



Argos

The complete solution for weather hazard management at **National or Regional** scale



The effects of Global Warming and Climate Change (**GW&CC**) are felt all over the world. It is causing more and more severe weather events resulting in a lot of damage both to life and property creating a lot of negative news around the world. Although efforts are being made to reduce Green House Gas Emissions through various agreements between Governments, the number of damaging events is going to increase before things, if at all, stabilize. Therefore, we need to implement Early Warning Systems (**EWS**) to get people out of harms way and take measures to safeguard their life and property.

Some people believe that such systems can be expensive, but when you compare the amount of damage in terms of life and property a single big incident of weather-related disaster can cause, the cost of acquiring such a system would look quite small.

Realizing the importance of such systems, European Union established a Multi-Hazard Early Warning System (**MH-EWS**) called A4EU – Anywhere for Europe. **Argos**, the commercial outcome from A4EU – Anywhere, is based on distributed processing with the Central Node

running Impact-based forecasting algorithms along with other functions and the National Nodes running more localized processing. The Central System and 9 additional National Systems have been implemented and more and more European countries are implementing their National Nodes.

The above project is considered to be a very important step towards safeguarding Europe from weather-related disasters. We believe that other continents and countries can take advantage of this experience and develop similar systems for their continent and countries.

With this idea in mind, we are proposing the development of such a system for many other large countries and also for the Continent of Africa to serve all of Africa through a Central Node and National Node(s) in each country.

A Project like that for Africa should be financed by the World Bank and other donors. Looking at the ROI (Return on Invest) for such a project, affluent countries can finance it on their own.

Our group consisting of companies - IES and HYDS - with great experience in all aspects of meteorology and hydrology and involvement in the implementation of A4EU and development of web-based Forecasting Workstation, has ample experience in implementing such a comprehensive system as presented in the attached Brochure.

