**Nexus: a Process Integration and Design Optimisation Solution**

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1. **Introduction**

The development of modern engineering products requires complex design interactions, team working and computationally intensive analysis tasks. In this scenario, integrated design processes are becoming more and more relevant in the earlier design phases to interactively explore and compare multiple solutions so to identify the most promising ones and to lead to an overall optimal design.

Such integrated processes should account for multiple disciplines ranging from the purely engineering fields (structures, fluid dynamics, systems, controls, etc.) to cost and production considerations.

Nexus, the Process Integration and Design Optimisation Suite by iChrome, has been designed to accomplish these tasks and to answer these needs in an intuitive and user-friendly working way.

This work is intended to provide a general and simple introduction to Process Integration and multi-disciplinary Optimization, showing some of the benefits such integrated technologies can offer to leading industrial firms. Nexus will be used as an example to go through simple applicative examples and to derive some preliminary conclusions on the benefits of the technologies along with some open discussion on the work undergoing at iChrome to make such technologies more distributed and collaborative.