

# Implementing INFRA

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## Cloud computing environment and multilevel implementation approach

INFRA IT modules have been developed to be installed in a cloud computing service, to increase accessibility and flexibility of use. Implementation based on computer cloud environment also reduce need for local hardware/software resources. In addition, in designing and developing INFRA functional blocks, we largely adopt a modularity strategy, in such a way to be able cover a wide spectrum of specific needs oriented to the local/regional scale. This considering as wildfire services are strongly related to the characteristics of the area to cover, as well as to user and stakeholder categories to serve. Taking advantage of this modularity, a **MULTI-LEVEL** implementation strategy has been considered to align use of INFRA service to both user interests/capacities and resources they have at disposal.

### LEVEL ZERO: ACCESS TO INFRA-AEGIS

INFRA-AEGIS module can be easily accessed by individuals as well as indigenous communities and/or little municipalities.

Three target areas, each of about 1500 x 1500 km, have been up to now realized and can be accessible at the following links

<https://arcticpassion.caedns.it/aegissacha>

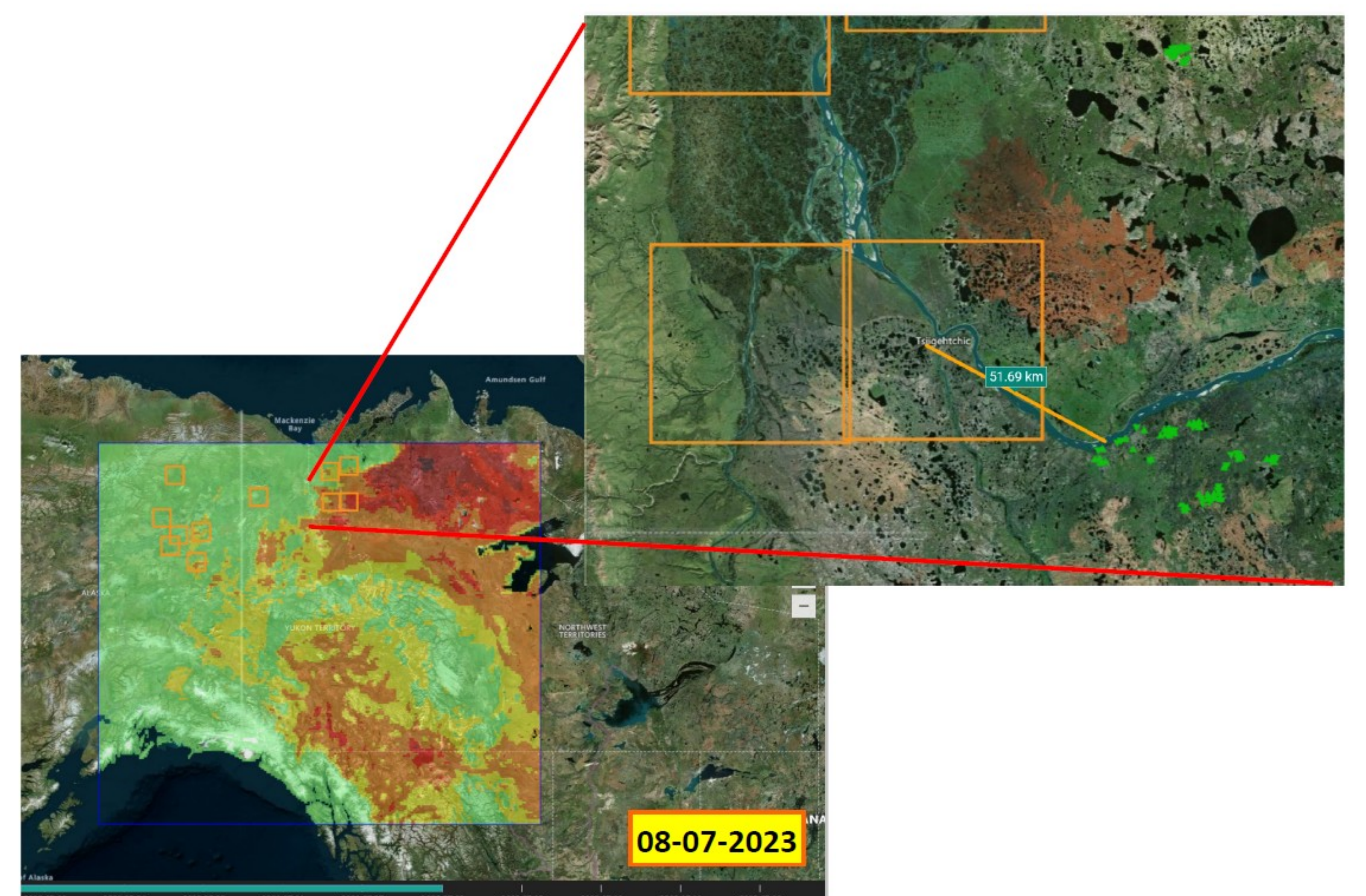
<https://arcticpassion.caedns.it/aegisfennoscandia>

<https://arcticpassion.caedns.it/aegisalaska>

Information layers related to RISK INDEX, IGNITION RISK (lightning), ACTIVE FIRES/BURNED AREAS, FUEL MAP are at disposal.

SITES OF INTEREST can also be included to focus on a local scale of 50x50 km.

Products and information are extracted by the GWIS (Global Wildfire Information System) a joint initiative of the GEO and the Copernicus Work Programs (<https://gwis.jrc.ec.europa.eu/>). The only exception being a fuel map evaluated on an annual basis from MODIS observations (500 m resolution).