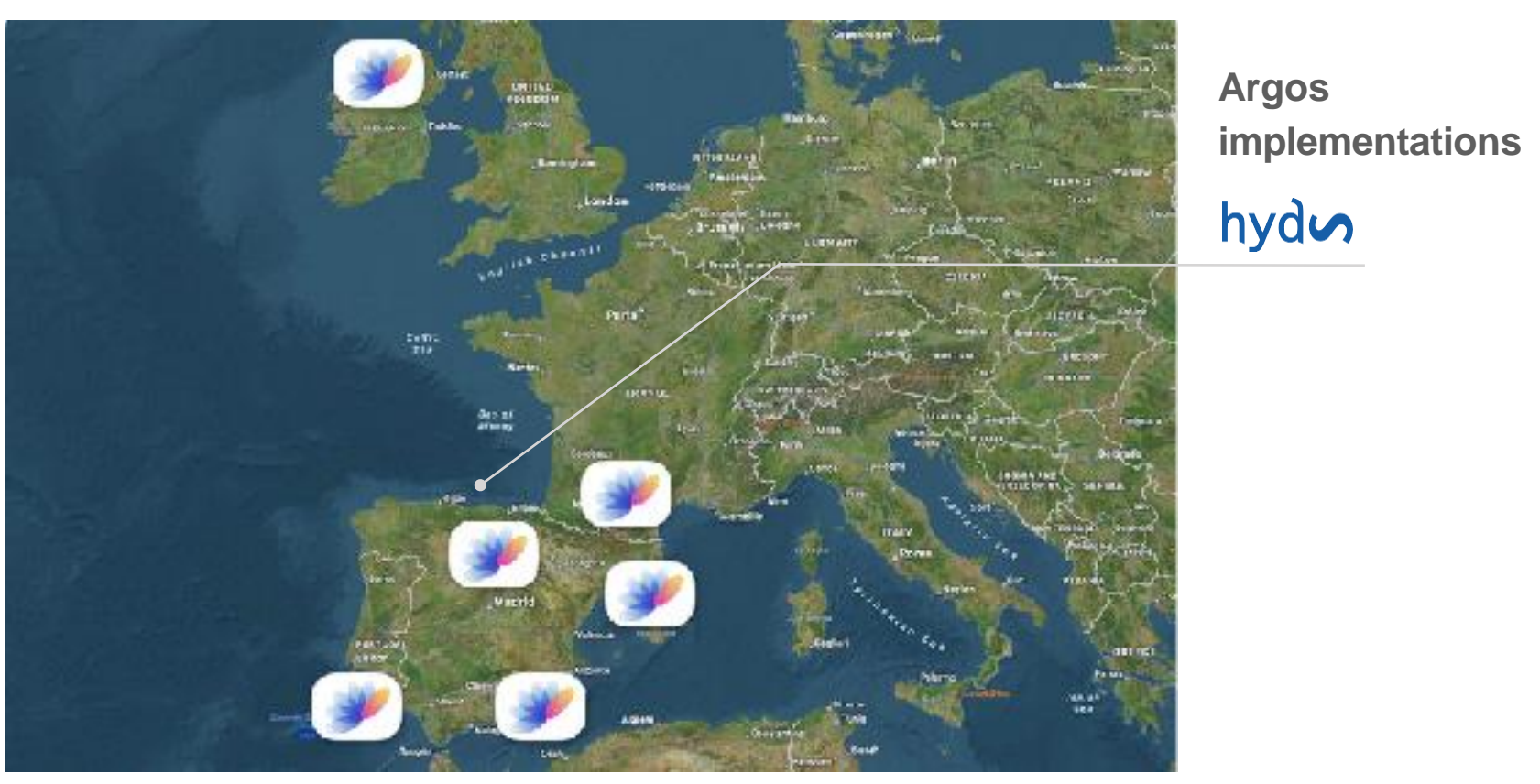


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Argos, from research to the operational context

Argos has been created in the framework of the **ANYWHERE** H2020 EU project, developing cutting-edge technology to enhance the **risk management** of emergencies derived from **weather-induced** events. **Argos** technology provides solutions at all key levels: continental, national and regional scale, Currently **Argos** is implemented at national and regional levels in several countries in Europe.



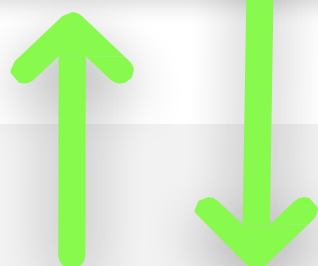
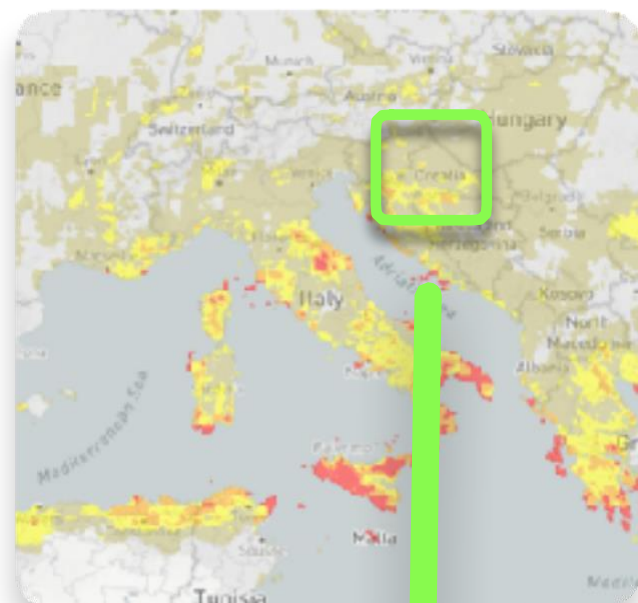


Central and National approach

Argos platform is oriented to build operational solutions based on **Central Node** and **National Node(s)**, that can be interconnected. That approach allows to provide large scale information and warnings about weather-induced hazards and very detailed information at the Local scale, including warnings, impact and protocols in one integrated solution.

Central Node

This implementation connects and collects **data and warnings** in real time from **global platforms** (Copernicus, NASA, etc.) and **national agencies** (National Weather Agency, National Geological Institute, National Water Directorate, National Transit Authority, National Ports Authority, etc.) in order to provide a single access point to all **Continental war nings** and associated information for civil protection authorities.



