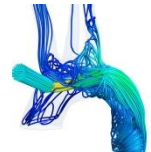
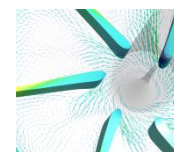
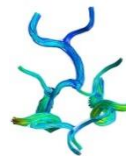
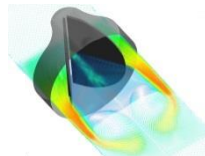
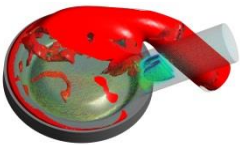


Applications of Modelling and Simulation in Cardiovascular Engineering

Materialise Webinar, 20th September 2017

Dr. Simon J. Sonntag



enmodes – what we do

Computational Modeling Service

- Design Analysis
- Device Conceptualization
- Design Optimization

Development Service

- Technology Development
- Consulting
- Executive Projects

...for biomedical device technology



Design process for blood-contacting devices

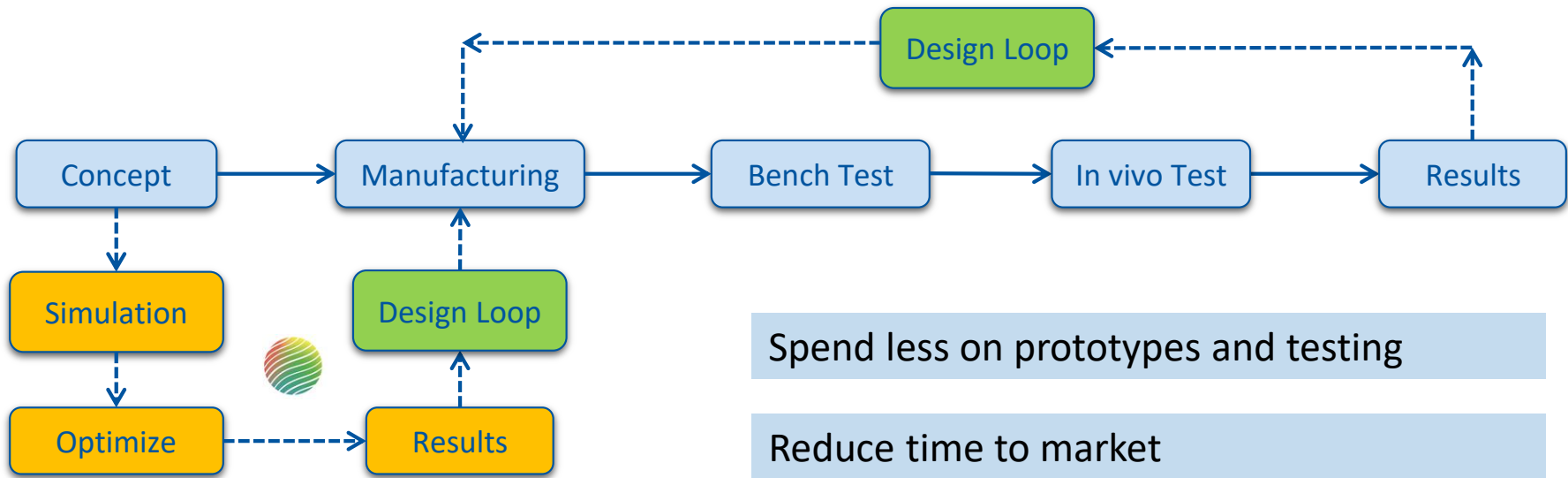
The pathway of medical device development

Common way:

