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UNIVERSITY OF APPLIED SCIENCES UTRECHT

FIELDLAB 3D MEDICAL

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Institute for Engineering and Design

OECD Workshop Digital Health Innovations Netherlands - April 12, 2018

Smart Industry Fieldlab *3DMedical*:
connecting **facilities**, **knowledge** and **expertise** on 3D printing and medical imaging at the **Utrecht Science Park** to form a strong **innovation cluster** together with private **partners** from the Netherlands and abroad, with the purpose of creating **innovations** for **patient-specific healthcare**: from surgical models to bioprinted implants.

Facilities

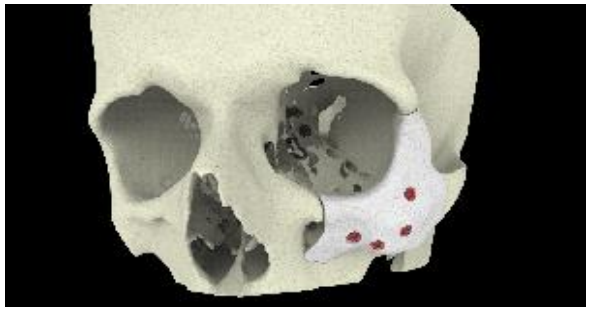
The Fieldlab consists of three labs at different locations on Utrecht Science Park:

1. **3D Facelab UMC Utrecht**
   clinical applications for dental and facial surgery

2. **Utrecht Biofabrication Facility**
   3D (bio)printing with biomaterials

3. **Protospace and 3D Printlab HU**
   agile prototyping, technical development and education.

Technology and applications within 3DMedical



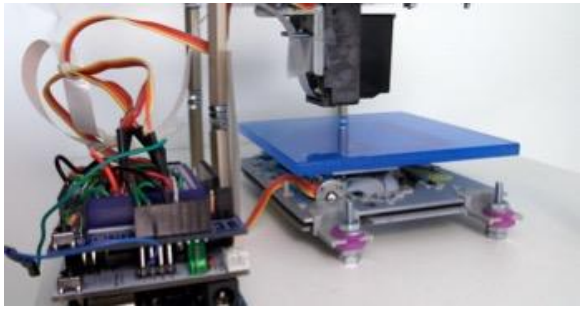
3D print hardware

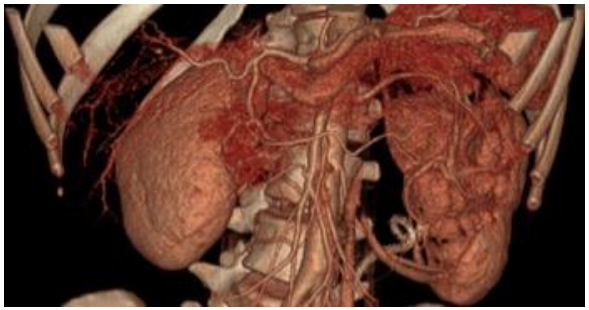
Medical 3D print materials

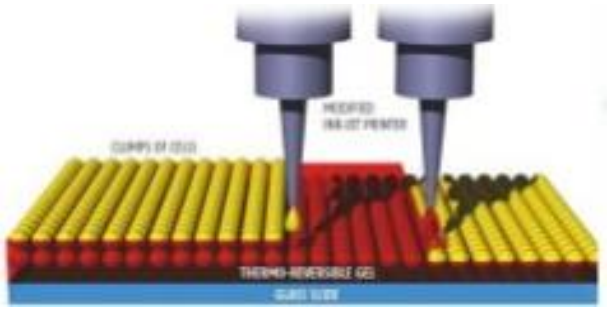
Medical Imaging for printing

Workflow automation

Bio-materials







What's in it for F(o)unding Partners?

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- Inspiring content for **professional education**
- Contribute to the **regional focus areas**
- Access to clinical practice through UMCU and other hospitals
- New **applied** research projects
- Research **funding**: public and private
- Excellent and meaningful **education**
- **PR value and positive and innovative image**
- Sponsoring of 3D printing equipment
- **Spin-off** companies

UMC Utrecht

- Research **funding**
- **PR value and positive and innovative image**
- New public private partnerships
- Sponsoring of 3D printing equipment
- **State of the art** clinical care with 3D printing
- Contribute to value based healthcare with **new treatment strategies**
- Pioneer in 3D printing for healthcare
- **Spin-off** companies
- **Royalty** income

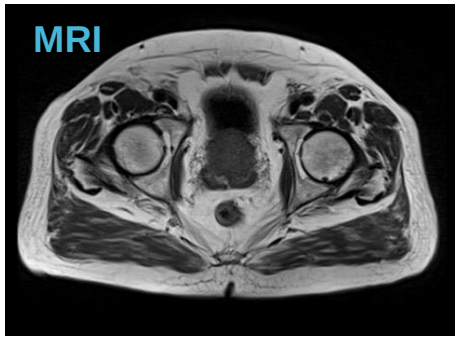
Possible collaboration with other Fieldlabs

