

CYBER SURGERY

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



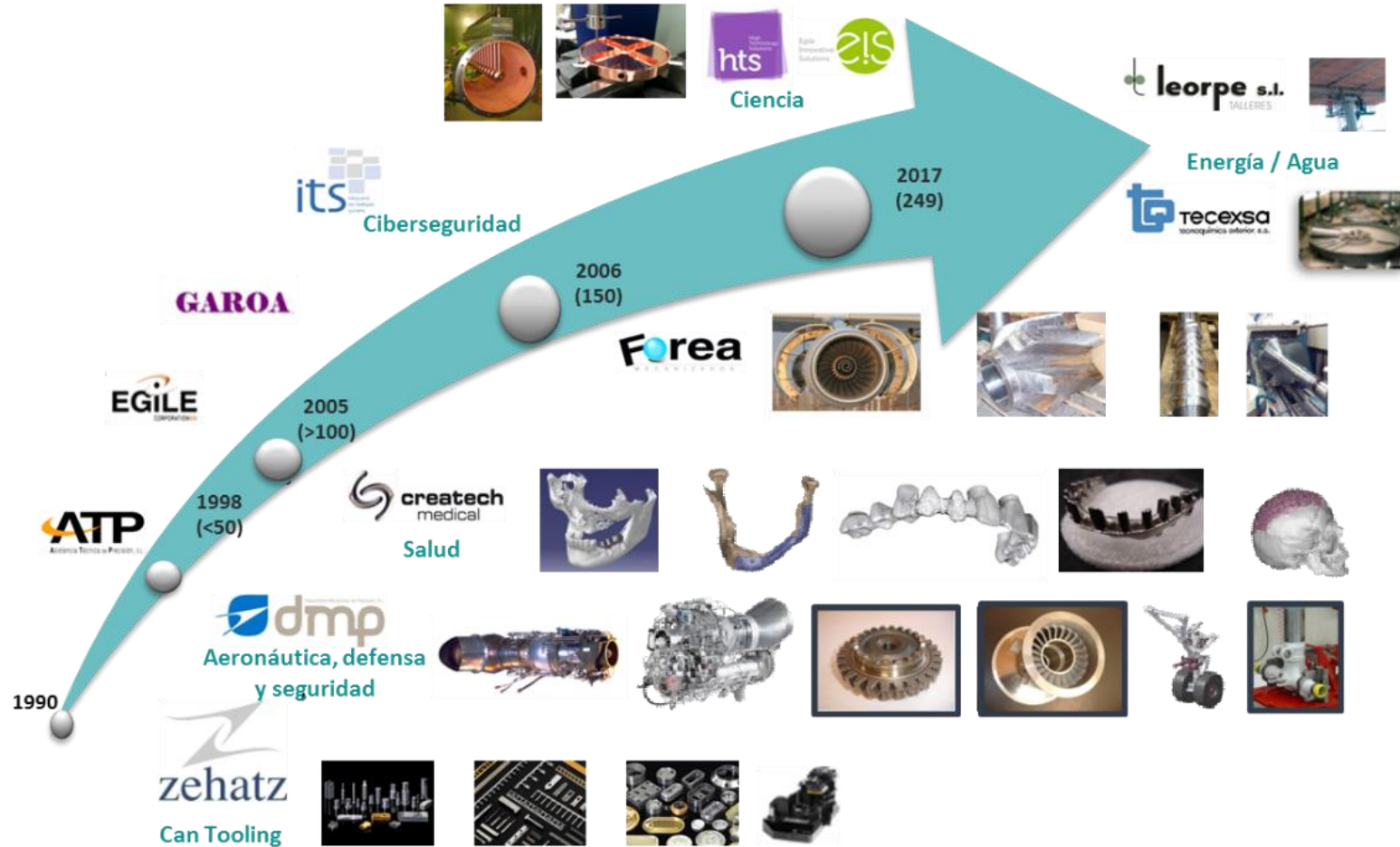
6 de Julio de 2022

01

SCIENCE HISTORY

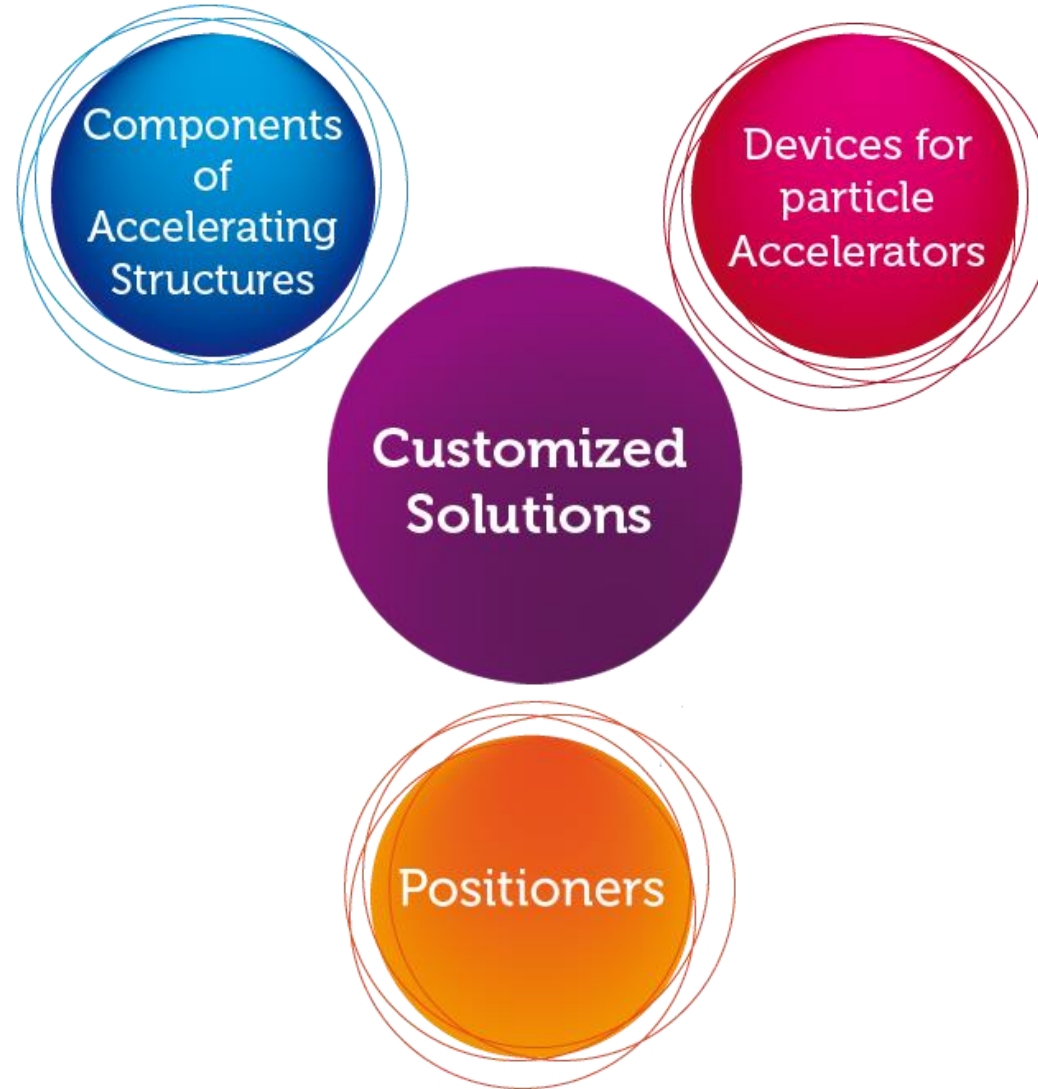


