



The RainBO platform

Event planning and management

ProteCHt2save Conference
27th June 2019

Lepida ScpA



The RainBo Project proposes improvement

*of knowledge
of methods
and tools*

to increase the capacity of **resiliency** of
urban centers in case of extreme precipitation phenomena
(so called “Flash Flood”)



The platform can work in

OFF-LINE mode
(planning support)

On-LINE mode
(event management)

We have included a series of spatial data in the platform

The **data model** is based on (Italian) National and regional guidelines for municipal and inter-municipal Civil Protection plans.

We have found a functional model in order to have:

- data homogenization
- data normalization

Planning Support: territorial data



LIFE15/CCA/IT/000035
With the contribution
of the LIFE financial
instrument of the
European Community



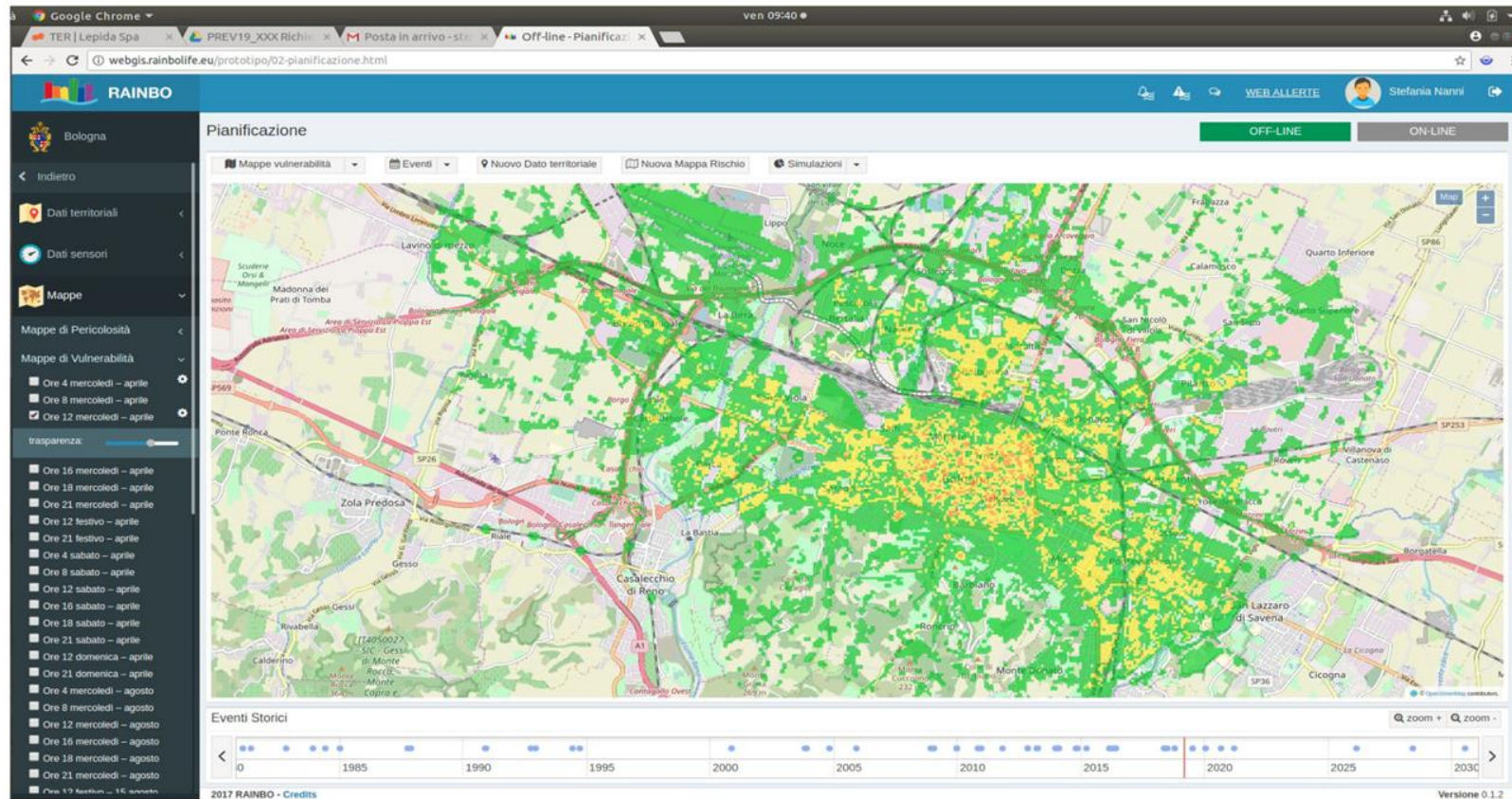
The screenshot displays the RAINBO web application interface. The browser address bar shows the URL `webgis.rainbolife.eu/prototipo/02-pianificazione.html`. The application header includes the RAINBO logo, navigation icons, and the user name 'Stefania Nanni'. The main interface is titled 'Pianificazione' and features a map of Bologna with various data layers. A popup window is open over a specific location, displaying the following information:

