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Abstract

The goals defined by the ACARE Vision 2020 present a major challenge to aeronautic research. Besides developments in new aerodynamics and structures, advancements in aero engine research will account for a major part of the required reduction in fuel, emissions and noise. To enable a commercial launch of new aircraft and engine concepts, complex and often contradictory demands have to be fulfilled. Strong dependencies between the individual technical disciplines exist so that the optimization in a single discipline may not lead inevitably to a global optimum. Therefore it is necessary to look at the overall system in order to evaluate the potential of new technologies realistically. This article presents a typical design task in aeroengine predesign and a software solution which supports and enables multidisciplinary cooperation on the engineer side. A common data format based on XML, necessary for data exchange, as well as supporting programming libraries for the processing of this data format are introduced. Furthermore it is described, how a parametric representation can be realized for various geometries with the help of XML. A programming library with C and FORTRAN Interfaces supports geometrical computations for these representations. Finally it is demonstrated that the tools used by the different technical disciplines can be connected to a process chain within a framework.