

Goals for European working group on GC for re-entry vehicles

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ASTRIUM ST expectation from this European working group would be to build European know-how on re-entry vehicles control.

In more details from ASTRIUM ST perspective we should:

- Perform a survey on one side on research studies and on the other side on existing flight proven GNC in the world.
- Define the main aspects to be considered (guidance, navigation, control and/or control allocation), based on identified needs.
- Define reentry common benchmark with rapidly varying parameters, numerous parameters, numerous uncertainties, NL and MIMO system

This open benchmark could be used for all research works.

Research partners would develop novel algorithms and techniques.

ASTRIUM ST would contribute with its experience to monitor the developments, analyze and synthesize conclusions.

All guidance and control aspects could not be treated simultaneously. Thus, based on our current experience, we think that we should focus on:

- Definition of standard re-entry Flying Quality rules for design and analysis
- And control aspects including continuous and discrete time aspects of synthesis and analysis tools:
 - improve WCA tools for large number of parameters for design and validation,
 - increase GC robustness and versatility,
 - reduce control design time (iterative process) for uncertain LPV system,
 - develop tools for local and global MIMO stability and robustness analysis,
 - reduce time-domain validation time.
- Working group should also gather our congress contributions in dedicated sessions.