Nidi dell'infanzia - XVIII APRILE 1945	
gid	48
nome	XVIII APRILE 1945
Indirizzo	VIA SCANDELLARA n.9/4
dirigente	
telefono	
fax	
cellulare	
mail	
numero_alunni	
numero_personale	
numero_disabili	
orari_apertura	
numero_piani	
anno_revisione	
area	

Below the map, there is a 'Eventi Storici' section with a timeline from 1980 to 1995. The bottom of the browser window shows the Windows taskbar with the search bar and system tray.



Hydraulic risk vulnerability maps

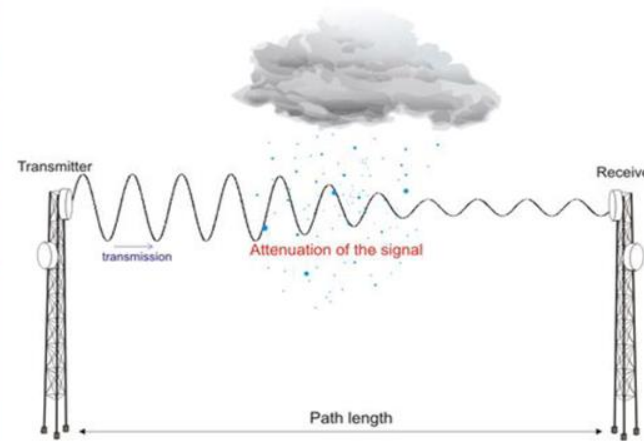


Enhanced monitoring infrastructure

Conventional: Hydrometers and rain gauges



Microwaves links

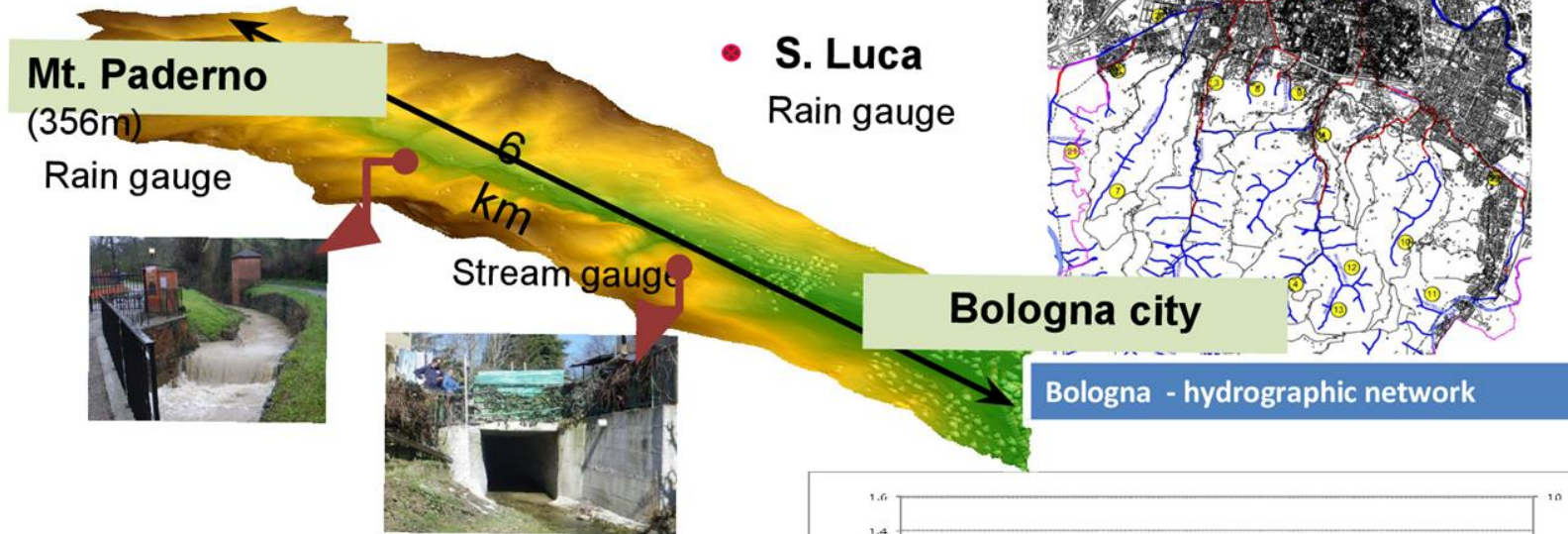


Crowdsourcing Web Application



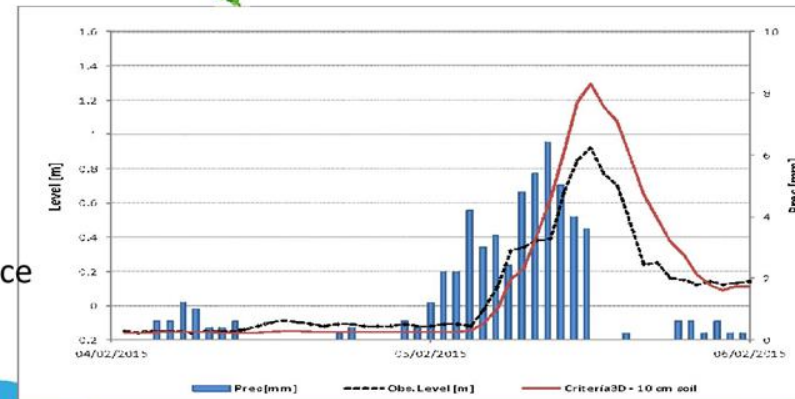