Science History

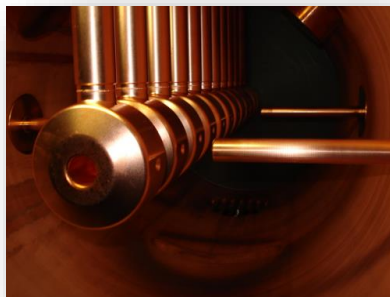
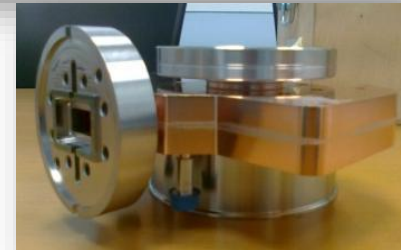
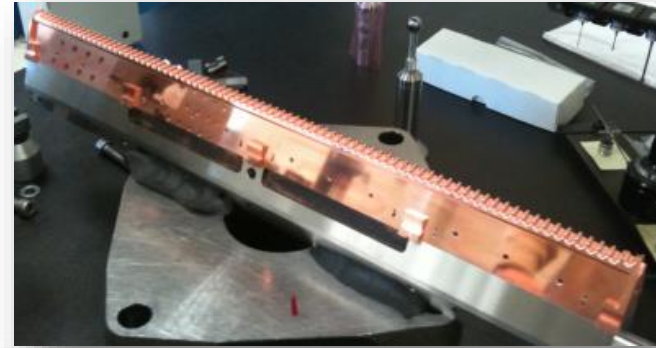
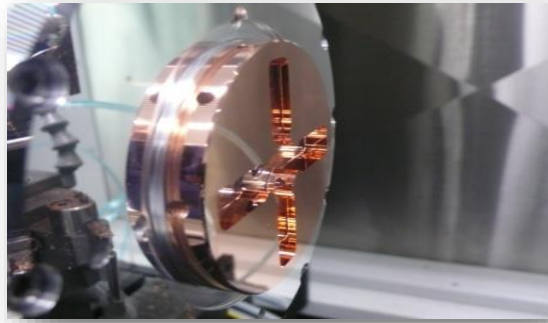


