

Nurnet- A case of crowdsourcing for geographic knowledge

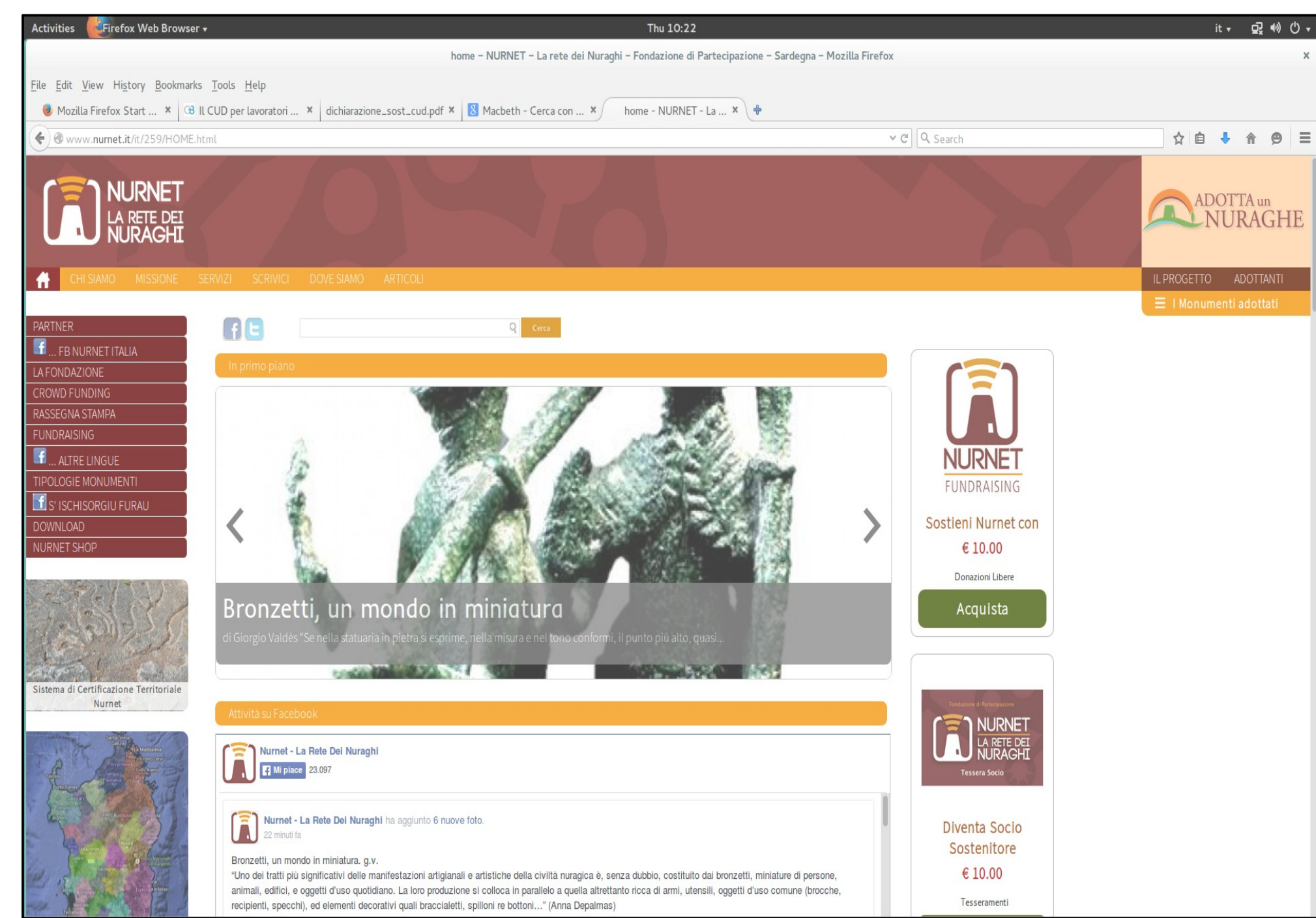
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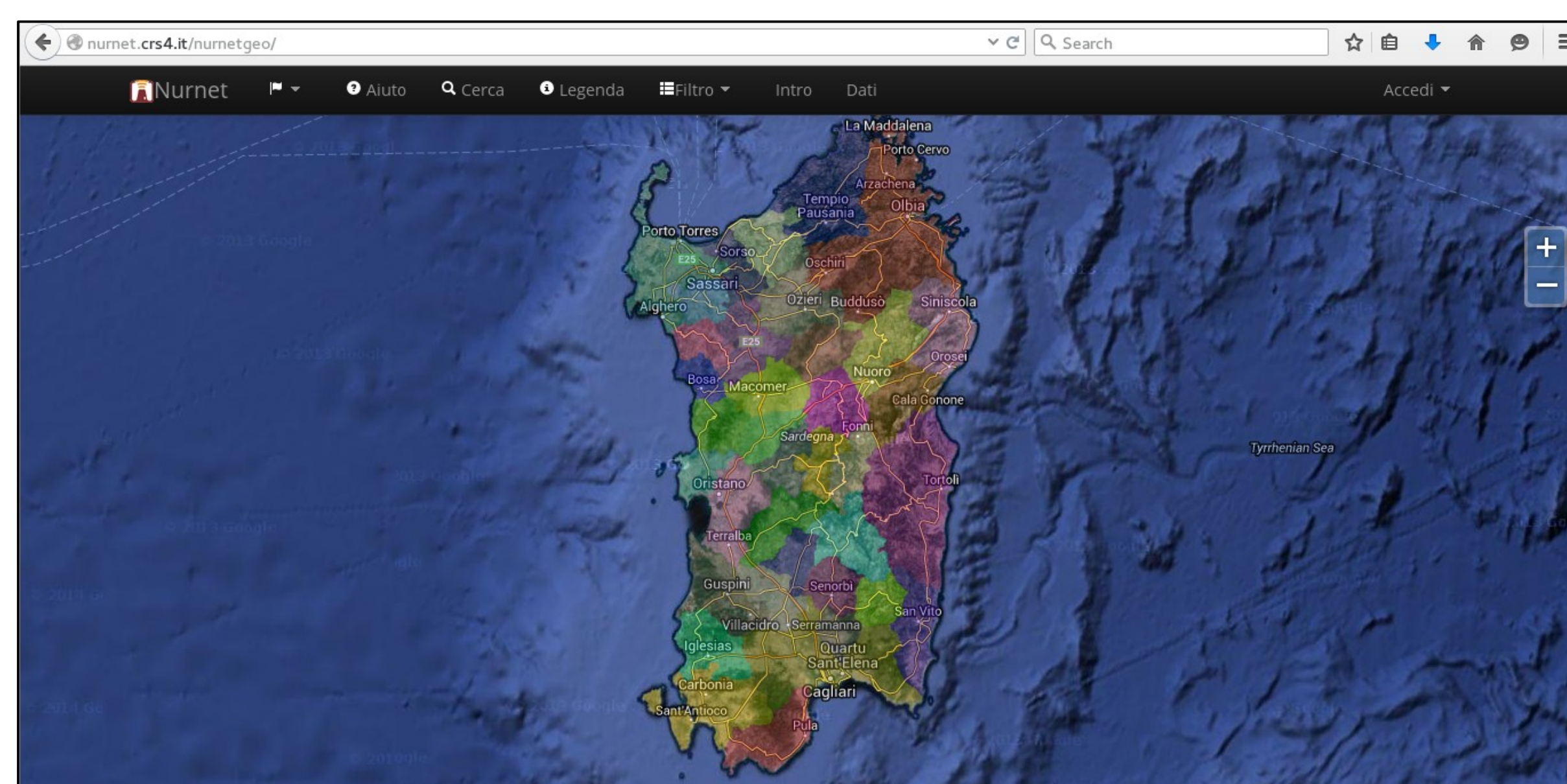
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1) Introduction and objectives