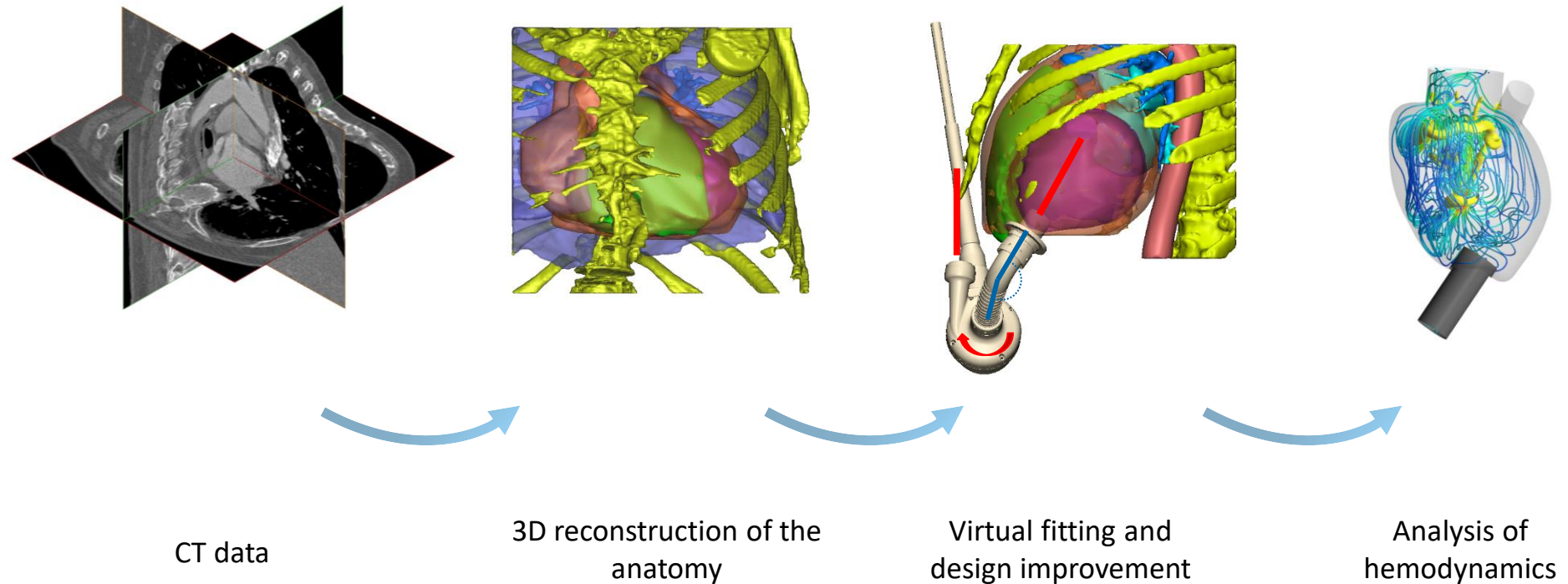
Many cost- and time-expensive design loops

Our approach:

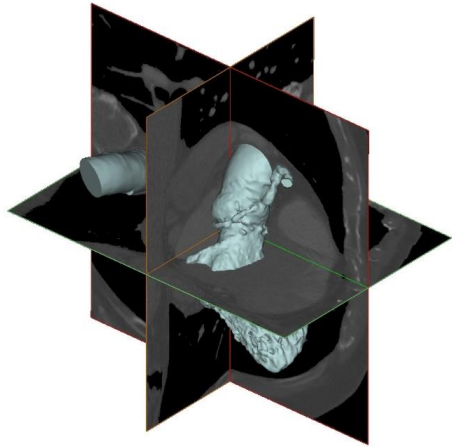
Design loops even before prototype manufacturing



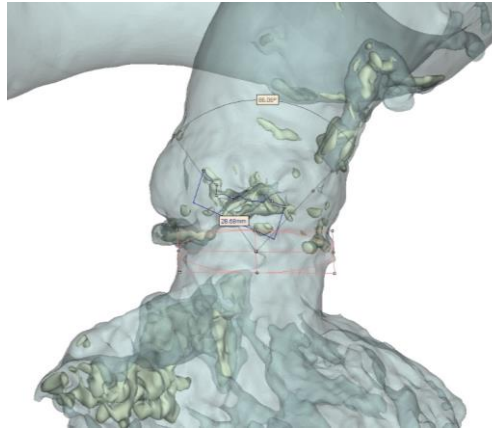
Development of a new inflow cannula for a ventricular assist device



