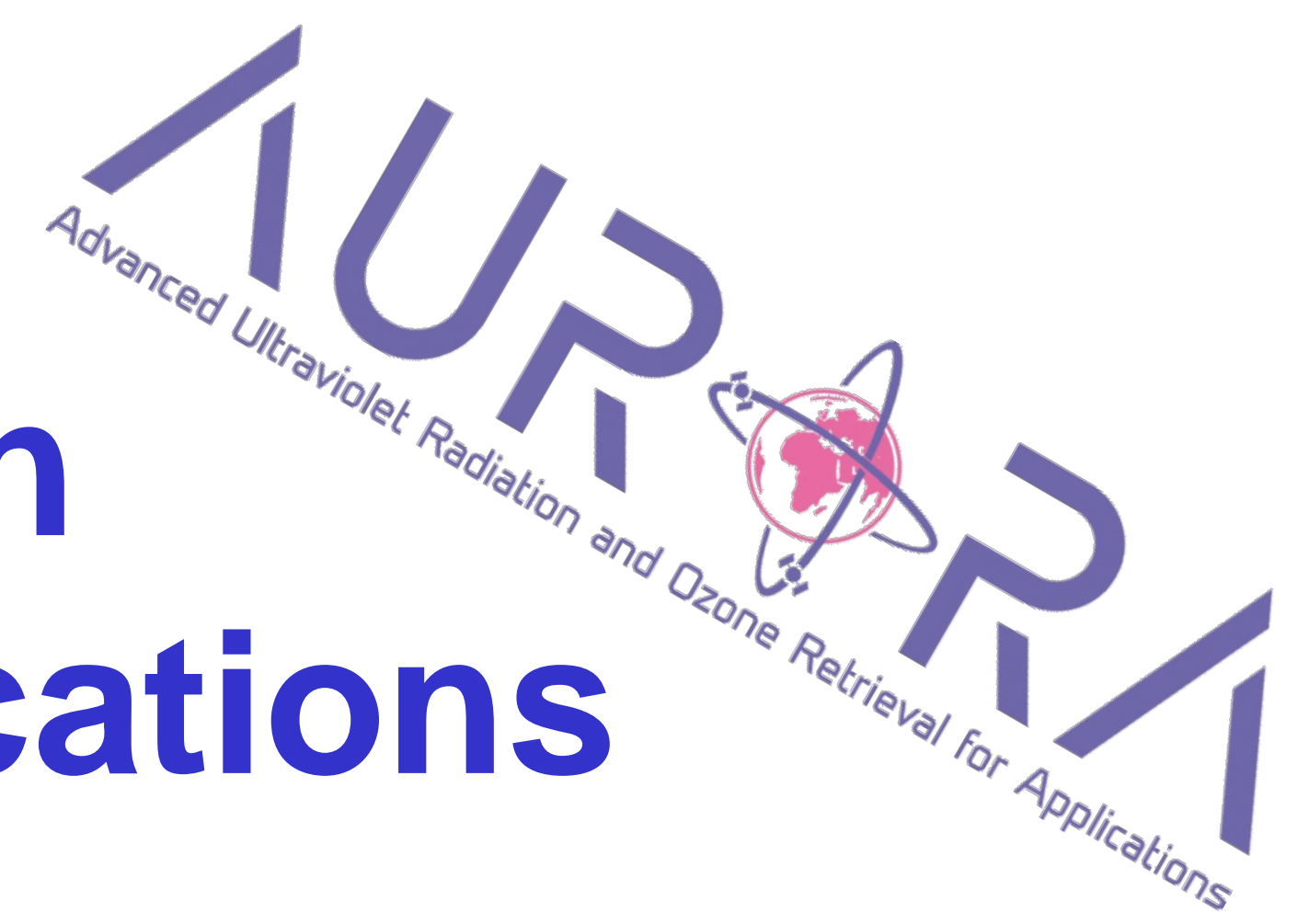




# AURORA H2020 project

## Advanced Ultraviolet Radiation and Ozone Retrieval for Applications



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### The AURORA Project

The **AURORA** project was proposed in response to a Call of the **Horizon 2020** framework programme of the EU and after positive evaluation started on February 1<sup>o</sup>, 2016.

**H2020 Work Programme:** 2014-2015

**Research Area:** Leadership in Enabling and Industrial Technology

**Sub-programme:** Space

**Call:** H2020 - Earth Observation – 2015

**Topic:** EO-2-2015 Stimulating wider research use of Copernicus Sentinel Data.

**Project title:** Advanced Ultraviolet Radiation and Ozone Retrieval for Applications.

**Project duration:** 36 months (Feb 1, 2016 – Jan 31, 2019)

#### Project challenges:

- to reduce the complexity of the high volume of Copernicus S-4 and S-5 data and increase its quality with respect to the operational outcome of individual instruments;
- to propose a platform with an easy-to-use, efficient and quick data access allowing the use of Copernicus Sentinel data in a wider community of scientists and application developers.

