CYBER SURGERY

De la mecánica para la ciencia a la cirugía de alta precisión



6 de Julio de 2022





SCIENCE HISTORY

Science History



DRIVEN BY PRECISION



Science

- Design
- Manufacturing
- Assembly
- Test





Science. Compents for accelerating structures



DRIVEN BY PRECISION





DRIVEN BY PRECISION

Science. Compents for accelerating structures

The next slide shows the measurements from one RFQ modulation:

This free form shape is a variational sweep guided by a sinusoidal function. R=3mm L=785mm.



Science



DRIVEN BY PRECISION

• Devices for particules accelerators







• Positioners





HEALTH HISTORY

Health history



DRIVEN BY PRECISION

Dental Implants. Createch Medical (2006)
<u>http://www.createchmedical.com/en/</u>

• Maxillofacial Customized Prosthesis (2009)

- Research & Development
 - Spinal Customized Prosthesis (2011)
 - Spinal surgery assistance (2013)

Createch Medical



DRIVEN BY PRECISION



Personalized Maxilofacial Prosthesis



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• Autotransplant using spliterbone



• Development of cutting guides



• Titanium desings











Personalized Spinal Prosthesis

Egile

DRIVEN BY PRECISION

- Status
 - Research and develoment Project
 - Tested in sheeps and cadaver













CYBER SURGERY

Spine surgeries







Vertebral Fusion



- Complex procedure
- Between 6% and 15% of screws are misallocated
- In 2% of cases a new surgery is required
- 1% are performed by a robotic assistant, growing quite fast

Global Market

Spine

- 7 Million screws in 1,2 M surgeries
- **20.000 hospitals** all around the world which perform these surgeries
- Technology is being adopted by hospitals (Market Opportunity)

Robotic Surgery

- In 2030 robotic assisted surgery for spine will be 3.600 million of euros
- CAGR 20% in robotic surgery and 33,6% in spine
- Spine market is a niche where accuracy is mandatory



North America surgical robot market share, by product, 2014 - 2024





Competitors



- All of them use **Optical Tracking** technology
- Approximately 500 robots installed
- They are showing the advantages of robotic surgery for spine, creating **tendency**
- It is the right moment for Cyber Surgery, a solution with a new technical approach and advantages

Product

Current Technology: Optical Tracking



Cyber Surgery's Technology: Mechanical Tracking

- Higher Accuracy vs optical
- Higher control loop frequency
- No affected by occlusions





Disruptive solution:

- Mechanical Tracking (Patent PCT/2017/030704)
- Surgical Procedure (Patent PCT/2017/030705 and EP20382920.5)

Extensive preclinical Trials in phantom and human corpse









Value Proposition

BENEFITS OF MINIMALLY INVASIVE SURGERY

ADDED VALUE

- Safer surgery
 - Accurate tracking system
 - Redundancy in tracking measurements
 - Artificial Intelligence and machine learning for supporting the surgeon during planning and surgery
- User Oriented
 - No camaras required, less footprint
 - Ergonomics improvement, seamless surgery
 - Quick start
 - Adapted for different screws manufacturers
 - Improving User Experience with Augmented Reality

PATIENTS SURGEONS HOSPITALS



- Reduction of in-hospital recovery. From 9,4 to 6,8 days
- Less X-ray exposure for patients and OR personnel
 - Reliable
 - Mechanical Tracking
 - Not affected by occlusions
 - Reference point closer to working area
 - Cost-effective
 - Reduction of setup which implies less time and surgery cost
 - New Business model
 - Several Spine Procedures, like Osteotomy (in progress)
 - Technology and modularity for multiple medical applications (neurosurgery and orthopaedics) (in progress)
 - Business Intelligence analytics

MANAGEMENT TEAM



Jorge Presa, CEO

International experience in creating and growing Start-up in Health sector



Andrés Amarillo, CTO Mechatronic Engineer with international experience in robotics



Ane Ubarretxena, Quality and **Regulatory Affairs Manager** Full career in regulatory affairs mainly in CE Mark and FDA certification

TEAM

- 26 people (5 PhD + 20 Msc Engineering)
- Experience in health sector and Start-up management •
- High technical expertise ٠
- Motivated and moon-shot thinking ٠



Dr. NICOLÁS SAMPRÓN Neurosurgeon at Hospital Donostia



Dr. IÑIGO **POMPOSO** Neurosurgeon at Hospital Cruces, Bilbao

Dr. JESÚS LAFUENTE Former President EANS

New members from **Europe and USA in** 2022

MEDICAL ADVISORY BOARD

Dr. BARTOLOMÉ **OLIVER**

Neurosurgeon at Clínica Teknon, Barcelona



Milestones Timeline





CYBER SURGERY

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