex pathologies, for which there are currently no specifically designed training models.

With the aim of reducing this "supposition training" and being able to offer specific high-performance training programs to the market, we want to develop hyper-realistic synthetic tissue models for clinical and surgical training. The impact is that surgeons will be able to perform complex surgeries in the lab in advance so this will dramatically increase the effectiveness and efficacy of healthcare treatment.

Have there been any previous approaches to solving this problem (or answering the question)? **Please describe how your idea is original.**	Surgical training models are based on live tissue and virtual simulators. Ethical issues prevent the use of animals, and cadavers are scarce. Moreover, most of these models reproduce normal anatomy and specific diseases are not replicable. On the other hand, virtual reality is still not able to mimic the appearance and haptics of real tissue. 3D printing has emerged as an alternative, and it is now possible to print solid organs and different types of diseases. But still, these models are not realistic for surgeons, and there is a need to develope synthetic models that simulate the feel and appearance of human organs and tissues. Moreover, there is a need for those tissues to be cut by electrocoagulation and sutured by different materials. Our idea is the generation and transfer to the market of training models of specific pathologies that can potentially replace the training with cadavers and animals. As a well known doctor said, ‘’I do not need a simulation of a healthy heart, I need one as close as possible to the disease heart of the patient I want to treat’’ The originality of this idea is based on the generation of Ad-Hoc training pathologies for the surgeon.

Tell us something interesting about yourself (and your team)	Passionate industrial engineer who loves making clinician work safer and easier. I want to make a difference applying my knowledge to the clinical. I want to bring my system thinking approach, with that I mean that I am working to add a different perspective, a different point of view and try to complement the clinical knowledge with technical skills .Generally, in our country, engineering is not only not focused on health, but the engineering schools and engineers' graduates do not have in mind their professional career in this sector. I have become so involved in the health and surgical environment that I have come to change my mental model. Now I think that engineers and surgery teams are quite similar. Saving the professional competences, I think that the future is the total understanding of engineering and medicine. At the same time, I am passionate about technology, so I like to invest my time reading articles from technological journals and seeing how to transfer current technology to clinical and surgical training such as healthcare. We work in a team where surgeons are in turn people with a very high capacity for innovation and with development skills of people close to engineering. As an expert staff in clinical and surgical training (more than 10 years of exclusive dedication to clinical and surgical simulation), the team has people who have a continuous thinking of improvement and who continuously question the current. This is the key to the development of advanced training systems.

Why do you want to participate in the program and what do you hope to gain from the program?	We want to participate in the program because we think it is an opportunity to learn from best practitioners and learn how to develop our project and how to transfer it to the market with a validated methodology that will bring us professional and business growth. Professionally, I hope to be able to acquire ideas and skills necessary to transfer our idea to the market. We have expertise in our day to day as a high-performance simulation center, but we need that method. In addition, we think we can know both the previous experiences developed at MIT and other partners in the program with the aim of generating a successful common development space.
Last Update	2019-04-15 16:48:38
Start Time	2019-04-15 16:07:06
Finish Time	2019-04-15 16:48:38
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Browser	Chrome
OS	Windows
Referrer	https://fs24.formsite.com/MITLinQ/idea_spark_application/form_login.html

Registration for IDEA Spark

Reference #	12962106
Status	Complete
Short Project Title (use title from IDEA Spark Application)	RESIMO
First Name	David
Last Name	Truan
Preferred name (for name tags)	David
Institution or organizational affiliation	Hospital Universitario Marqués de Valdecilla
Degree	MS
Role in Institution	• Other: • Surgeon
City	Santander
Country (if US, enter State)	Cantabria
Phone Number	942 20 38 95
Email Address	david.truan@scsalud.es
In what way will you be participating in IDEA Spark?	e-communication access only (not participating)
Last Update	2019-04-15 17:06:56
Start Time	2019-04-15 17:05:12
Finish Time	2019-04-15 17:06:56
IP	73.200.30.188
Browser	Chrome
OS	Windows
Referrer	N/A

