

Intelligent, real-time and collaborative custom prosthesis design solutions.

The Challenge

Custom acetabular prosthesis offer superior outcomes with improved fit, lower risk of failure and revision, and cost savings through shorter clinical stays. However, the lengthy and expensive custom design process is a major hurdle in the uptake of custom prosthesis.

Current custom design processes require days of manual input from radiologists, engineers and surgeons plus a host of expensive software for image processing, design and mechanical/functional analysis. The process is highly expensive, hard to scale and results in prolonged wait times.

The Solution

ACID (automatic custom implant design) from Formus Labs is an intelligent custom design platform presented as a webservice that allows engineers and surgeons to collaboratively view and modify prosthesis designs in real time.

ACID-Acetabular is our first platform aimed at custom revision acetabular implants. Hip CT scans are uploaded to the webservice where the patient anatomy and optimised prosthesis design is calculated and presented as a 3D, fully adjustable model. This workflow uses novel algorithms to determine optimal prosthesis shape, position, and fixation given the existing bone stock, surgical approach, and guided by extensive population data from a database of real patient anatomies and function. The automatically generated design is fully customisable by both surgeon and engineer anywhere at anytime on a shared web application.

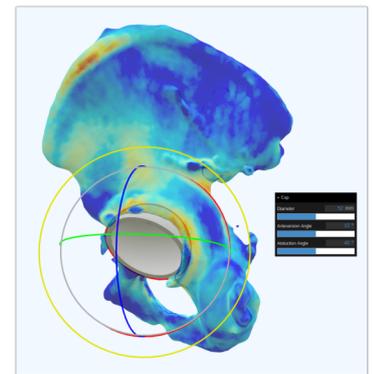
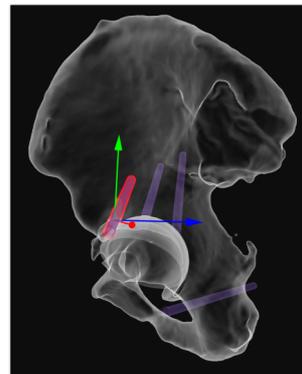
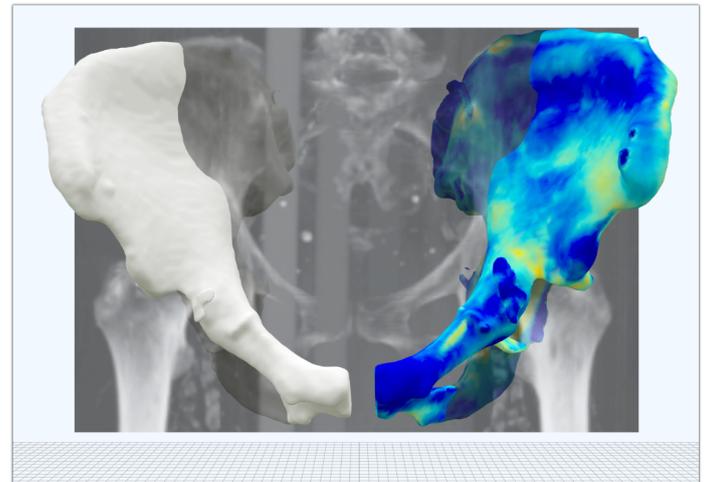
ACID-Acetabular can be tailored to offer the desired balance of automation and fidelity to ensure critical time savings and quality.

Competitive Advantage

- Reduced design time from 35 hours to 5 hours
- Release time to care for surgeons and engineers
- Scalability without additional engineers, >8 fold increase in cases/year
- Share and modify designs between engineers and surgeons in real time
- No need for many expensive design products

Key Aspects

- Substantial cost savings on individual designs
- Streamline engineer-surgeon collaboration
- Attractive solution for hospitals and surgeons due to a valuable decrease in design and wait time
- Diversification into other segments through economics of scalability



Valuable Technology for

- **Custom implant producers** through cost savings and scalability
- **Surgeons** through the release of valuable time, exact inputs on key implant design decisions, and increase in patient satisfaction
- **Engineers** through the ease of use, clearer design feedback from surgeons, and release of time
- **Hospitals** through scalability, long term cost savings and increased patient satisfaction
- **Patients** through increased function and comfort, in addition to a shorter wait time



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