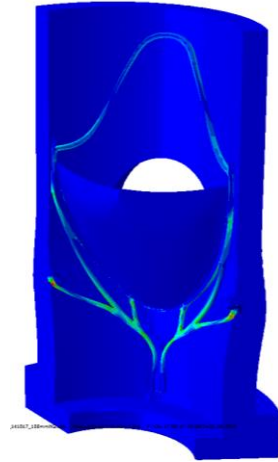
Development of a new heart valve



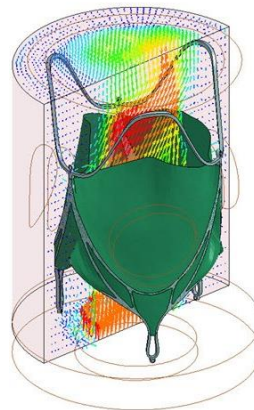
Model creation



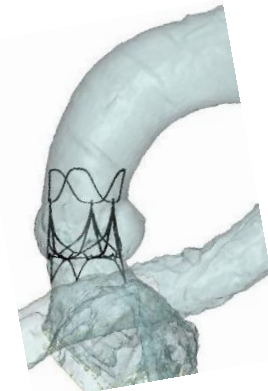
Anatomy study



Design development and optimization

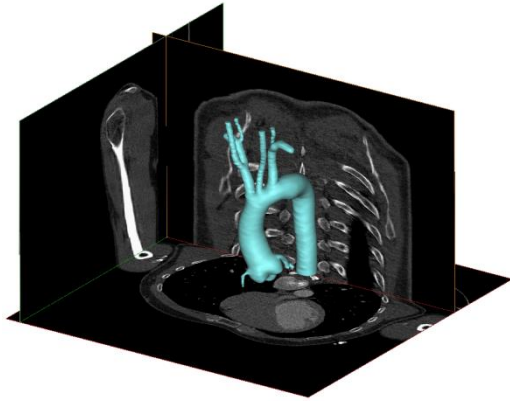


Analysis of hemodynamics

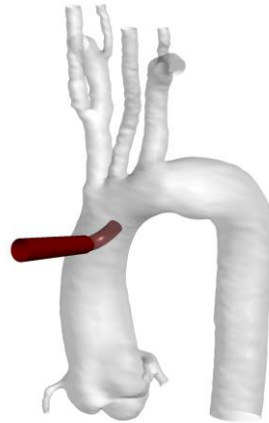


Virtual implantation

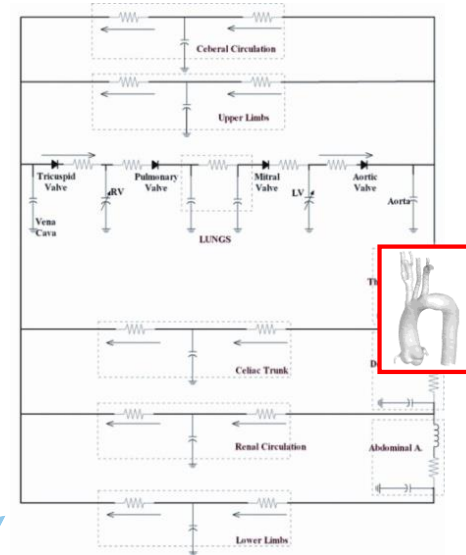
Development of a new outflow cannula for bypass surgery