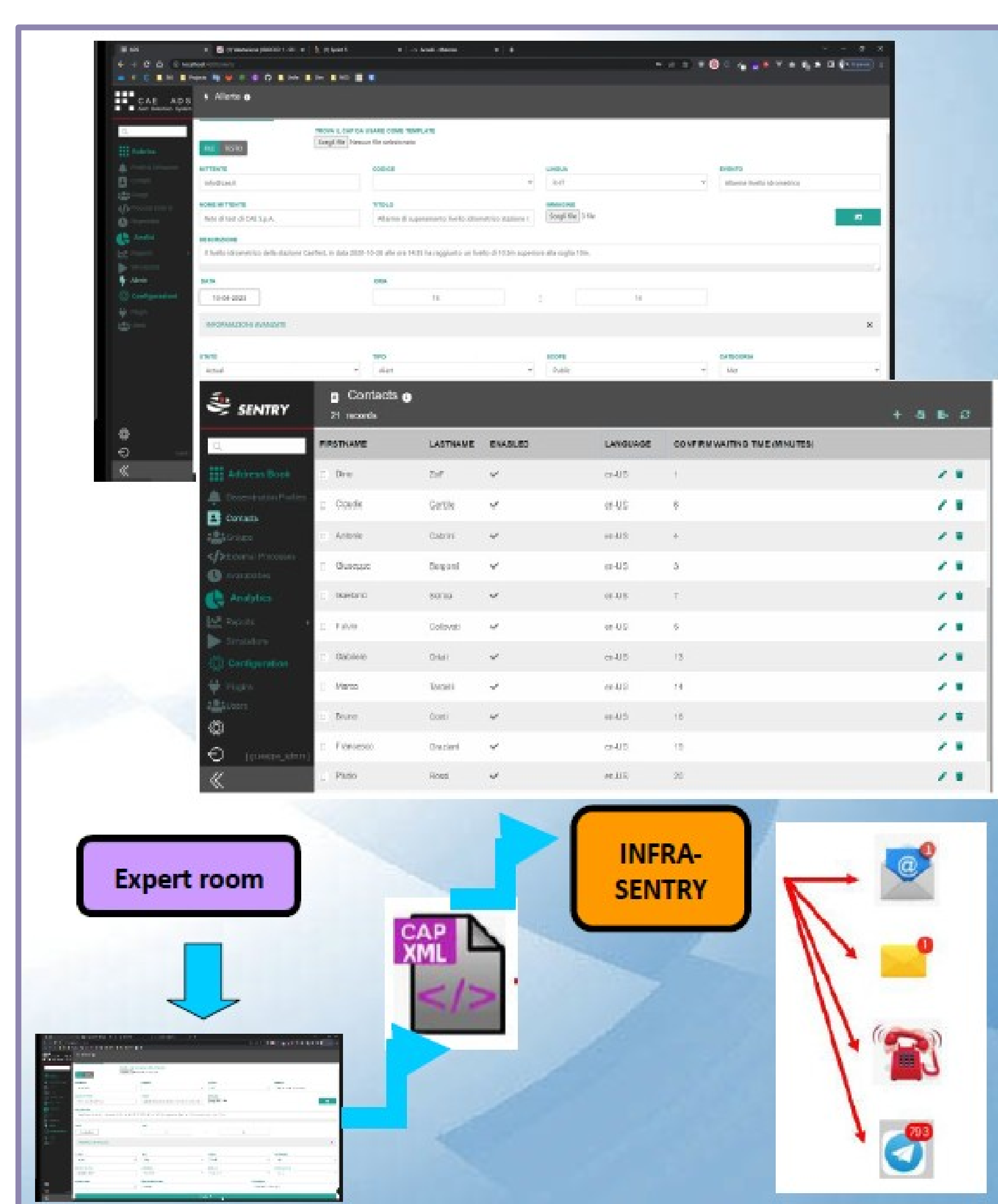
An example of how INFRA level zero implementation can help to monitor wildfire status around a site of interest

### LEVEL 1: PRODUCE/DISSEMINATE TAILORED MESSAGES

Integration of INFRA-AEGIS and INFRA-SENTRY can lead to the overarching target to produce tailored messages, and widely distribute them through a large spectrum of communication channels.

Steps and resources necessary are:

- 1 - collectively identify the area of interest;
- 2 - collect information on target people to reach with messages and information;
- 3 - define messages formats, language, information to distribute. Information can be tailored for each different user category;
- 4 - Identify/secure experts who will act as the key operators to acquire/integrate/select information through INFRA-AEGIS and transform them in messages and distribute thanks INFRA-SENTRY functionalities;
- 5 - Set up working space and resources for the Operators' to work.



Chain to produce and disseminate tailored/textual messages

“Experts” will have a simple mask to introduce information, write a text, associate images.

System will store them in CAP (Common Alerting Protocol) standard. INFRA-SENTRY through specific plugins will manage and distribute messages with different modalities (sms, e-mails, phone calls, social applications, to other computer/services, ...)

Dissemination of information and alerts can be defined/made with high flexibility by defining contacts, groups of users, distribution profiles, availability of each contact

Possibility to order simple actions, as for example activate automatically a relay.

### LEVEL 2 and 3 : METEO INFORMATION, ADDITIONAL RISK INDEXES, AND MORE

**level 2A** - Numerical weather prediction module (MOLOCH 1.3 km resolution) developed at CNR-ISAC (<https://www.isac.cnr.it/dinamica/projects/forecasts/>) is added, supplying 13 additional information layers to INFRA-AEGIS and **level 2B** - in addition to NWP outputs, several risk indexes and other information parameters increase GIS information layers in INFRA-AEGIS.

**Level 3** - information on wildfires arising from ground observing systems and/or individual inhabitants/citizens can be also managed