Science

- Design
- Manufacturing
- Assembly
- Test

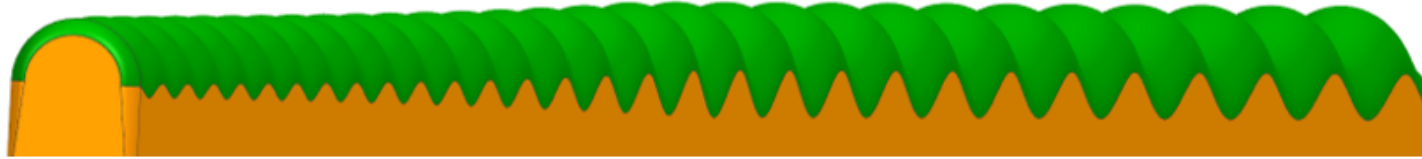


Science. Compents for accelerating structures

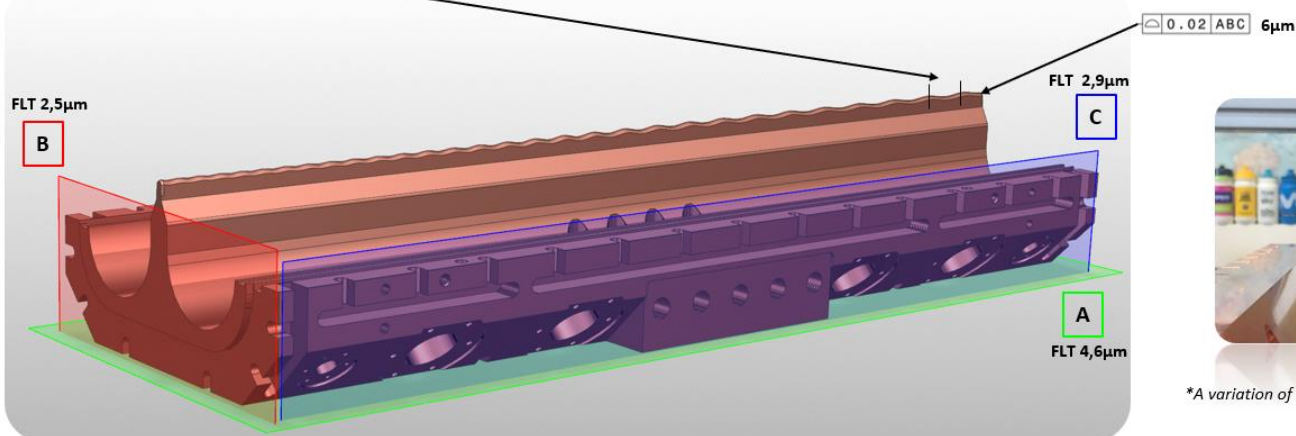
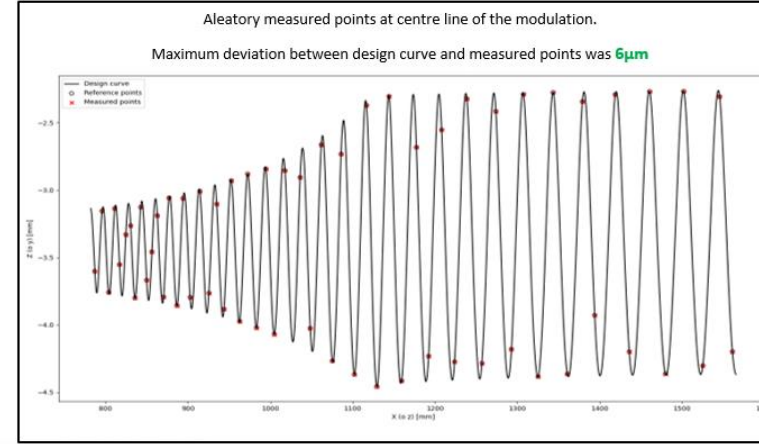
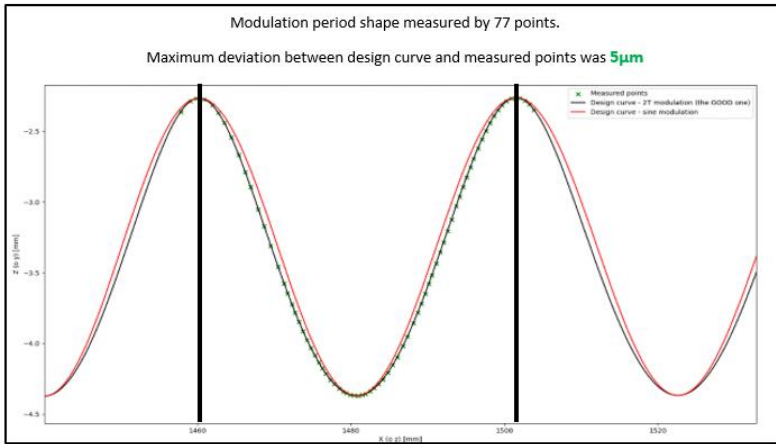


