QME ontwerpproject   **Tim van den Boom**

Openbare eindpresentatie:

Datum:	vrijdag 6 september 2019
Tijd:	11.00 uur
Locatie:	Flux 0.300, Groene Loper gebouw 19, TU/e, Eindhoven, De Zaale, 5612 AJ, Eindhoven

*AngioSupport: The design of an interactive tool to allow numerical modelling in clinical decision making**
LifeTec Group

Begeleider bedrijf:	*dr.ir. J.M.A. Stijnen (Marco)*
Begeleiders zorginstelling:	*dr.ir. W.A.L. Tonino (Pim) en dr.ir. M. van 't Veer PDEng (Marcel)*
Inhoudelijk begeleider(s) TU/e:	*prof.dr.ir. F.N. van de Vosse (Frans) en dr.ir. W. Huberts (Wouter)*
Opleider SMPE/e:	*dr.ir. I.M.M. Lammerts (Ivonne)*

Coronary Artery Disease (CAD) is the most common type of heart disease. It is caused by the buildup of plaque in the arterial walls, which narrows the vessel and reduces blood flow to the heart muscle. The golden standard for assessing CAD severity is coronary angiography (CA). This minimally invasive procedure involves the injection of contrast agent to visualize the coronary arteries using x-ray imaging. For complicated CAD, This procedure can be combined with an invasively measured Fractional Flow Reserve (mFFR), which can be used to assess the severity of a stenosis, since a mFFR below 0.80 results in ischemia. Treatment of CAD is either by medical therapy or revascularization. The two main revascularization techniques are percutaneous coronary intervention (PCI) and coronary artery bypass graft (CABG).

Although this measurement justifies the need for revascularization, the heart team still needs to decide between PCI and CABG. For each patient, choices in the position, length or diameter for a CABG or PCI can still become very difficult based on only experience, FFR, and CA. The goal of this project is therefore to create a model that could help the heart team in this process.

By using the already made angiogram images, a 3D representation of the coronaries can be created. This gives a more realistic insight of the patient specific vasculature and an easier interpretation of the lesions. It also allows for computational fluid dynamics, which can calculate the patient specific pressure throughout the coronaries, allowing for a virtually simulated FFR (vFFR). This vFFR can show the results of an intervention and help the heart team in planning coronary interventions.

*Deze openbare eindpresentatie is in het Engels/This public end review will be in English!

BMT ontwerpersopleiding Qualified Medical Engineer