National Node

This implementation is focused on providing early warning on different elements (both administrative units and **critical elements**) to help focus the civil protection authorities in the most potential affected areas to disseminate **local warnings** and distribute assets accordingly. It provides **multi-source of impact products** linked with **auto-protection plans** to help civil protection authorities to trigger impact mitigation actions and improve emergency management.



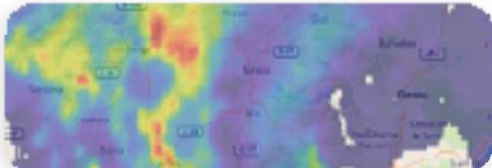
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Integrating the key aspects

Argos incorporates all the processes required to manage weather-induced hazards, harmonising data, products, warnings, impact and protocols in one integrated solutions.

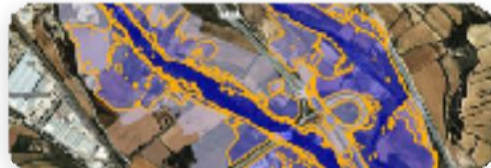
Hydrometeorological forecast



Early-warning detection



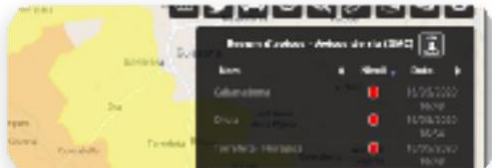
Exposure and vulnerability



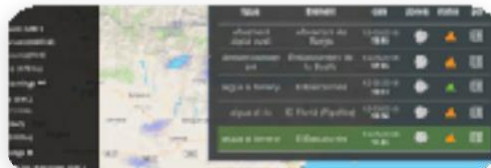
Impact forecast



Management protocols



Dissemination



Multi-hazard solution

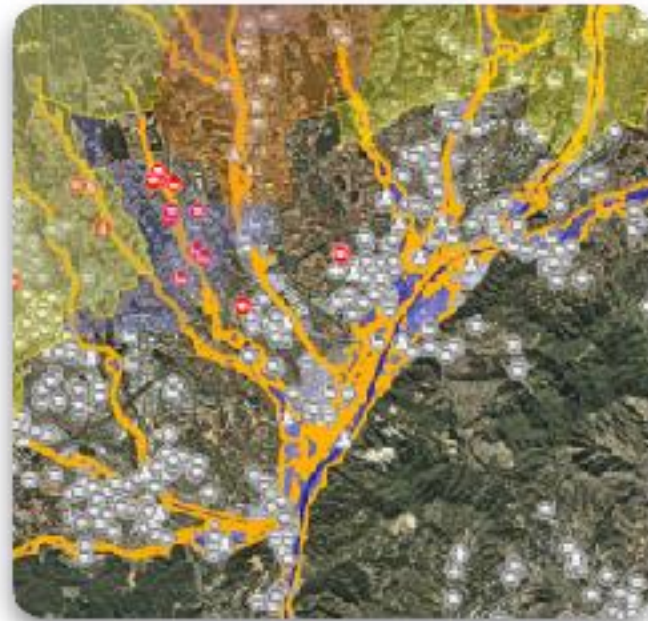
Droughts, floods, forest fires, air pollution, heat / cold waves, snowfalls,... It doesn't matter, our solution covers everything: adapted to your region, specific to your situation.





Fostering the proactive management

Stay always one step ahead. From early warning forecast some days in advance to high resolution impact models for specific assets some hours before. Argos helps you to move the paradigm: **from reactive to pro-active management.**



Evolving with new requirements

Argos is built on top of an open architecture, so that you could improve your management flow: adding new weather data, sensors, building new products and warnings, growing your set of critical points, redefining your protocols, expanding your dissemination, etc.

Connecting operational authorities

Weather-induced hazards management is a matter of connecting different operational authorities. Argos and its family of products (Argos City, Argos Site) allow a seamless integration and harmonisation of the management process at different scales: continental, national, regional and local.