Registration for IDEA Spark

Reference #	12962087
Status	Complete
Short Project Title (use title from IDEA Spark Application)	RESIMO
First Name	Ignacio
Last Name	Del Moral
Preferred name (for name tags)	Nacho
Institution or organizational affiliation	Hospital virtual Valdecilla
Degree	PhD
Role in Institution	• Other: • Director
City	Santander
Country (if US, enter State)	Cantabria
Phone Number	942 20 38 95
Email Address	idelmoral@hvvaldecilla.es
In what way will you be participating in IDEA Spark?	e-communication access only (not participating)
Last Update	2019-04-15 16:58:34
Start Time	2019-04-15 16:57:18
Finish Time	2019-04-15 16:58:34
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Browser	Chrome
OS	Windows
Referrer	N/A

Registration for IDEA Spark

Reference #	12962091
Status	Complete
Short Project Title (use title from IDEA Spark Application)	RESIMO
First Name	Jose Maria
Last Name	Maestre
Preferred name (for name tags)	Jose
Institution or organizational affiliation	Hospital virtual Valdecilla
Degree	PhD
Role in Institution	• Other: • Innovation Director
City	Santander
Country (if US, enter State)	Cantabria
Phone Number	942 20 38 95
Email Address	jmmaestre@hvvaldecilla.es
In what way will you be participating in IDEA Spark?	e-communication access only (not participating)
Last Update	2019-04-15 16:59:39
Start Time	2019-04-15 16:58:36
Finish Time	2019-04-15 16:59:39
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OS	Windows
Referrer	N/A

Registration for IDEA Spark

Reference #	12962065
Status	Complete
Short Project Title (use title from IDEA Spark Application)	RESIMO
First Name	Juan
Last Name	Pedraja
Preferred name (for name tags)	Juan
Institution or organizational affiliation	Hospital virtual Valdecilla
Degree	MS
Role in Institution	• Other: • engineer
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Country (if US, enter State)	Spain
Phone Number	665851772
Email Address	jpedraja@hvvaldecilla.es
In what way will you be participating in IDEA Spark?	In person
Last Update	2019-04-15 16:51:18
Start Time	2019-04-15 16:49:41
Finish Time	2019-04-15 16:51:18
IP	73.200.30.188
Browser	Chrome
OS	Windows
Referrer	N/A

Registration for IDEA Spark

Reference #	12962080
Status	Complete
Short Project Title (use title from IDEA Spark Application)	RESIMO
First Name	Jose Carlos
Last Name	Manuel-Palazuelos
Preferred name (for name tags)	Carlos
Institution or organizational affiliation	Hospital virtual Valdecilla
Degree	PhD
Role in Institution	• Other: • Surgical Director
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Country (if US, enter State)	Cantabria
Phone Number	942 20 38 95
Email Address	jcpalazuelos@hvvaldecilla.es
In what way will you be participating in IDEA Spark?	e-communication access only (not participating)
Last Update	2019-04-15 16:57:15
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OS	Windows
Referrer	N/A

Registration for IDEA Spark

Reference #	12963684
Status	Complete
Short Project Title (use title from IDEA Spark Application)	RESIMO
First Name	Maria Fe
Last Name	Garcia
Preferred name (for name tags)	Fe
Institution or organizational affiliation	Hospital Universitario Marqués de Valdecilla
Degree	MS
Role in Institution	• Other: • Surgeon
City	Santander
Country (if US, enter State)	Cantabria
Phone Number	942 20 38 95
Email Address	mfe.garcia@scsalud.es
In what way will you be participating in IDEA Spark?	e-communication access only (not participating)
Last Update	2019-04-16 08:58:46
Start Time	2019-04-16 08:56:28
Finish Time	2019-04-16 08:58:46
IP	174.205.16.118
Browser	Chrome
OS	Windows
Referrer	N/A

Registration for IDEA Spark

Reference #	12962105
Status	Complete
Short Project Title (use title from IDEA Spark Application)	RESIMO
First Name	Roberto
Last Name	Ballestero
Preferred name (for name tags)	Roberto
Institution or organizational affiliation	Hospital Universitario Marqués de Valdecilla
Degree	• MS • Other:
Role in Institution	• Other: • Surgeon
City	Santander
Country (if US, enter State)	Cantabria
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In what way will you be participating in IDEA Spark?	e-communication access only (not participating)
Last Update	2019-04-15 17:05:09
Start Time	2019-04-15 16:59:48
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IP	73.200.30.188
Browser	Chrome
OS	Windows
Referrer	N/A