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**Title of the Presentation:**

**Industrial demonstration of advanced algorithms for aerodynamic simulation on unstructured grids.**

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**Abstract Text:**

*(20 lines or 300 words)*

*Most of the methods for flow simulation used at present in aeronautical industry are based on Finite Volume discretizations developed for regular structured grids of cubic cells. Extensions of these methods for unstructured grids have been introduced, but a loss of accuracy is inevitable due to the non smoothness of unstructured grids.*

*In the present work carried out under the 4<sup>th</sup> Framework IdeMAS project, a different class of methods, known as upwind residual distribution methods, is evaluated and further developed. These methods are of the cell-vertex type and bear strong relation with continuous stabilized Galerkin methods such as SUPG and GLS, however they also incorporate monotonicity preserving properties as found in Godunov finite volume solvers. They offer the potential of second order space accuracy on arbitrary irregular grids composed of tetrahedra.*

*A demonstrator code has been developed, which will incorporate the new developments built around these compact stencil schemes, such as : new upwind residual distributions, efficient Full Multigrid acceleration, advanced parallel iterative solvers based on scalable preconditioners and solution adaptive remeshing.*

*The status of the project will be described and the milestones reached until now will be highlighted: This includes industrial validation of the inviscid flow solver showing improved accuracy of the new methodology , as well as the full multigrid acceleration.*

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