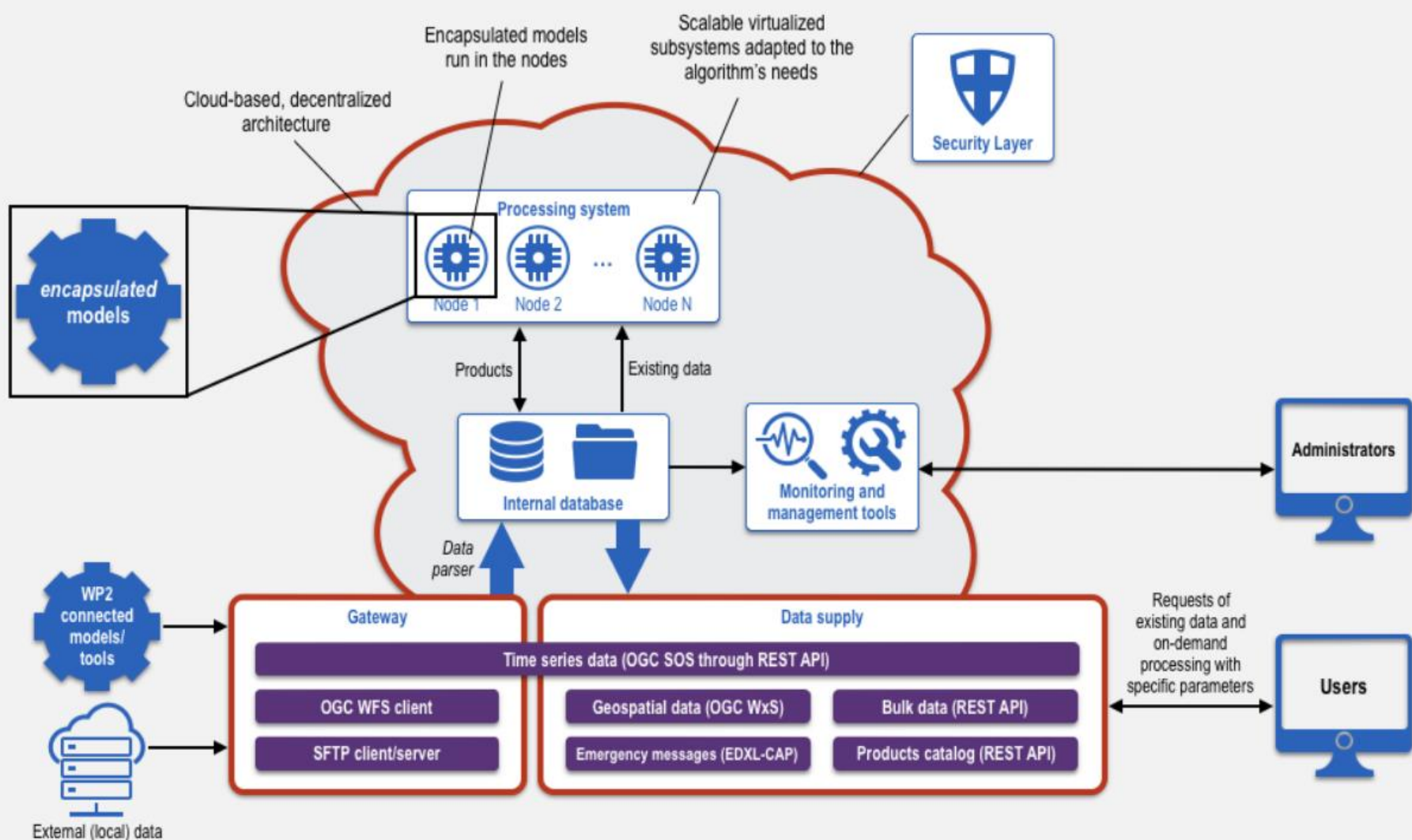
Collaborative approach

From emergency calls to traffic cameras, even social networks. Argos has been designed from ground up to seamlessly integrate any source of information useful for your operational management. What's more, these new sources can define new rules of your warning decision flow.