<https://partecipa.rainbolife.eu/>

Hydrological simulation models

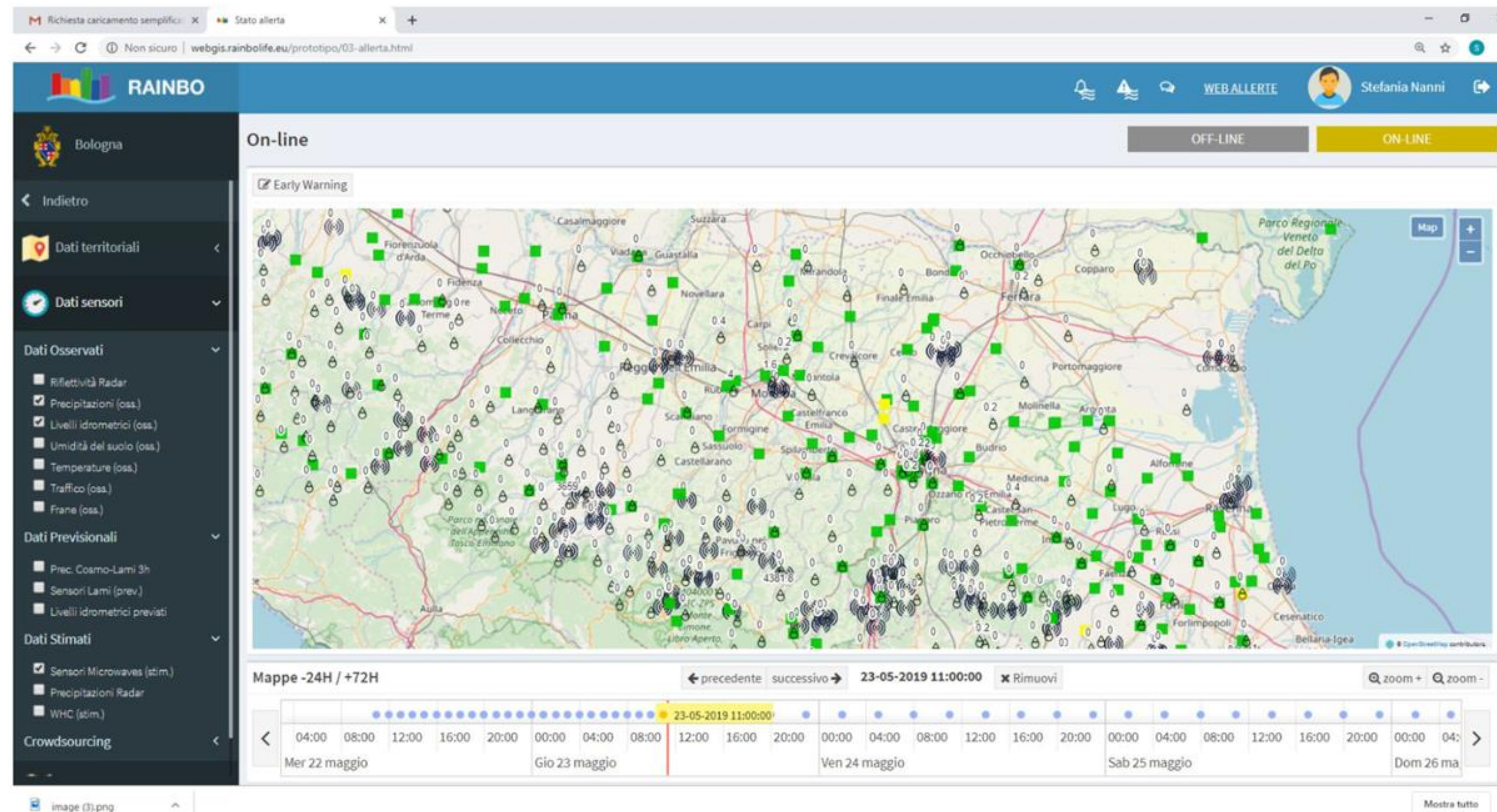


2015.02.05 event

Measurements and simulation with CRITERIA3D
Physically based, 3D model of surface and subsurface
water flows



Integration of different monitoring data





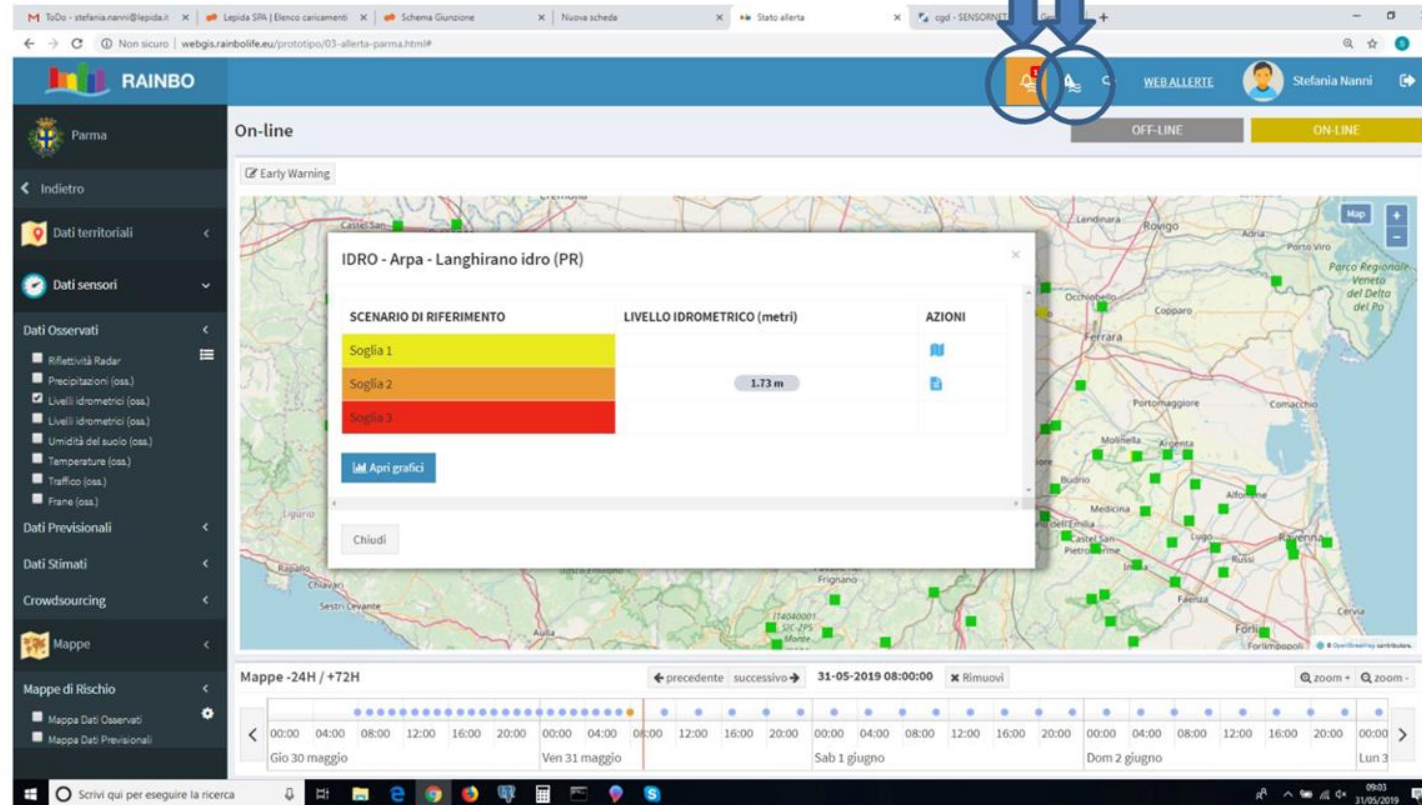
Integration of different monitoring data