### Scope and Objectives

The idea at the core of AURORA is the exploitation of advanced products for **TROPOSPHERIC OZONE** and **UV SURFACE RADIATION** derived from GEO (S-4) and LEO (S-5, S-5p) platforms, based on **ASSIMILATION OF FUSED DATA** from different spectral regions (UV, Visible, Thermal IR).

#### SCIENTIFIC OBJECTIVES

- to investigate the potential of data fusion and data assimilation to convey complementary information content of measurements by the atmospheric Sentinel LEO and GEO missions into unique geophysical products.
- to focus the exploitation of the synergy between simultaneous and independent measurements of the same target on **tropospheric O<sub>3</sub>** and **UV SURFACE RADIATION**.

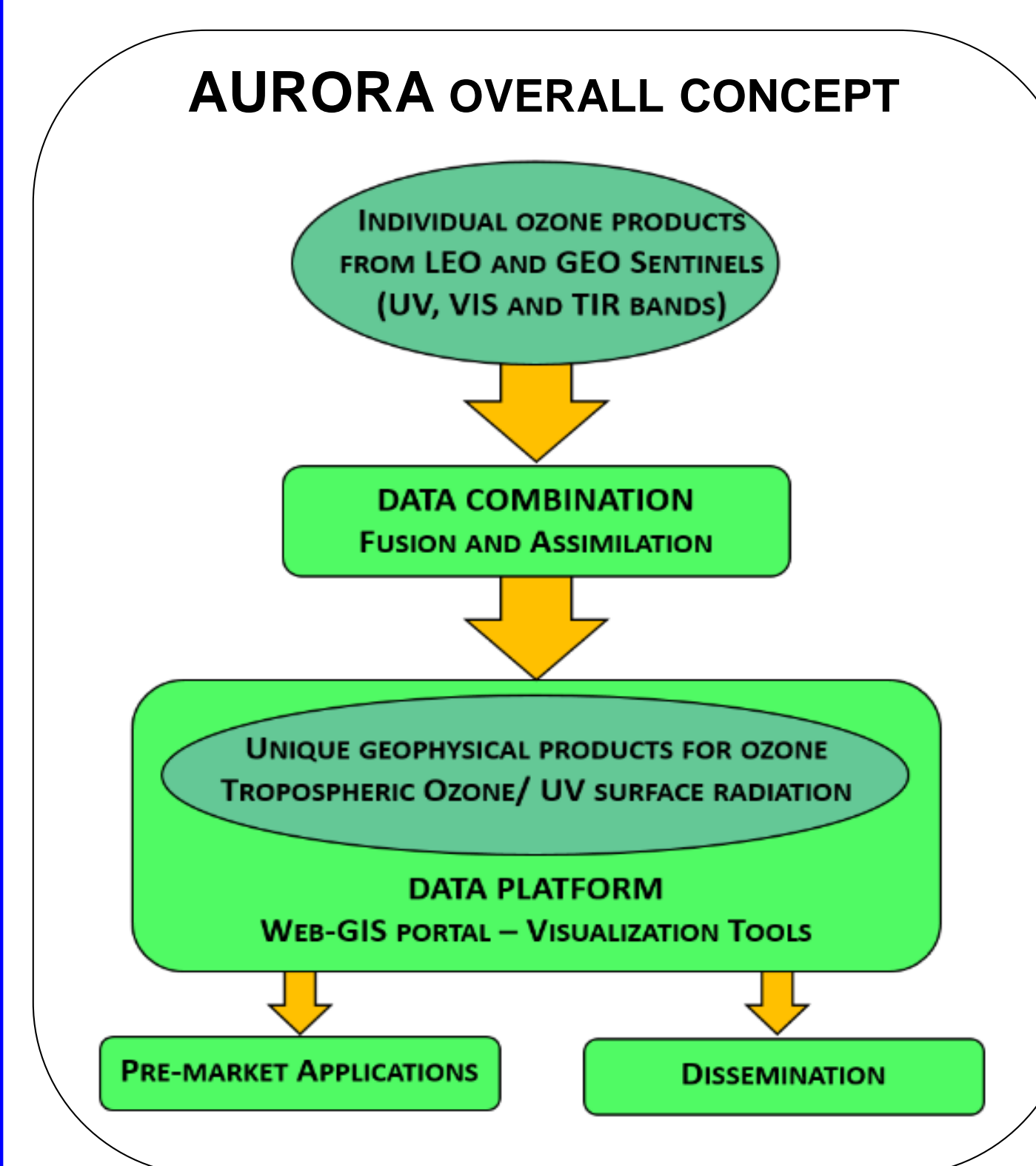
#### TECHNOLOGICAL OBJECTIVES

- to develop a data platform allowing to pursue the above mentioned challenges for reduction of complexity of S-4 and S-5 data management and for data quality improvement with respect to the operational outcome of individual instruments.
- to develop a prototype data processing system and demonstrate its capability to work with simulated data as closely as possible to the operational environment.

