



# AI-based control for the next generation of flexible satellite payloads

## What is ATRIA?

**ATRIA (AI-Powered Ground Segment Control for Flexible Payloads)** is a project funded by the European Commission under the Horizon 2020 Programme as part of the H2020-SPACE-2020 call. The project aims to build a generic and intelligent tool (named AI-PCS) to control current satellite flexible payloads and their configurable traditional counterparts. Artificial Intelligence (AI) techniques will provide the tool with the sufficient intelligence to autonomously decide the optimum configuration of the available satellite resources for the on demand service requests.

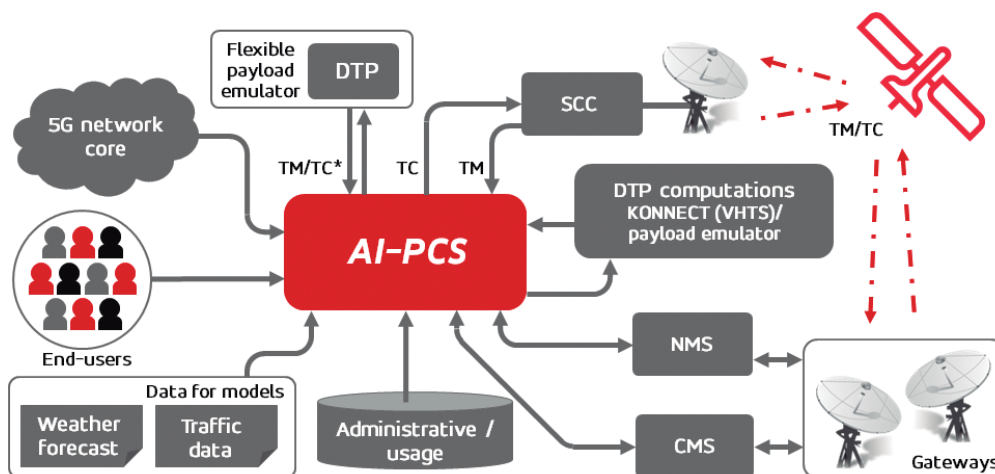


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# AI-based control for the next generation of flexible satellite payloads

A new generation of completely flexible satellites is currently about to take over the space segment market. These new satellites are provided with novel digital payloads whose cores are composed of complex digital transparent payloads (DTPs), making the satellite systems become softwarized objects. This evolution from traditional analog payloads to their new digital counterparts has been a consequence of the development of the technology, the emergence of new necessities and the corresponding commitment to the full replacement of custom hardware solutions by customizable software alternatives. While, in the past, the mission of a satellite was defined and fixed years before entering into service, and remained inalterable during its whole lifetime, currently, missions are aimed to be redefined on demand, even when the satellite is in orbit, via commands from the ground.



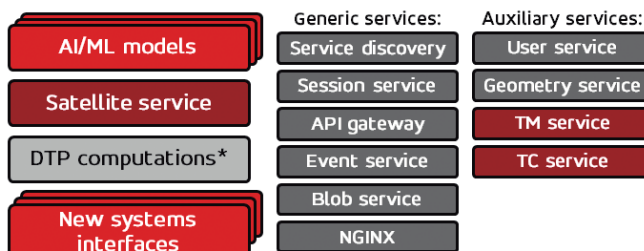
To tackle the mentioned new situation, **ATRIA proposed tool is aimed to be a disruptive advance for the ground segment technologies** due to several reasons. First, AI algorithms will substitute the, until now, indispensable role of the payload engineer in terms of payload configuration. Second, the AI algorithms and datasets will provide useful information to, not only autonomously optimize the satellite resources allocation, but also explore new capabilities for these complex payloads and take the most out of them. Last but not least, the tool is aimed to be generic, hence, transparent to the payload, providing added value to the proposed system and turning it into a cost-effective solution for satellite manufacturers. The lower cost of this proposed generic flexible payload management will increase the attractiveness of its standardization. **ATRIA** plans other outcomes, such as a flexible payload emulator. **ATRIA** tool will be validated on EUTELSAT KONNECT and KONNECT VHTS satellites.

The project is coordinated by GMV Aerospace and Defence and brings together seven complementary partners from

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four European countries with different areas of expertise for the development of AI-PCS and other relevant tasks for experimental implementation and demonstration of prototypes, collaboration with standards and the definition of a roadmap for the results generated. **ATRIA** runs from April 2021 to March 2024.



(\*): KONNECT, KONNECT VHTS, payload emulator

The partners are Centre Tecnològic de Telecomunicacions de Catalunya (Spain), AIKO (Italy), Eutelsat (France), Skylogic (Italy), OHB System (Germany), Fraunhofer Institute for Integrated Circuits IIS (Germany).

