IAF SPACE SYSTEMS SYMPOSIUM (D1)
Innovative and Visionary Space Systems (1)

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AIX SPACE-EDGE APP STORE

Abstract

Current scenario is moving towards the implementation of tools able to comply to application needs on-board: to have the information required by end-users at the right time and in the right place. And the place is more and more often becoming the space segment, where the availability of actionable information can be a game-changer. In this approach, the EO value chain is transforming. Value is shifting from the sensed data (that nowadays are becoming a commodity) to "insights" and actionable information. Components of the chain are being moved from user's desktop to the cloud and from ground to space. User will no more need to be aware of what data are providing the information he look for, or where these are stored and processed. Application will be the core and the details related to its workflow (data acquisition, processing, selection, information extraction...) can even be completely transparent to users. Or, actually, user may only define what he really cares of. This is the scenario the AI-eXpress services (AIX in short) are enabling. AIX makes available satellite resources and on-board applications as-a-service. Customers can pick-up the application they need from the AIX app store, configure and run it on the satellite already in orbit. The system will the take care of scheduling the data acquisition, transforming data into information and also raising near real-time alarms when services require. It is based on the SpaceedgeTM on-board artificial intelligence application framework, on distributed ledger technologies (blokchain) machine-to-machine interfaces, on the high performance computing cluster and finally on the ION cargo spacecraft vehicle.

AIX is a gamechanger. It processes data where it's more convenient, starting on-board at the "space edge"; it turns EO product generation into services, making the satellite transparent; it makes on-board resources flexible enough to fit to different applications and address different needs, thanks to AI and DLT technologies advances. AIX fosters the transition from a traditional space model to a really commercial one, reducing bottlenecks and barriers, enabling new market opportunities to flourish and enhancing the effectiveness of the services delivered to the ground. Emerging NewSpace companies may now test their innovative AI algorithms and proof-of-concept directly in space and prove their value to the market. Traditional space institutions and research entities may test a new approach changing from "makers" to "enablers".

AIX is developed within ESA Incubed programme and the services will be commercially available in 2022 on-board two satellites (4 in 2023).