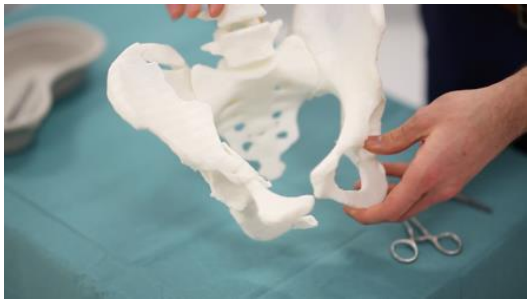
7. Multimaterial 3D printing
Aims at the development of next generation multimaterial 3D print technologies and integrated datamanagementsystems.

14. 3D Makers Zone
Aims at the combination of 3D Printing, Robotics, Internet of Things and Blockchain to enhance production processes.

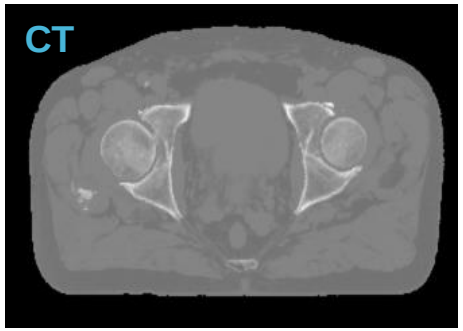
Examples of projects


MRI


MRI




CT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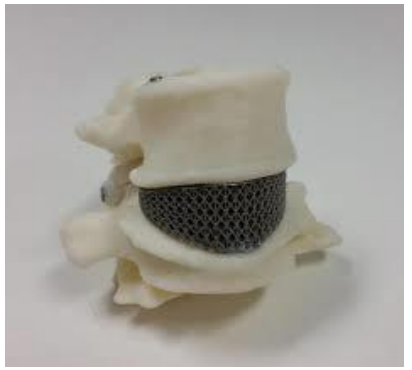
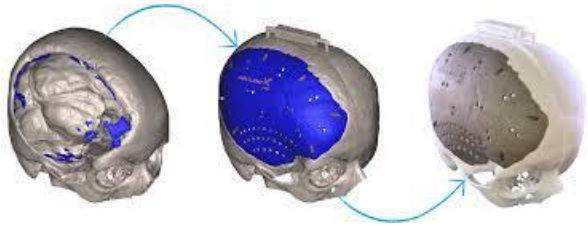
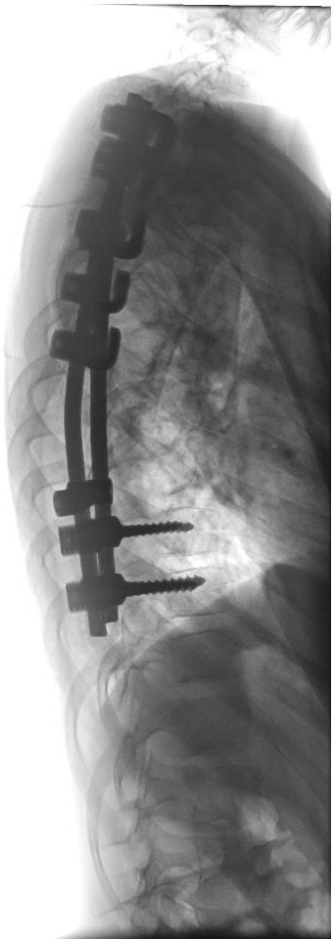