Science. Compents for accelerating structures

The next slide shows the measurements from one RFQ modulation:



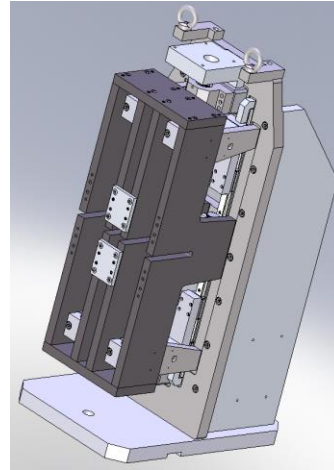
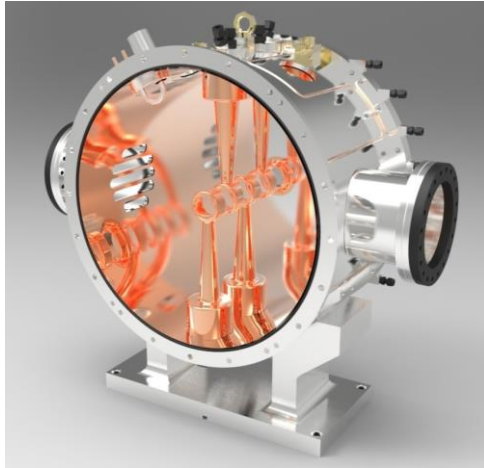
This free form shape is a variational sweep guided by a sinusoidal function. $R=3\text{mm}$ $L=785\text{mm}$.



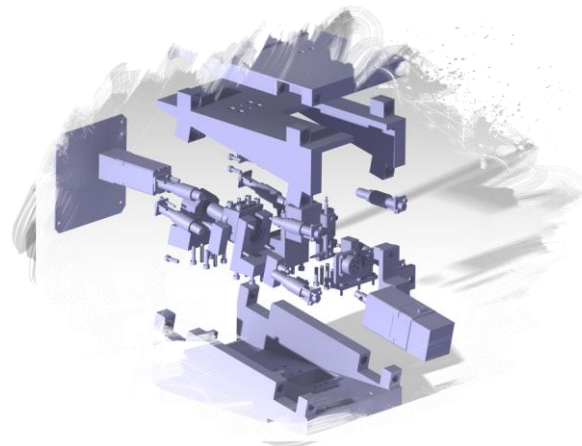
*A variation of 1°C at 800mm copper part means $13,6\mu\text{m}$ of variation.