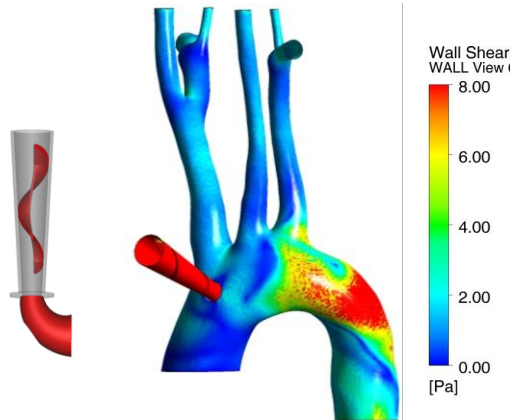
Model creation



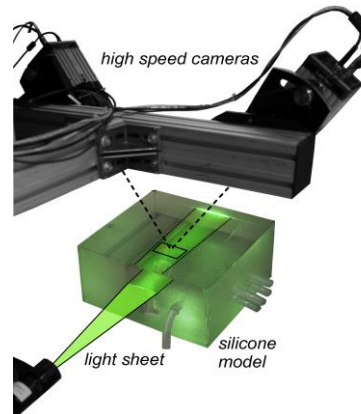
Virtual cannula placement



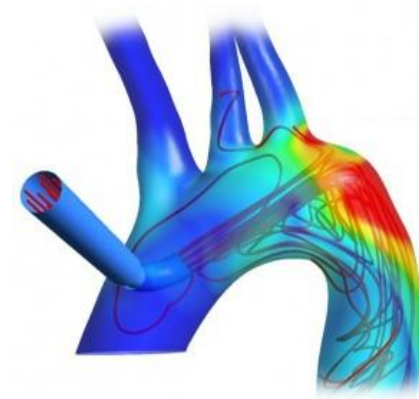
Boundary conditions



Design development and optimization

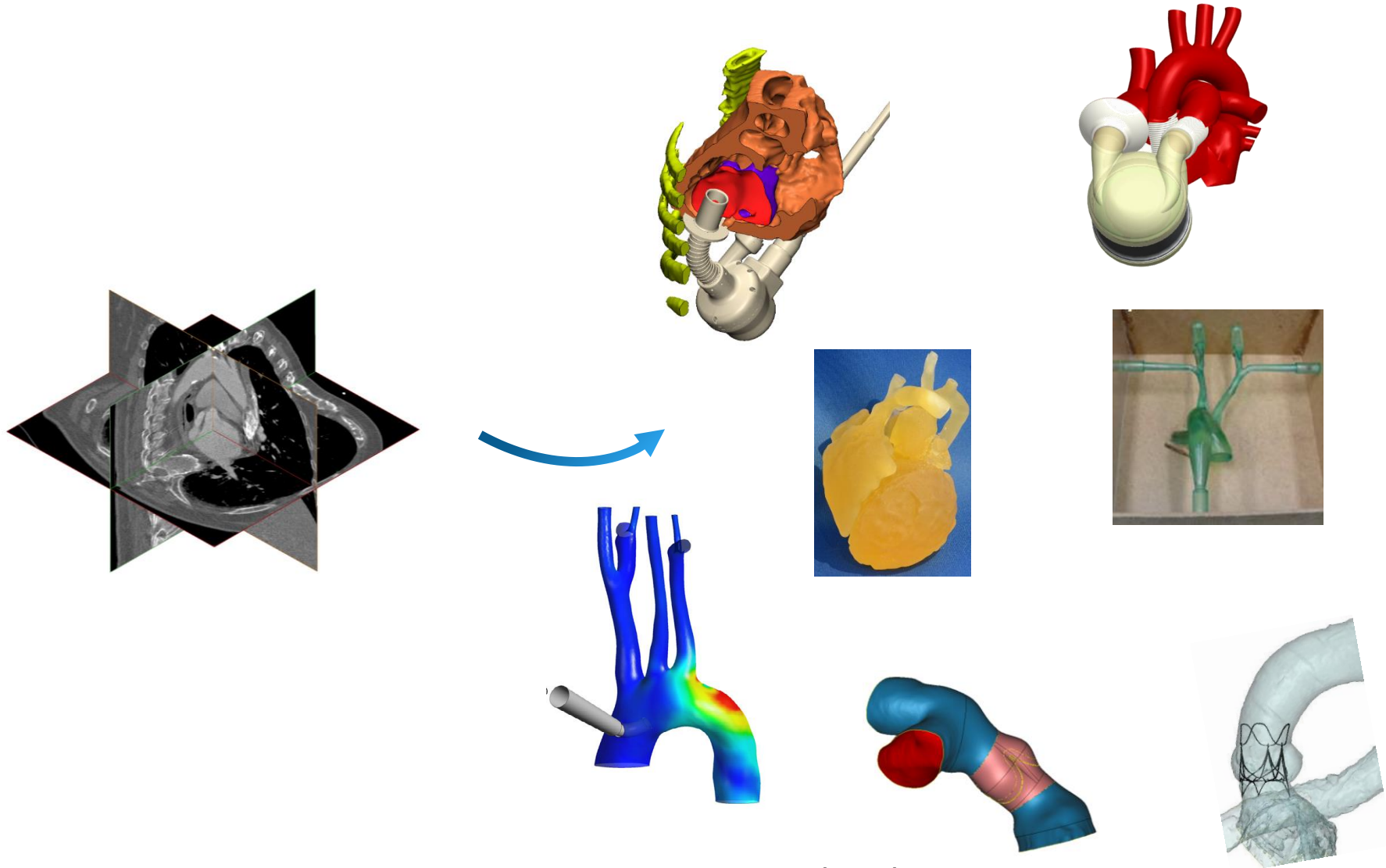


Validation



Simulation

Modelling and Simulation in Cardiovascular Engineering - lots of possibilities...



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