- + More than **2000 sensors integrated**
- + Different sources
- + Observed data, Estimated and data forecasts
- + point data, maps
- + georeferenced with respect to the same reference system (WGS84)
- + Time temporally synchronized
- + All Available in the same place/platform

Event alert

Ongoing

Foreseen



The screenshot displays the RAINBO web application interface. The main content area shows a map of the Langhirano area with a data table for 'IDRO - Arpa - Langhirano idro (PR)'. The table has three columns: 'SCENARIO DI RIFERIMENTO', 'LIVELLO IDROMETRICO (metri)', and 'AZIONI'. The data rows are:

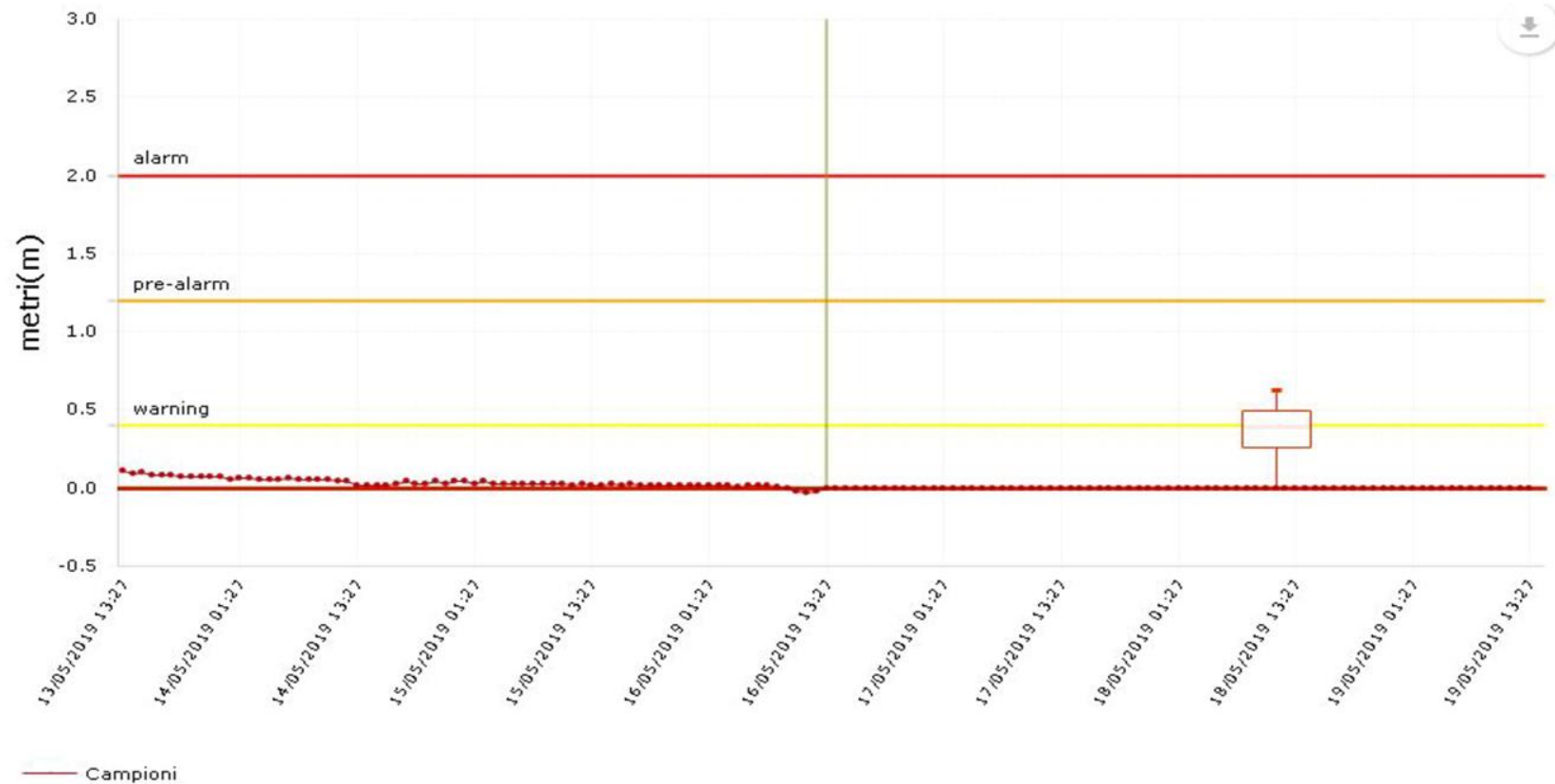
SCENARIO DI RIFERIMENTO	LIVELLO IDROMETRICO (metri)	AZIONI
Soglia 1		
Soglia 2	1.73 m	
Soglia 3		