#### APPLICATION OBJECTIVES

- to develop **two operational downstream services** (innovative mobile App for UV dosimetry and tropospheric ozone monitoring application for major cities and regional prediction of air quality) reaching a pre-market version at the end of the project.

### AURORA Core Elements



**Data Fusion** of information retrieved from sensors onboard the same missions

**Data Assimilation** combining LEO and GEO fused profiles.

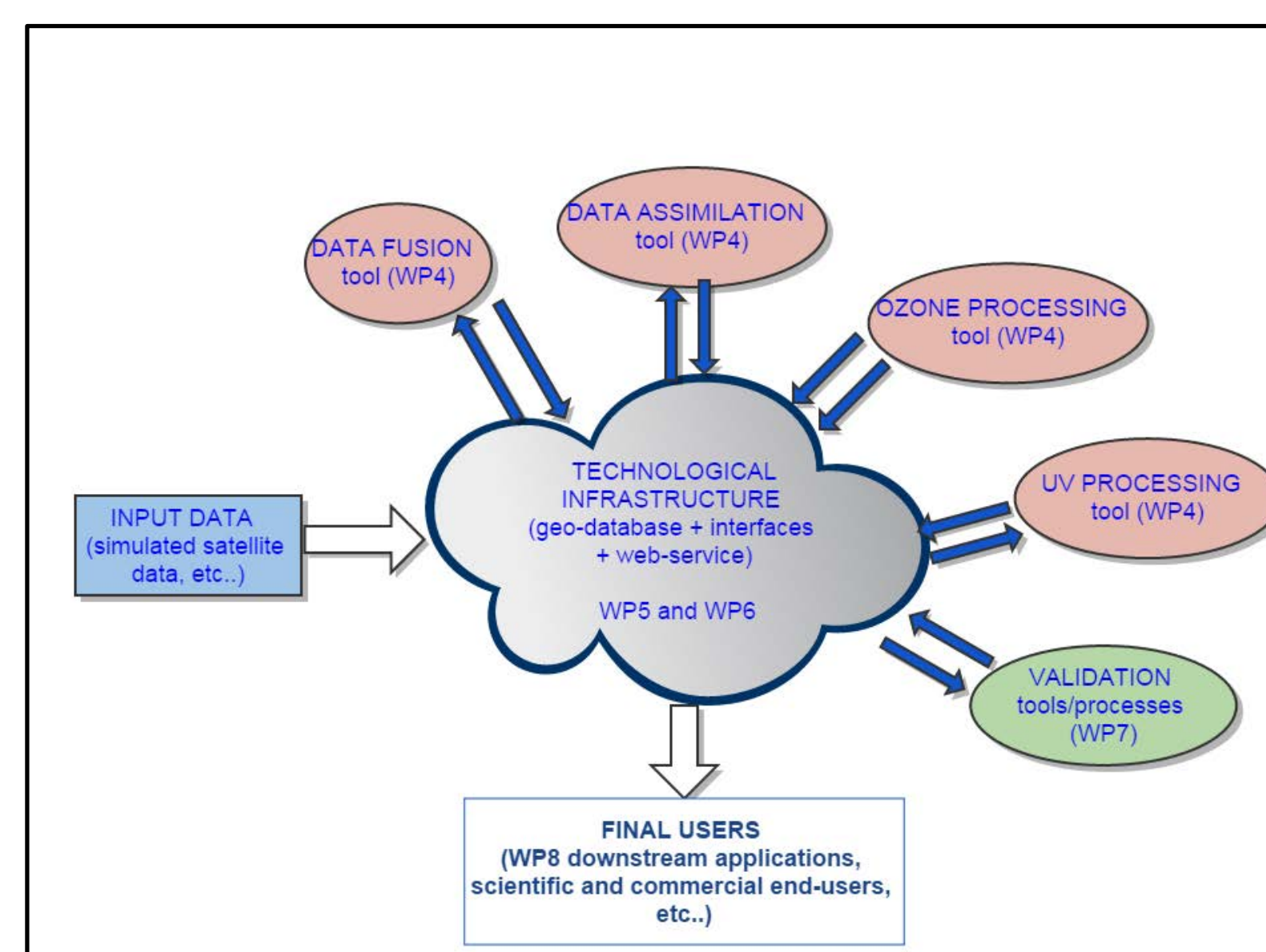
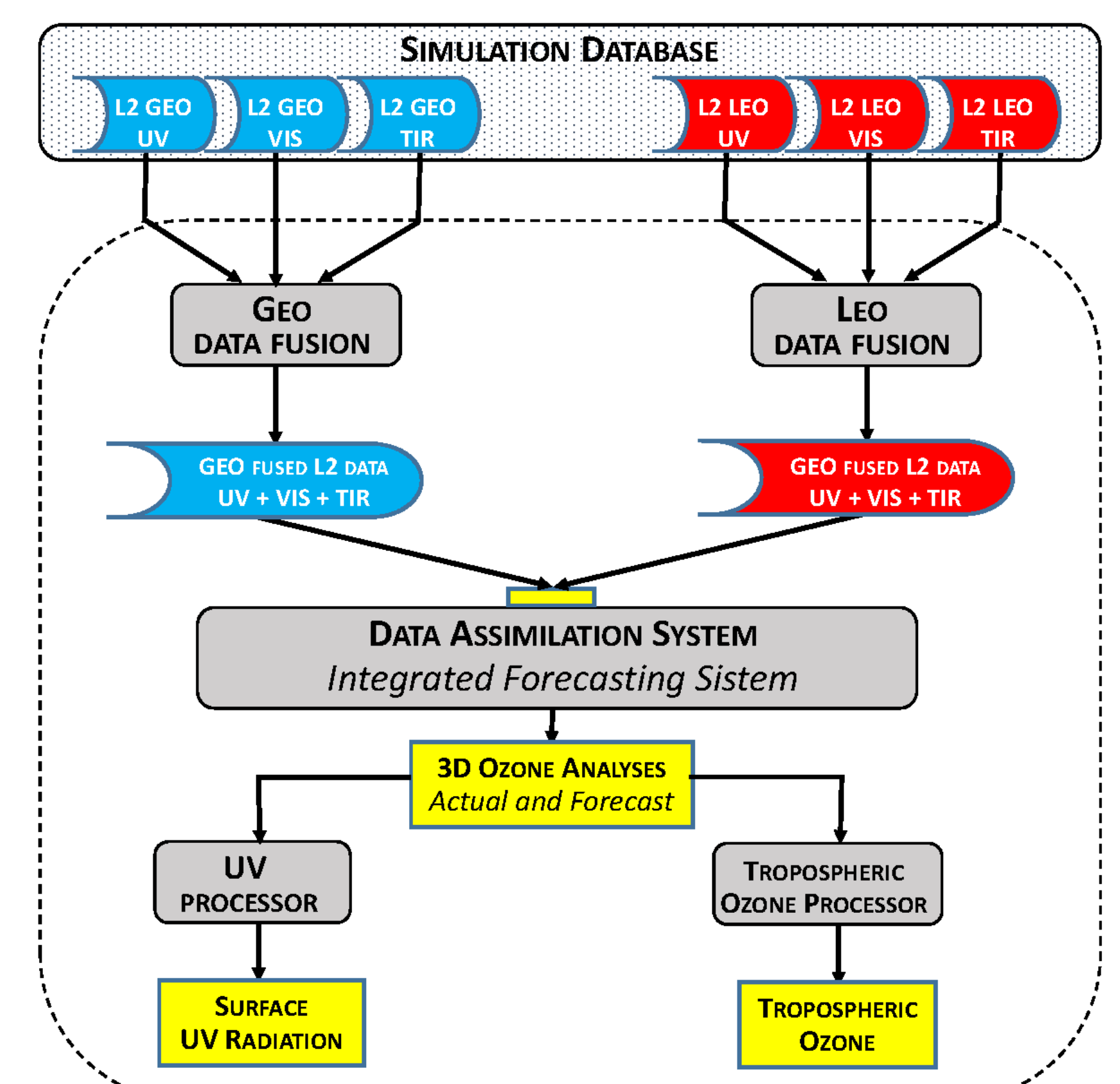
**DAS** available to AURORA:

- ECMWF Integrated Forecasting System (IFS)
- KNMI Chemical Transport Model DAS (TM5)

#### AURORA DATA PROCESSING CHAIN

The DPC can be segmented in the **Input Data Source (IDS)** and in the **Prototype Data Processor (PDP)**.

The IDS block will be fully replaced by S-4 and S-5 data once the real data become available.



#### AURORA TECHNOLOGICAL INFRASTRUCTURE

From an operational point of view, the data processing is executed in the AURORA infrastructure framework using a cloud-based architecture.

**APPLICATIONS** - Development of innovative products and services during and after project lifetime. Two applications (for **OZONE MONITORING IN URBAN AREAS** and **PERSONAL UV DOSIMETRY**) starting from pre-existing products that will be further developed thanks to AURORA's results, gaining a high added value with respect to currently available similar solutions.

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