Science

- Devices for particules accelerators



- Positioners



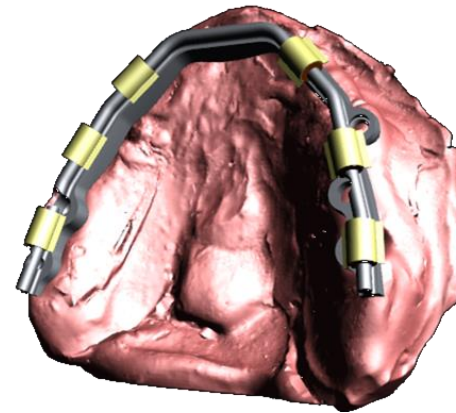
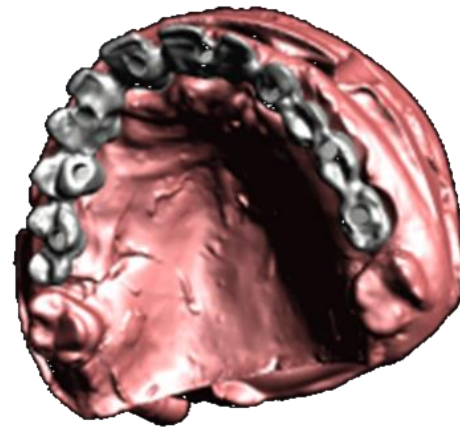
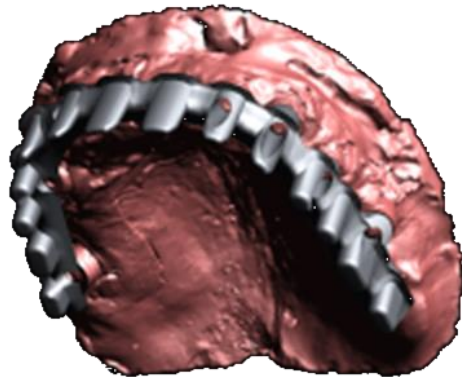
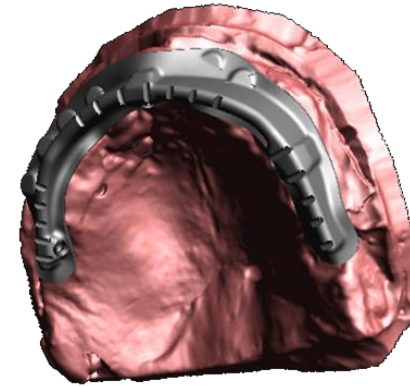
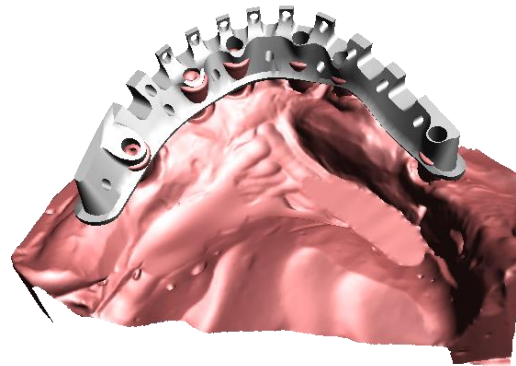
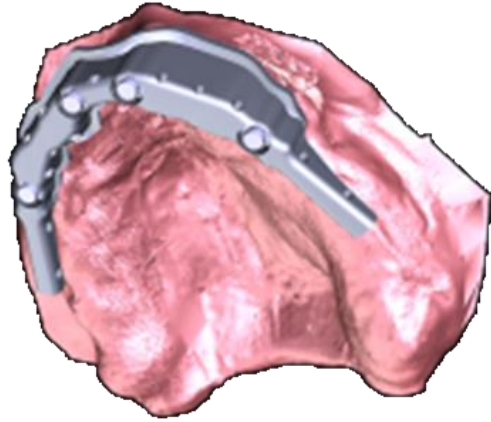
02

HEALTH HISTORY

Health history

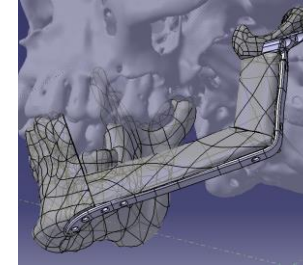
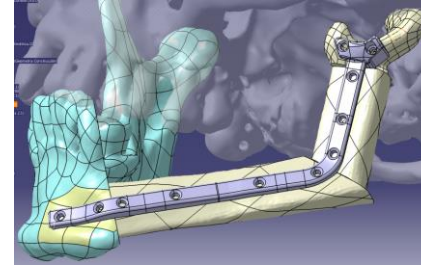
- Dental Implants. Createch Medical (2006)
<http://www.createchmedical.com/en/>
- Maxillofacial Customized Prosthesis (2009)
- Research & Development
 - Spinal Customized Prosthesis (2011)
 - Spinal surgery assistance (2013)

Createch Medical



Personalized Maxillofacial Prosthesis

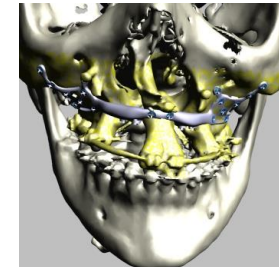
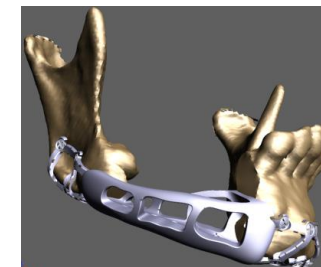
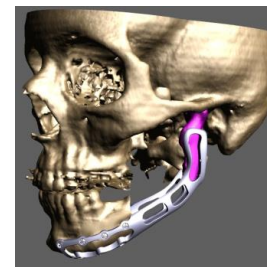
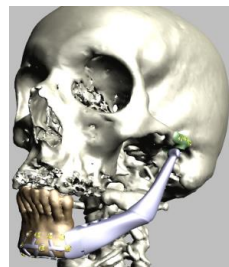
- Autotransplant using spliterbone