Dep. of Orthopedics UMCU – Dr. Moyo Kruyt

Proximal junctional failure due to neurofibromatosis



2012

2016

2017

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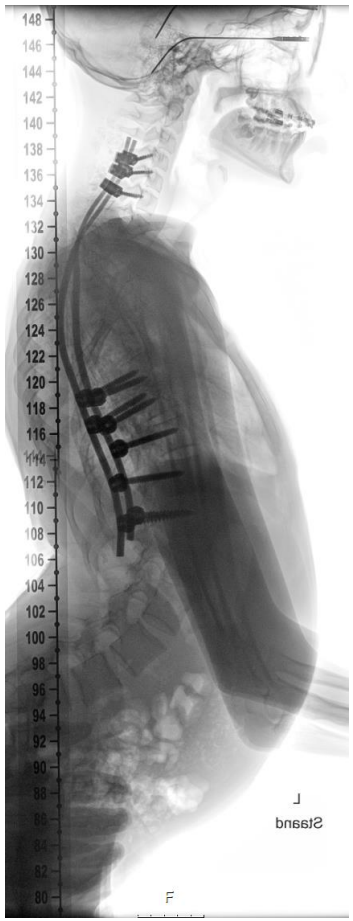
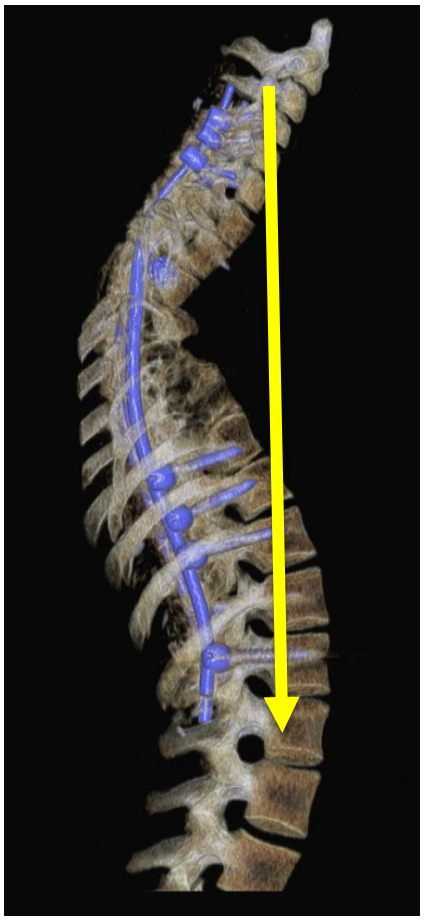
February 1st 2017: good reduction





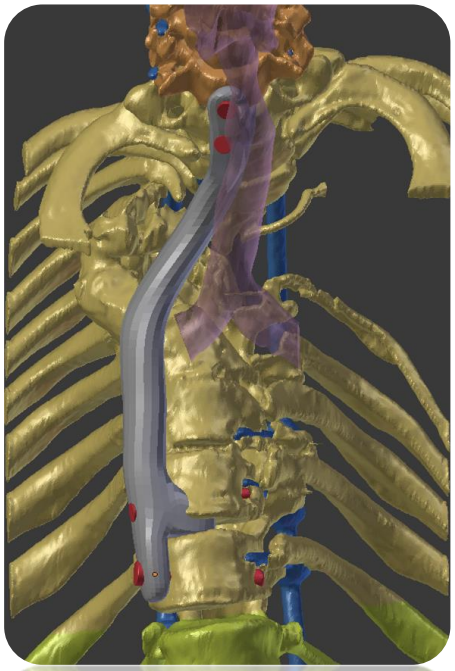
- **Failure** of posterior material is a matter of time
- Conventional rods or graft not an option due to **deformation**

- Need for **maximal strong** anterior strut
- That **exactly follows** the crooked spine and does not impinge on heart and lungs
- That **integrates with bone**
- Allows **size adaptation** to position it under tension

But lack of anterior support

UMC Utrecht

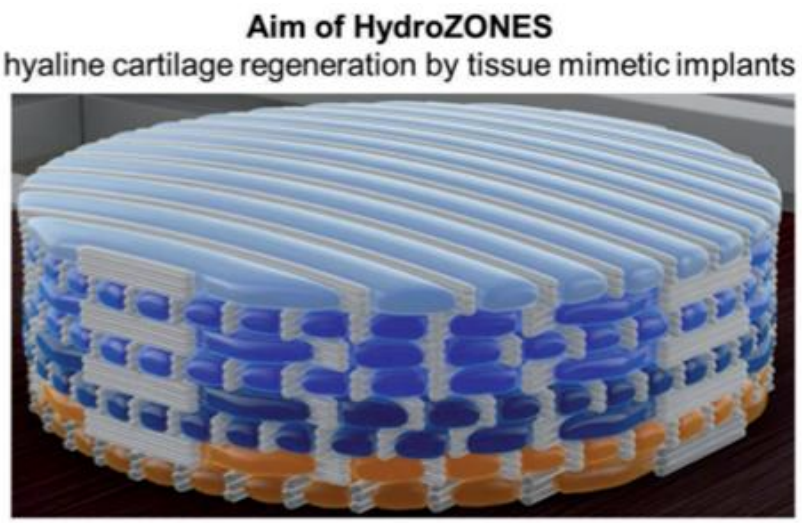
July 2017: insertion via right lateral approach

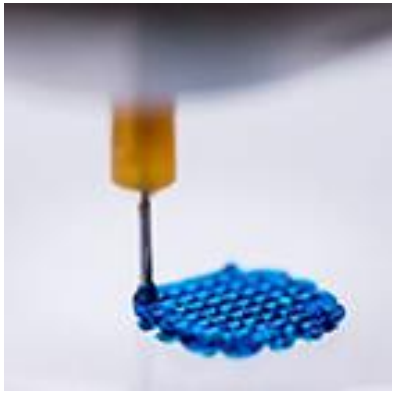


- Perfect fit of the implant and screws
- 2mm undersized due to positioning

- Recovered well
- Patient is walking and goes to school

Utrecht Biofabrication Facility: 3D printing with biomaterials





Thank you for your attention!