Below the table, there is a button 'Apri grafici' and a 'Chiudi' button. The interface also features a timeline at the bottom showing dates from 'Gio 30 maggio' to 'Lun 3'. Two blue arrows point to the 'Ongoing' and 'Foreseen' labels above the interface.

Event monitoring in progress (source: Hydrometer)



Forecasting event reporting. Source: 3D Criteria



Early-warning system

The screenshot shows the RAINBO web application interface. The browser address bar indicates the URL `webgis.rainbolife.eu/prototipo/03-allerta.html`. The interface features a sidebar on the left with navigation options: **Bologna**, **Indietro**, **Dati territoriali**, **Dati sensori**, **Dati Osservati**, **Dati Previsionali**, **Dati Stimati**, **Crowdsourcing**, **Mappe**, and **Mappe di Rischio**. The main content area is titled **On-line** and includes a **Early Warning** section with a map of Bologna. A **Punti critici** (Critical Points) window is open, listing various locations with expandable options (+):

- Scuole dell'infanzia
- Scuole primarie
- Scuole secondarie di primo grado (medie)
- Scuole secondarie di secondo grado (superiori)
- Università
- Impianti sportivi al chiuso
- Centri anziani
- Cinema
- Teatri

Below the map, there is a **Mappe -24H / +72H** section with a timeline showing dates from **Mer 22 maggio** to **Dom 26 maggio**. The Windows taskbar at the bottom shows the system time as 11:33 on 23/05/2019.



WebGIS: access from any PC

Modular: customizable services

Configurable

Replicable

Open architecture

Standard interfaces

Interoperable with third party projects

- **Consortium:** partners with complementary skills and validation authorities
 - **Methodology:** real involvement of local administrations
 - **Extended Network of Stakeholders:** Municipalities, Civil Protection, Drainage Water Consortium, Private Companies, Institutions.
 - **Citizen involvement:** crowdsourcing web Application
- **Synergies with other EU programming projects** (i.e. H2020, Climate-KIC)





Interactions with **International scientific partners!**



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA



WAGENINGEN
UNIVERSITY & RESEARCH





- **Experimentation** in progress with 7 **new** municipalities
- **Revision of the General Urban Plan of the Municipality of Bologna** (New vulnerability Maps)
- New **vulnerability modules** such as industrial and seismic risk.
- Request of access to the platform of **additional Municipalities**
- Possible **services catalog** for third platforms



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<http://webgis.rainbolife.eu/prototipo/>





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Děkuji za pozornost!



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