- Development of cutting guides

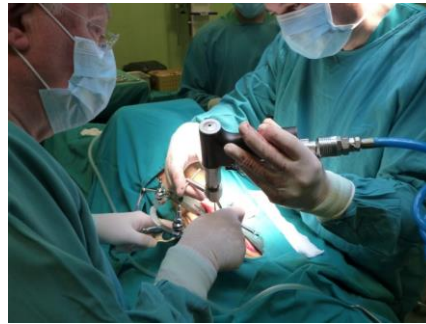


- Titanium desings



Personalized Spinal Prosthesis

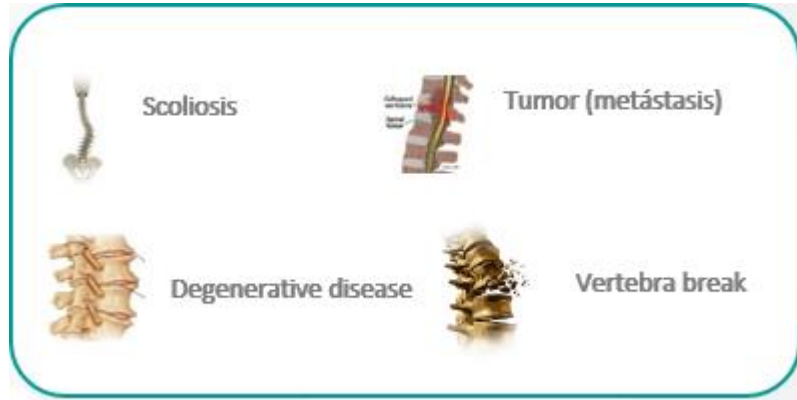
- Status
 - Research and development Project
 - Tested in sheeps and cadaver



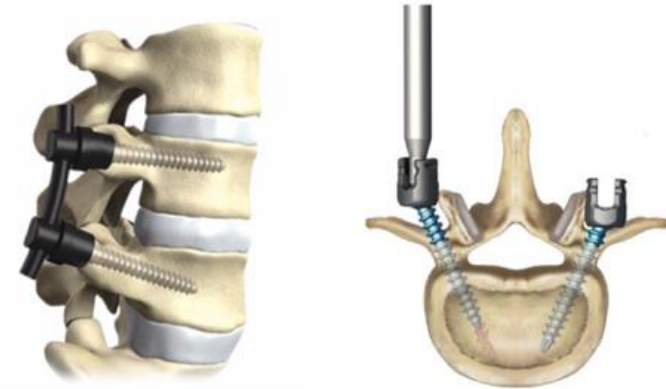
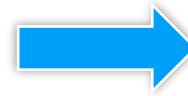
03

