

## Common Information Space

dice.cyfronet.pl/cis

Bartosz Baliś (balis@agh.edu.pl), Tomasz Bartyński (t.bartynski@cyfronet.pl), Marian Bubak (bubak@agh.edu.pl), Tomasz Gubała (t.gubala@cyfronet.pl), Marek Kasztelnik (m.kasztelnik@cyfronet.pl), Piotr Nowakowski (p.nowakowski@cyfronet.pl)

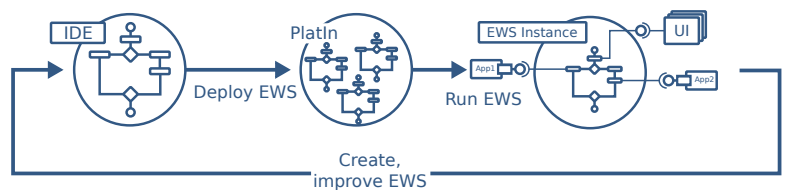
### Objective

To develop a generic platform for hosting Early Warning Systems (EWSes) facilitating decision support in situations involving environmental threats. CIS provides an environment for integrating spatial data sources and runtime components, organizing them into distributed applications (workflows), and managing cloud-based Early Warning Systems.

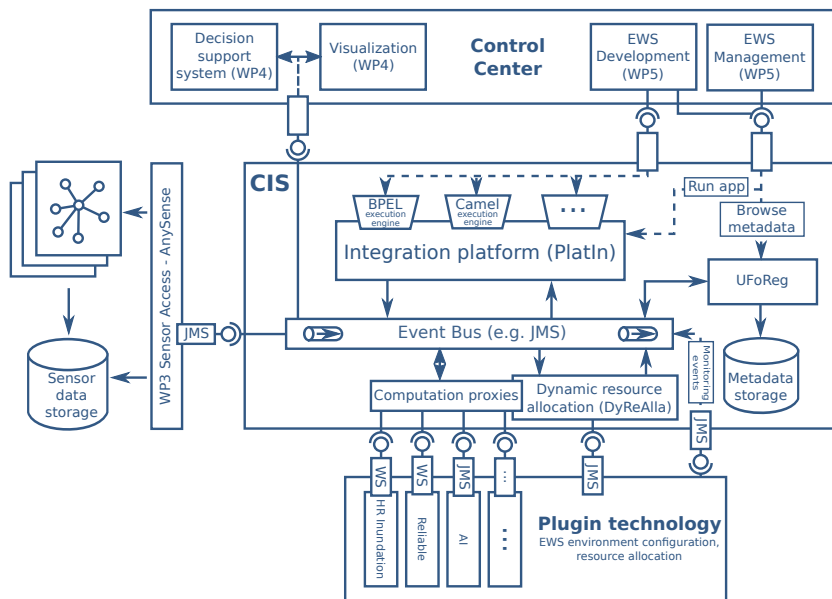
### Early Warning System

An application composed of *appliances*, hosted and executed in CIS, allowing users to discover anomalous or undesirable situations in the monitored environment. Each EWS can reuse other EWSes (in the same or other CISes). Examples include dike monitoring apps and flooding simulations.

### EWS Lifecycle



### Architecture



### Components

**PlatIn** (Integration Platform) – an integral part of the Common Information Space responsible for integrating loosely-coupled application elements into an operational Early Warning System. It interconnects application components created by different organizations, deployed in a dynamic cloud environment and supporting various communication protocols.

**DyReAlla** (Dynamic Resource Allocation) – responsible for efficient management of virtual appliances (VMs with preinstalled applications) which make up EWSes. Ensures that all components are available, configured and assigned appropriate resources.

**UFoReg** – generic metadata repository which manages sensor metadata, including: geolocation, measurement type and data feed channel. Also serves as a generic metadata store for the purposes of resource discovery and provenance information management.

### Capabilities

- Dedicated EWS development and management environment facilitating creation, configuration and execution of Early Warning Systems
- Support for different integration methodologies (workflows, rules, triggers)
- Connectors for different technologies (e.g. WS, JMS, FTP, XMPP)
- Access to live stream and archived repositories
- Integration with external visualization solutions
- Support for automatic appliance creation, configuration and management
- Automatic cloud infrastructure scaling
- Extensible metadata repository storing information about EWS status
- Metadata and provenance services, supporting discovery of data, application services and resources in addition to logging and browsing provenance data

### Dike Monitoring EWS

- Monitoring
- Analysis
- Judgment
- Action