Nurnet – The net of the Nuraghes- is a Foundation of Participation aiming to promote the culture of the Pre-Nuragical (3200–2700 BC) and Nuragical period (up to the 2nd century AD) in the island of Sardinia (Italy). It is fed by a net of conventional social connections or through social web- networks empowered by private citizens, agents and public administrations sharing the same goals and interests. CRS4 (Center for Advanced Studies, Research and Development in Sardinia), in collaboration with Nurnet Foundation, developed a Geoportal on the web, at the moment as a beta version, enable the users to access and share information.



<http://www.nurnet.it>



<http://nurnet.crs4.it/nurnetgeo/>

The users are encouraged to generate and manage information of archaeological sites in the Italian island of Sardinia about location, history, preservation of the archaeological patrimony, pictures and videos to enrich a wide geo-database pertaining the big heritage of this region.

Objectives:

- empowerment of the identity link between local population, the relative cultural heritages and the awareness of their different fruition methods;
- data collection taking into account open GIS data;
- providing useful information to mobile application via API (Application Protocol Interface);
- collecting new information and feedbacks from tourists.

3) Framework, mobile apps and e utilities

The framework

The entire structure is based on the “open GIS philosophy”. The collected data are published through the portal API and using GeoServer, an open source server for sharing geospatial data (<http://geoserver.org/>). It has been designed for interoperability, and it publishes data from any major spatial data source using open standard such as Opengis WMS, WFS interfaces, KML, GeoJSON and Shapefile formats. The system permits to insert and modify GIS contents from the CMS (Content Management System) pages. The resulting contents are published via the portal API and Geoserver Web Feature Service (WFS)\Web Map Service (WMS). The Nurnet Geo Database is licensed under Creative Commons Attribuzione 4.0 International.

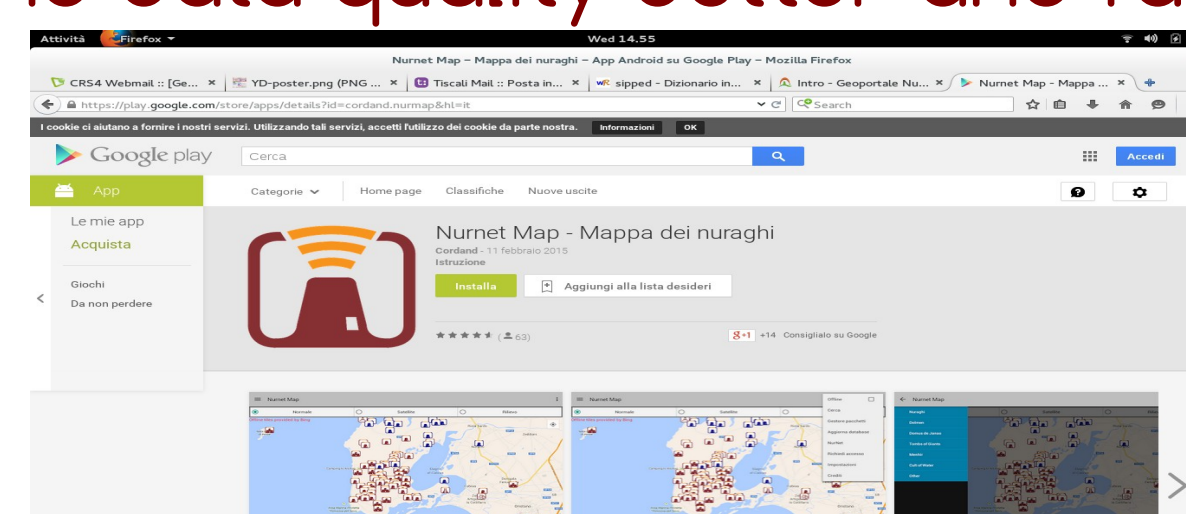
An example of mobile application

The “Nurnet Map” mobile App has been developed from the data provided by the geoportal, and it is available as a free download in Google Play, and it will allow to explore through smartphones the elements of the pre-Nuragic and Nuragic archaeological heritage in Sardinia. For every site it will allow to visualize information concerning the preservation condition, links to important internet pages, Nurnet pages and pictures. Also from the menu on the top right, choosing “Package Manager”, you can select the area to download and use in Offline.

Utilities

The portal has been though to use and take advantage of the new technology allowing to share and improve information and data quality better and faster every day more. What is actually possible at this stage with this new instrument is:

- visualizing the list of elements in the map;
- consulting the information regarding the selected elements;
- modifying the current information (for confirmed users);
- adding new elements (nuraghes, menhir, giant's graves, etc.).

