Complex Geometry Architecture: case study roof for a railway station

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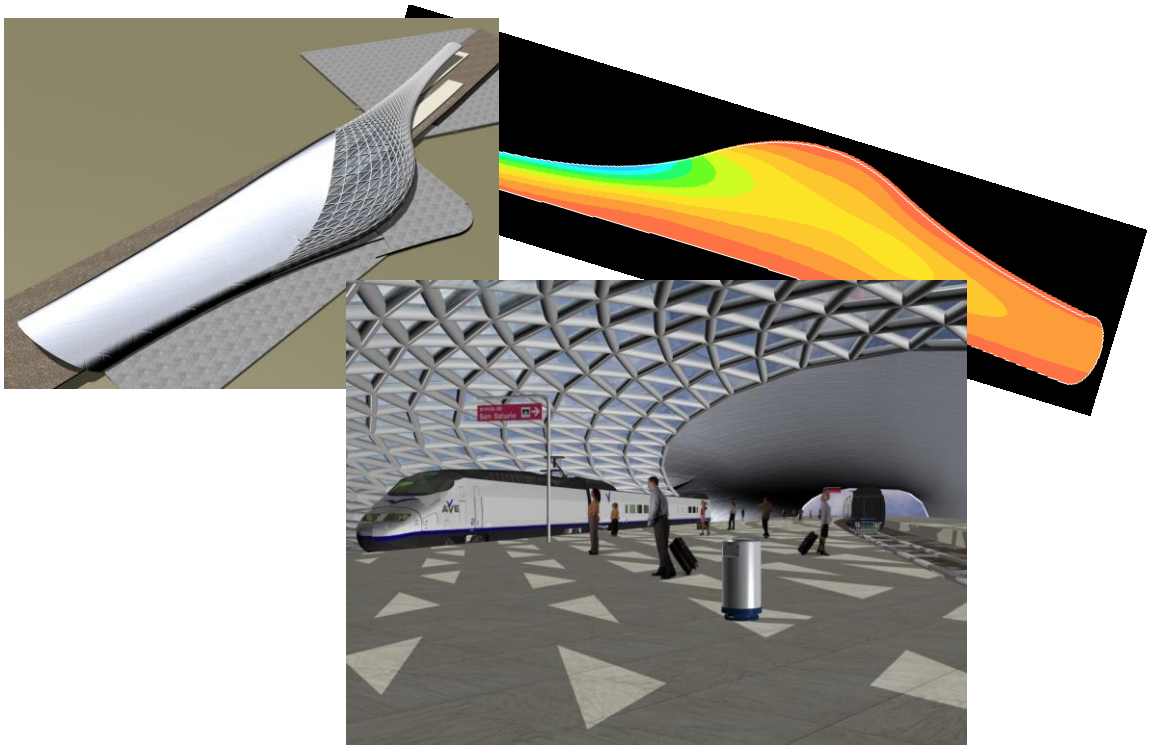
In this paper we will present our experience with applying DIANA in a new course for master students of the Faculty of Architecture of the Delft University of Technology. This course concerns the design, computation and digital manufacturing of complex geometry architecture in an exploratory process, which requires an integrated 3D approach with CAD, FEM and CAMP (Computer Aided Modeling en Prototyping).
The students are asked to design a building structure as parametric object, the form of which has to be related to its urban setting. For modeling the structure Bentley's Generative Components (GC) software is used. The structural behavior is tested by making a virtual model of the structure (DIANA).



The design space of the case study required a curved non-prismatic linear horizontal span structure, in this case a new roof for the railway station at Hoofddorp in The Netherlands This is a medium-size railway station (4 rail tracks) on a main railway line, including a high speed train, that curves through the landscape.
In the presentation we will specifically focus on the use of DIANA software and the interaction with other digital tools in the design process.