ANSA EVOLUTION AND CONTRIBUTION TO THE SUCCESS OF INDUSTRY'S CFD SIMULATIONS

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ABSTRACT – Computational Fluid Dynamics has been a rapidly growing and diversifying field over the past several decades that it is hard to set a specific “birth” date. However if we focus on industrial CFD applications, as we now know them, we can place a starting period sometime in the 80s. Since that time, various sectors of the industry have invested and equally benefited from the insight that this method provides.

Some 30 years later, the industry now expects from CFD to simulate its most complex and realistic models, in a fraction of the time that was required in the past, and to offer reliable understanding for practical improvements of a product well ahead in its design process. There are three main factors that have contributed to this achievement:
- the rapid growth of computational hardware resources
- the development of accurate, robust, and user friendly CFD solvers, and
- the evolution of powerful CAD and CAE tools

In this paper we will focus on the evolution of ANSA as a pre-processor for CFD model preparation. We will see how, over the past 20 years, ANSA has grown from a geometry clean up and surface meshing software that was needed by the automotive industry, to a complete suite of tools for complex and high quality CFD model setup and management.

Based on the accumulated experience from working in close cooperation with the industry, we will present all the currently available pre-processing techniques together with their pros and cons, and we will discuss about the future development plans to overcome any remaining bottlenecks, as well as to make the most out of the opportunities that arise with open source codes.