Most comprehensive solution

Argos service architecture follows a modular approach allowing for integration of data, models, products, warnings from any incorporated information, external sources, protocols, etc.



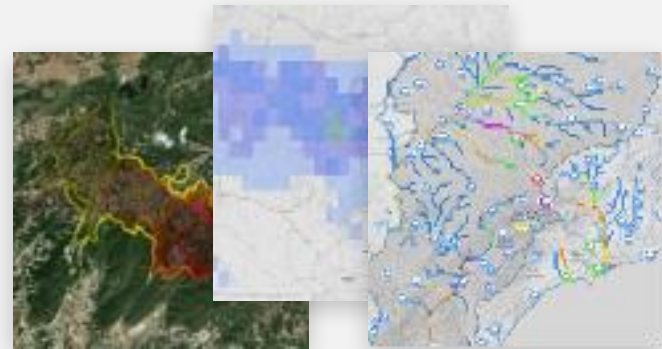


Argos global solution

Off the shelf solution with global information to provide complete service with a minimum set up. Argos also allows for an easy adaptation including additional local information (models, sensors networks, critical information, protocols, etc.).

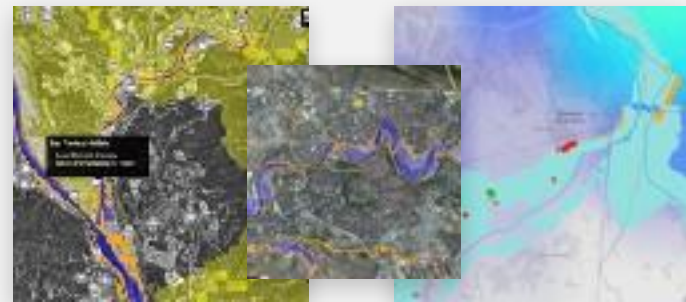
Global platforms

- GLOFAS (Global Flood Awareness System)
- GDO (Global Drought Observatory)
- GWIS (Global Wildfire Information System)
- NASA and others...



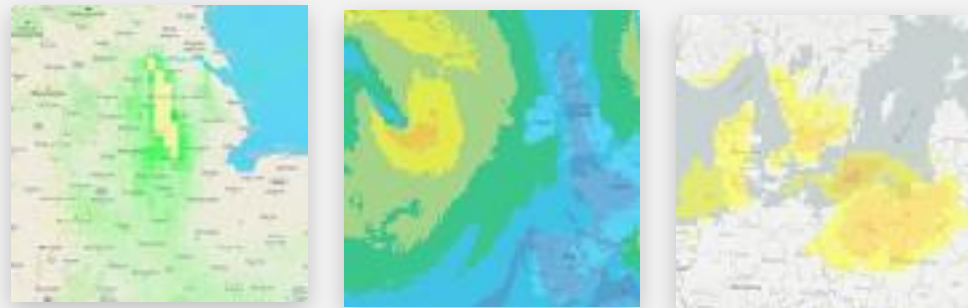
Satellite

- GPM (Global Precipitation Measurement)
- NASA Earth Observatory
- SENTINEL Copernicus



NWP

- GFS
- ECMWF
- Local models



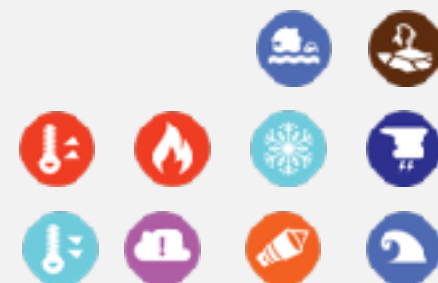
National data and systems

- Weather Radar
- AWS
- Environmental sensors



Algorithms

- | | | |
|----------------|----------------|---------------|
| • Flash-floods | • Droughts | • Snow |
| • Floods | • Storm surges | • Air quality |
| • Forest Fires | • Heat waves | • Wind |



Data - impact

- | | |
|-----------------|---------------------|
| • 112 / 911 | • Critical elements |
| • Transit | • Infrastructure |
| • Crowdsourcing | • ... |

