Remote testing, new approach for Space.

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Since the Industry 4.0 concept was introduced into the market, factories and manufacturing processes have experienced different transformations to make them smarter, by linking various up to now isolated disciplines, from design to production, automated inspections, embedded sensors to give an authoritative overview of product status and testing. Any space customer is aware of it and about the unquestionable benefits that will bring for new space missions.

This abstract is focused on the last step of this production chain, and how the Remote Testing is helping to shorten the cost and schedule of space programmes. In particular, we will show the last development on our Virtual Lab. platform devised to provide the final user with fast test-design tools, as well as real-time progress status and result feedback.

A quick numbers could help on a better understanding of the advantages that Virtual Lab could provide to the community. During Solar Orbiter around 15% of the parts procured were not qualified, more than 500 lots shared between 70 different companies. Most of them very critical for the mission: hybrids, integrated circuits, optos, wires, etc… and many were rejected, forcing a new procurement, testing and producing and non-marginal shift into the timeline.

Thanks to the Virtual Lab tool any customer can devise his own test solution specifically adapted to the actual needs and requirement and monitor the result in real time, without the need to wait for the completion of all the activities. Therefore, the final user can adapt the test conditions to the early results the platform is providing and receive feedback from our test engineer during the execution of any activity. In many cases, although the duration of the test cannot be reduced, the detailed records of parts behaviour can be accessed and analysed in real time. Thus, manufacturers and users gain valuable time to develop contingency plans and solutions to address detected anomalies.

Within this communication, the Alter Technology Virtual Lab platform will be briefly introduced, and their advantages and performance will be illustrated with some real example and currently running examples of the implementation in different critical tests such as Radiation Testing, Environmental and Mechanical Test, Microscopy, etc.

Virtual Lab is Alter Technology response to Space 4.0 requirement, and hopefully, a new framework to make European Space companies more competitive.