CYBER SURGERY

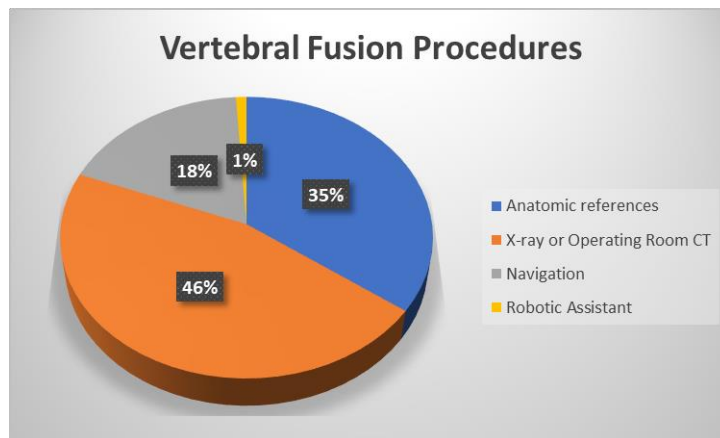
Spine surgeries



Multiple spine diseases



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

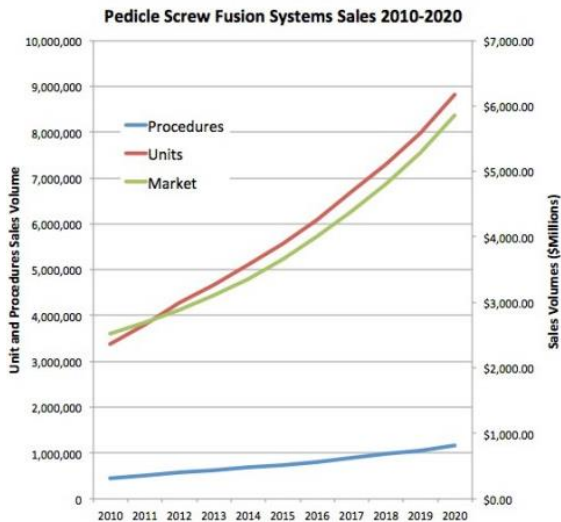
Global Market

Spine

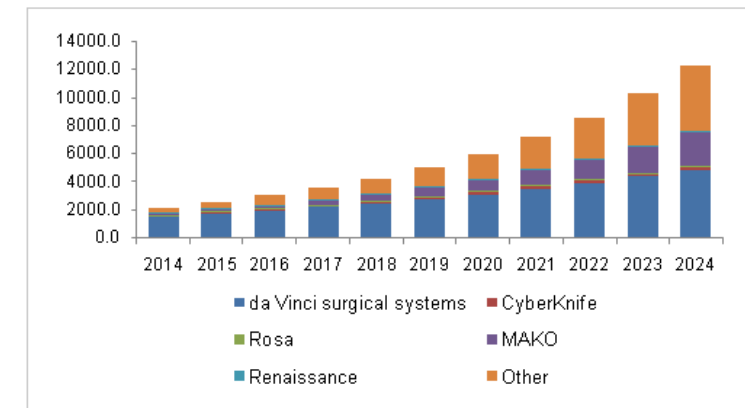
- **7 Million screws in 1,2 M surgeries**
- **20.000 hospitals** all around the world which perform these surgeries
- Technology is being adopted by hospitals **(Market Opportunity)**

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



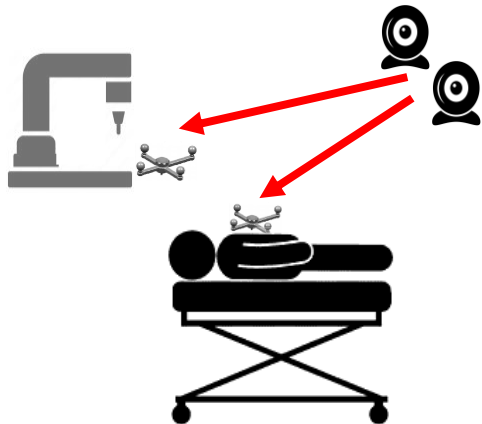
Competitors



- 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

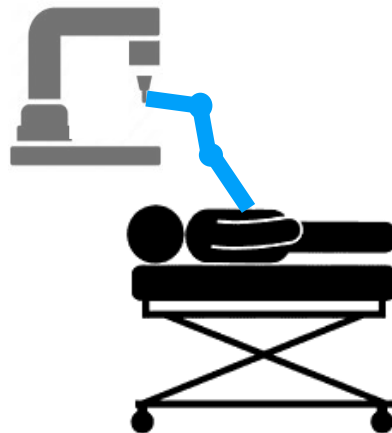
Product

Current Technology:
Optical Tracking



Cyber Surgery's Technology:
Mechanical Tracking

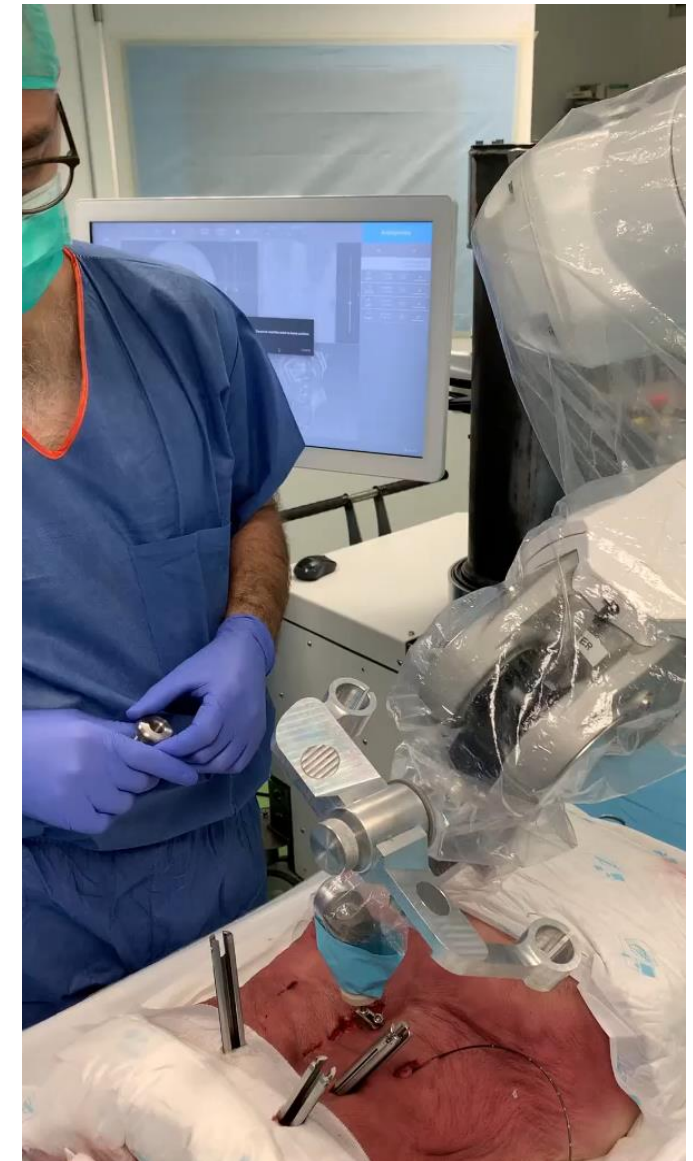
- **Higher Accuracy vs optical**
- **Higher control loop frequency**
- **No affected by occlusions**