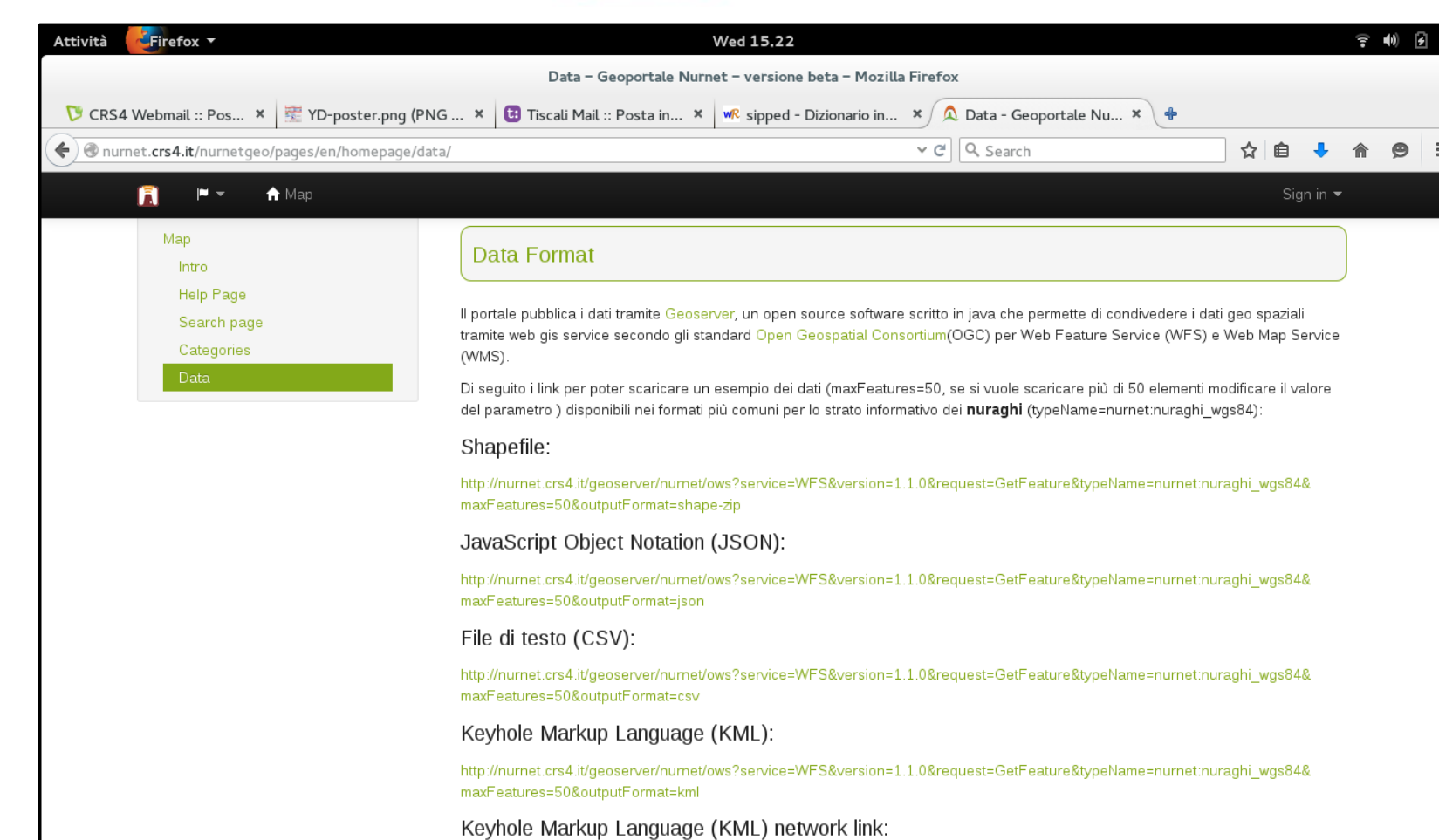


<https://play.google.com/store/apps/details?id=cordand.nurmap&hl=it>

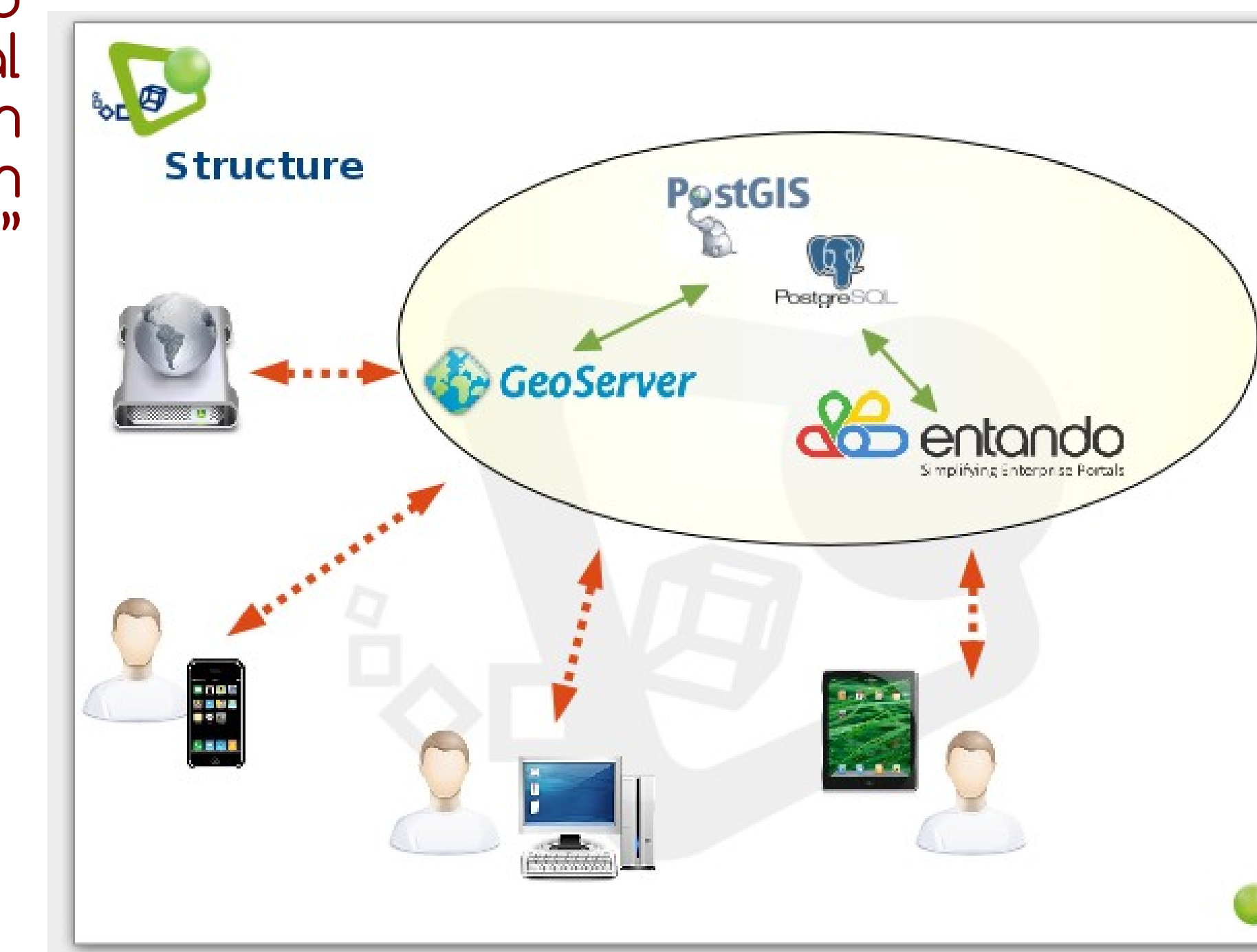
2) Methodology and data sets

The application is based on Geographic Information System (GIS) and Participatory Geographic Information System (PGIS) and it manages several types of information like archaeological sites, artifacts and museum information. Such information comes from the users of the Geoportal and from other sources that make the data available, according to the “open data” philosophy: free data accessible to anyone. The archeological features are:

