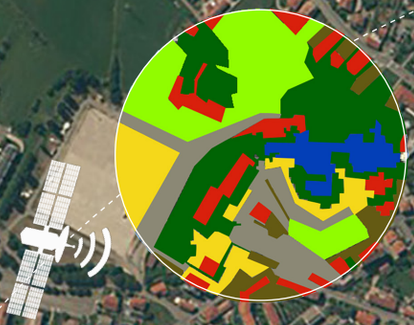
## Democratizing Earth Observation: The Domino-E Vision

Domino-E makes Earth observation **accessible and affordable.** It implements cutting-edge technology that allows users to address a variety of acquisition assets by having access to **multi-mission observation data** and focuses on improving the user experience of EO systems. The novel Domino-E multi-mission and multi-layer federation system featuring cognitive assistants, scheduling, and optimization algorithms are designed to **enhance the customer's experience** supporting the space industry's shift towards data-driven markets. Domino-E contributes to the development of Earth Observation technologies, **fostering European competitiveness,** and supporting SMEs in the development of multi-mission services.

**Join us in embracing the future of Earth Observation!**



## A Modular System of Dominoes

Domino-E uses **modular software components** for Earth observation. Like domino tiles, every module is accountable and interchangeable, following set standards and interfaces (e.g. OGS API, Open API 3.0., or JSON). Once connected to the ground segment, the **modules can be used for one or more missions** in different environments. Dominoes can be deployed at the customer site, as a service provided, or as a delivered component.

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# Your Access to Multi-Mission Earth Observation

AIRBUS Capgemini iTTi

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## Earth Observation at a Glance

The Earth observation market is tending towards increased operational needs in terms of **responsiveness, repetition and complementarity of multiple missions.** Use cases such as long-term environmental monitoring, border and maritime surveillance or natural disaster prevention require system capabilities that can provide images in the shortest possible time.

To meet these demands, each new generation of Earth observation systems is equipped with more powerful instruments and satellites. They offer higher resolution, storage capacity, acquisition capability and flexibility to quickly acquire imagery at different locations.

**This is where the mission of Domino-E starts.**

## Mission Management: The Key to Earth Observation

Earth observation missions often cover large areas. Given the movement of satellites along spheres, covering such areas requires multiple acquisitions to ensure that users receive a complete image of consistent quality. To achieve this, Domino-E enables **multiple observations in a single mission request.**

- Users specify needs along predefined parameters and filter available Earth observation systems.
- Domino-E provides a coverage system that helps to specify and/or add priorities to the distribution between systems.
- Users can iteratively change their request parameters and system selection until they are satisfied.
- A feasibility analysis evaluates the completion of the programming requirement and checks its progress.

## Virtual Assistant Service: No Need to Speak Satellite

Most users don't speak satellite. Domino-E develops an **interface that allows users to define acquisition requests in natural language.**

- The virtual assistant lowers access barriers and improves understanding of satellite-based imaging. It guides users by specifying zones or targets, but also their ideas of the results they intend to generate.
- Users are guided to to formulate production requests to obtain complementary acquisitions.
- Behind the scenes, the assistant searches the system for existing products that match the geographical and other criteria specified provided when preparing a request.

## Domino-E: Inside the System

As soon as users have sent their requests, the background work begins. Several satellite systems must be coordinated and interferences in the picture are to be reduced. What if another satellite passes the camera exactly when it should take a picture?

- Domino-E takes the planning and contacting of the different systems of the users' hands and **enables a true federation service.**

- Based on user needs, static and satellite configurations and routine contact requirements, an optimised Satellite Communication and Resource Management is proposed that differs in the degree of aggressiveness and security.
- Optimisation algorithms within the Satellite Communication and Resource Management **minimise the interference risk for known satellites and frequencies.** This is based on theoretical orbits and jamming probabilities provided by the ground segment.

Photo credits: xanmagena, Pixabay