ALTRAN Research Team created in 2013, initially intended to focus on space safety topics. Due to the emergence of space debris recommendations and regulations for space industry, the research team initial activities addressed the flight and ground aspects (satellite robustness to micro-meteoroids and orbital debris & trade-off between atmospheric controlled reentry and design for demise).

With involvement inside THALES consortium on ESA DESIGN for DEMISE activities on satellite and optical payloads, the team proposed several Building Blocks to the CLEANSAT Initiative and was selected to investigate further the BB10_SMA Dismantlement Mechanisms & BB11_Demise Reaction Wheels.

The intention of this presentation is to remind the outcomes of those building blocks and the evolutions and progress since to prepare the roadmap for the upcoming CLEANSAT Development Phase. A lot of spin-off topics and related activities have been identified and investigated. The presentation will present those assets as well and the potential benefit for the CLEANSPACE community. In addition, the presentation intends to highlight the evolutions of those RESEARCH activities in line with CLEANSPACE topics:

In parallel, the initial ALTRAN Research Cannes team has enlarged its Space Debris topics to the launcher industry mostly with an activity with CNES_DLA launcher directorate concerning debris mitigations scenarios for dual launch structure (AR6_SYLDA). The team has since investigated several preliminary innovative scenarios in CNES RFP concerning launcher debris mitigations and reductions:

- ST1R : Suborbital Reentry / Recovery & Reuse of 1rst Stage (ie Launch Booster)
- ST2R: Orbital Reentry / Recovery & Reuse of 2nd Stage (ie Upper Stage)
- ST3R : No Orbital Reentry / Reuse in Orbit of 3rst stage (ie Upper Stage or spacecraft vehicle)

Recently, several new activities have emerged within ALTRAN-FR in parallel of MMOD topics (Mitigations Measures for Orbital Debris) addressed by original ALTRAN Cannes Research team. This trend is now so-called "GREENSPACE" intending to address same perimeter as CLEANSPACE. It is then since including:

ADR : Active Debris Removal topic with CIR Project "Space Cleaner" (an investigative scenario of small size debris collector in a large quantity and high cadence rate)
GREENSAT : "Life Cycle Assessment" for satellite LEO & GEO at preliminary development phase in line with evolutions Industry 4.0 trends.

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