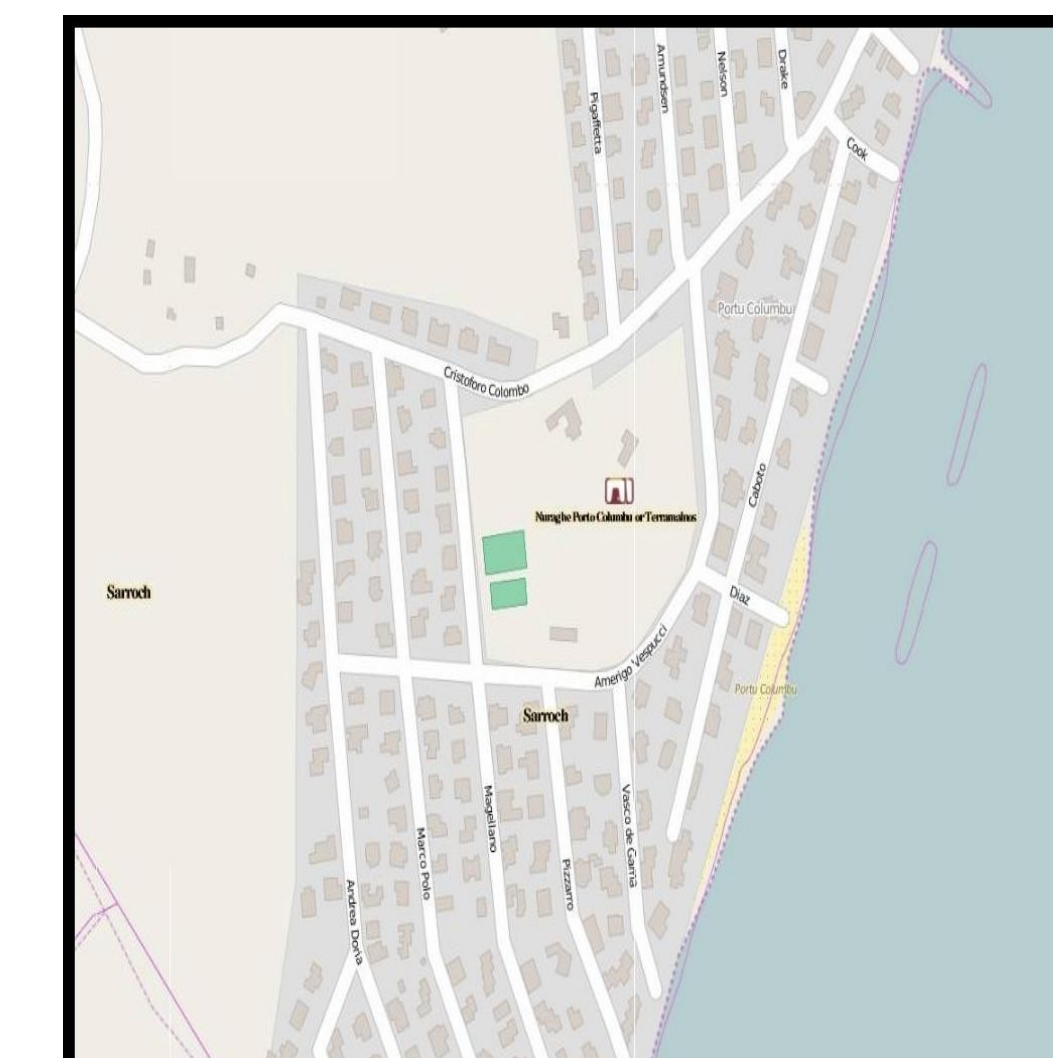
- nuraghes (the type of icon depends on the type of represented nuraghe)
- dolmens
- domus de janas
- Menhirs
- villages
- water worship (wells and springs)
- giant's grave