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

- Reduction of in-hospital recovery. From 9,4 to 6,8 days
- Less X-ray exposure for patients and OR personnel

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**
- **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
- Motivated and moon-shot thinking

MEDICAL ADVISORY BOARD



Dr. NICOLÁS SAMPRÓN
Neurosurgeon at Hospital Donostia



Dr. IÑIGO POMPOSO
Neurosurgeon at Hospital Cruces, Bilbao



Dr. JESÚS LAFUENTE
Former President EANS

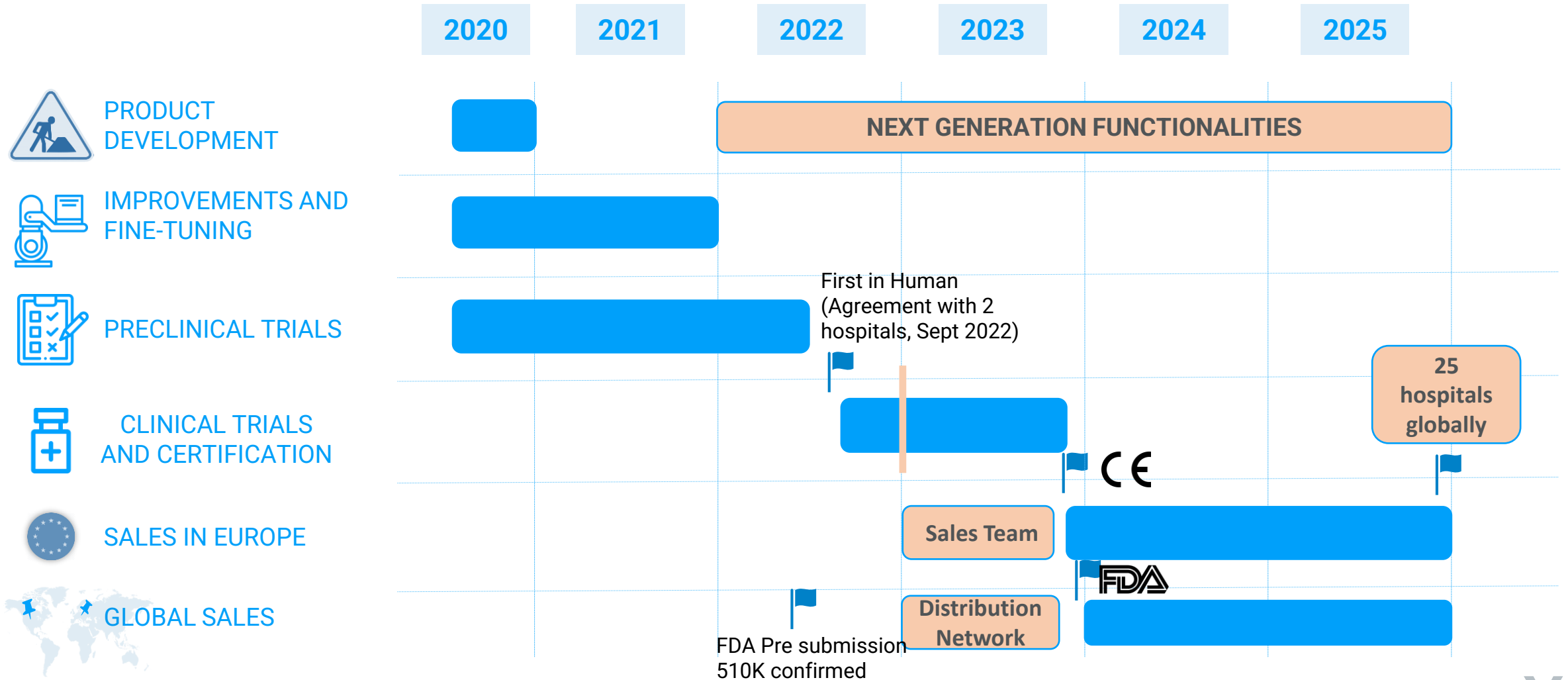


Dr. BARTOLOMÉ OLIVER
Neurosurgeon at Clínica Teknon, Barcelona

New members from Europe and USA in 2022



Milestones Timeline





CYBER SURGERY

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