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FUTURE GROUND SEGMENTS WITH STANDARDIZED INTERFACES: THE DOMINO-X PROJECT

Abstract

The DOMINO-X project was launched at the end of 2021 with 11 partners with a central aim of making main interfaces within EO ground systems public and standardized. The goal is for these interfaces to be adopted by industry and institutions, by primes and providers of ground segment building blocks. Key to the future success of this initiative is the involvement of the largest number of players in the domain. Stabilizing and agreeing interfaces of key building blocks increases competitiveness of the ecosystem, since the barrier to entry of build block providers is lowered, as the integration into end-to-end systems is facilitated.

The paper presents the motivation for this initiative, accelerated by the French Plan France Relance together with significant investment from industry. The concept of building blocks, aka dominos, is explained, along with the breakdown of the ground segment architecture and key interfaces.

A domino is standalone, is monitored, produces KPIs on the delivered service, may serve more than one mission and relies on its own infrastructure. Regarding the latter, each domino and key interface are natively thought for virtual environment, up to cloud environment. Important to note, no common IT specification is worked on, but instead guidelines to simplify deployment of dominos over the same IT infrastructure.

In addition, it is also key that a domino be of such nature and size that it presents an interest for a provider to develop or operate it. The system is then built by inter-connecting existing and/or new dominos.

The dominos are meant to answer to a wide array of use cases such as, to name a few, multimission federation, antenna as a service for reactivity or event based programming. The DOMINO-X project addresses a wide array of axes of innovation feeding the definition of dominos. The paper provides

a broad overview of these axes, covering CONOPS, mission programming, command and control, the antennas, image chain, AI in EO ground systems and automated reprogramming.