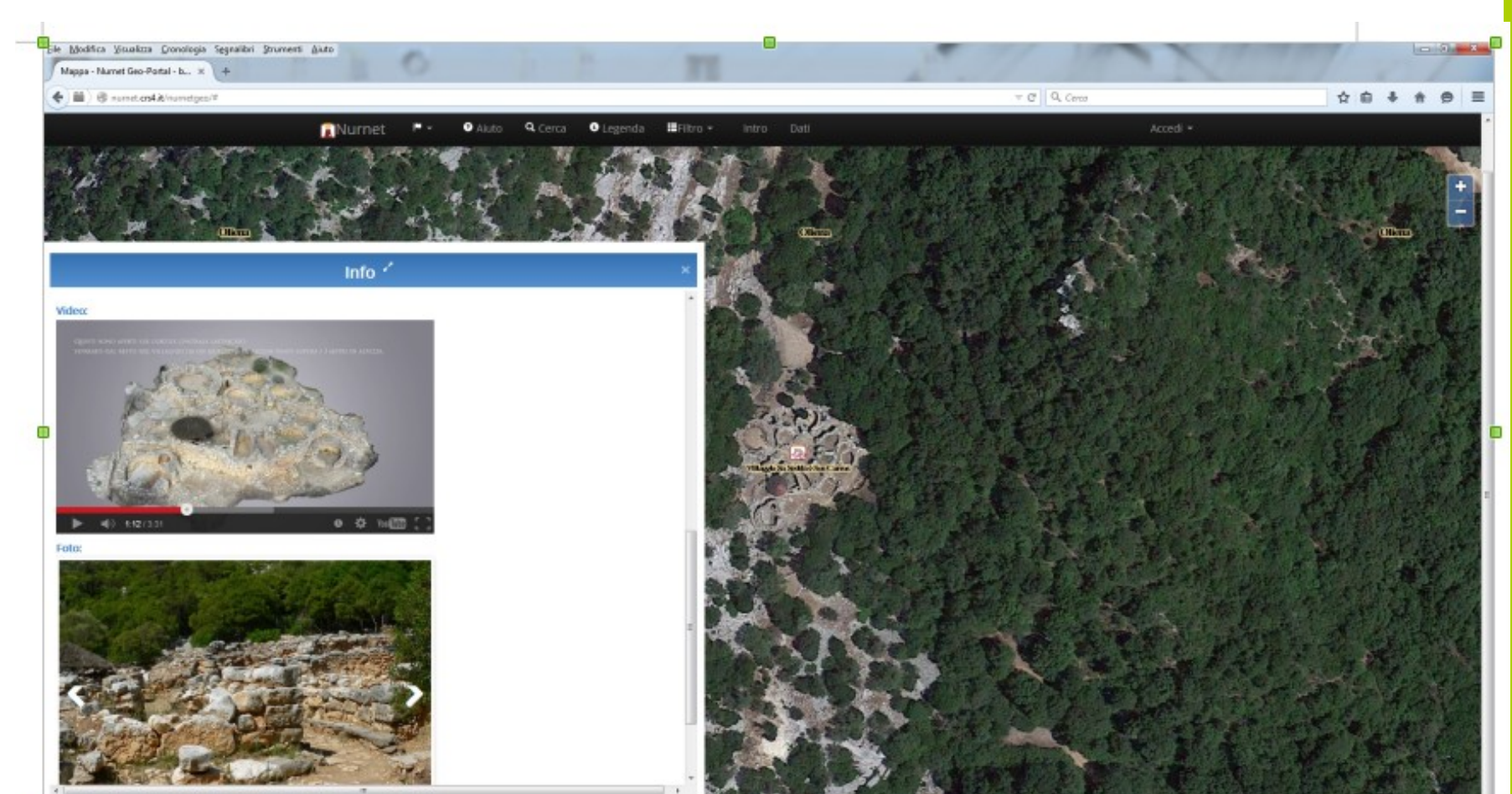
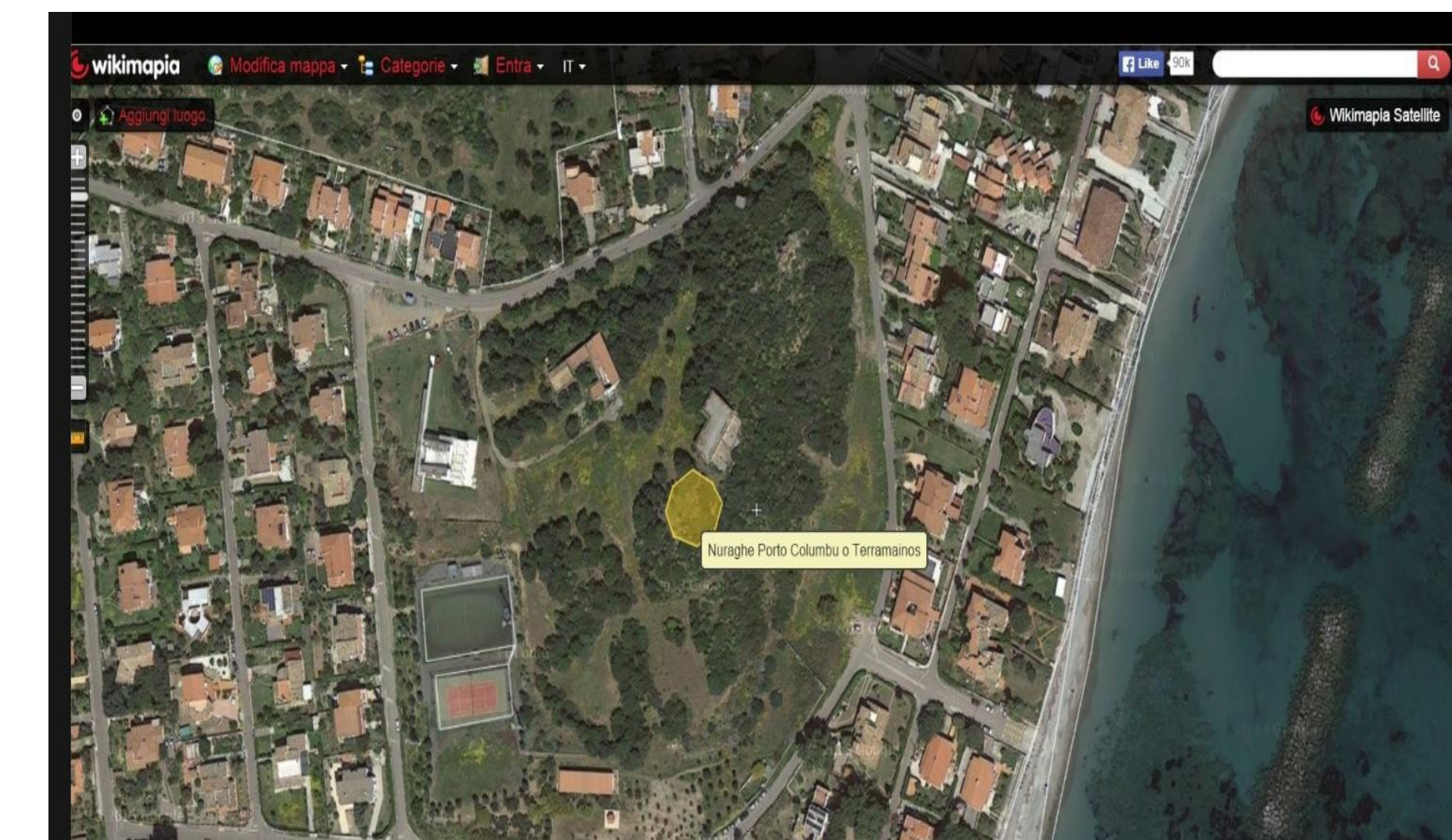
<http://nurnet.crs4.it/nurnetgeo/pages/en/homepage/data/>



A specific data model has been created, the geo-attribute is in WGS84 and it can be a point, a line or a polygon. There are three types of actors: viewers, editors and validators. The viewer can query data with a map or a form; the editor can insert and update data through maps using Google or Open Street Map as base layer; the validators are the experts working behind the geoportal: they evaluate and validate the data quality (archaeologists for example). To implement the geoportal, the open source software “Entando” has been used as a platform and all the data are published for free access via web services for third party applications.



Maps and satellite images on the web become a worksheet where external users can add information, details, links, etc.



4) Conclusions and future perspectives

One of the aims of the projects is making more attractive the archaeological sites and facilitate the archaeological tourism enhancing the economic opportunities in the territory through the participation of the visitors, final consumers of the good. Thanks to GIS applications it will be possible to study the tourist flows and provide information services for private and public entities.

Future purposes are:

- enhancing of the management of the territorial, cultural historical heritage through the use of the geo- portal;
- identify the touristic interest and create a model of the touristic flow in order to offer better services and give the appropriate value to the territory;
- promoting the territory and facilitating their popularity and fruition to the visitors through the use of the new technology;
- more efficient management of multimedia, like video, photo, etc.

Nurnet put already the base for a bigger project involving several European countries in order to assess the feasibility of the method in different Environments and to improve the platform, apps and services to an adequate standard to supply the needs of users and beneficiaries.

From a more technical point of view, Nurnet is a very good attempt of using a web platform based on open source resources (softwares and data) and it works thanks to the collaboration between experts and volunteers providing new information. The model has been applied to the territory of Sardinia to promote its territory, but the framework is proving to be a valid base for several issues such as disaster risk reduction, emergency response and management, environmental health and geomedicine, urban planning and many other applications, making a real difference compared to the old approach where only the experts could have an active role.

