



GEOSPATIAL™
WORLD
FORUM 

25 – 29 MAY 2015, LISBON CONGRESS CENTRE, PORTUGAL

THEME

CONVERGENCE

POLICIES | PRACTICES | PROCESSES
PUBLIC | PRIVATE | PARTNERSHIP

INSPIRE Geospatial World Forum 2015



PROJECT “S.T.A.R.”

Spatial Territorial Augmented Reality

25 - 29 May 2015

Lisbon Congress Centre, Portugal

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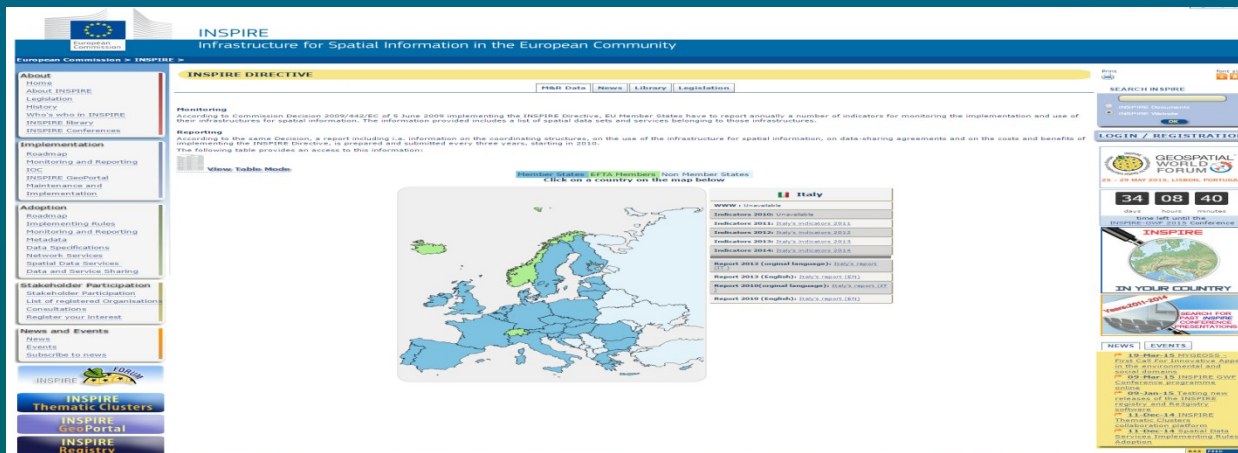
ARPA, the Calabria Environment Local Agency, works to defend and to control Environment against all the risks for humans, flora and fauna. It provides to develop data and informations of environmental interest, including scientific and technical programs, as well as giving a necessary support, with periodic reports, on the local environment conditions.



The screenshot shows the ARPA website interface. At the top, there's a navigation bar with links like 'HOME', 'Sede centrale', 'Dipartimenti provinciali', 'Centro Funzionale Multirischi', and 'Centro Geologico e Ambientale'. Below this, there are several news articles with images and titles. For example, 'Balneazione: illustrati a Tropea i dati per la provincia di Vibo Valentia' and 'Balneazione: domani a Reggio Calabria quarta tappa del tour Arpacal'. There are also sidebars with 'Menu Principale' and 'Tematiche Ambientali'.



ARPA Calabria Agency, being a local producer and owner of environment data, which have to be published on the WEB, has to work to guarantee the "interoperability" of the landing and the environmental metadata, according to the Inspire Directive. It also has to give the network services first to improve the RNDT and consequently to feed the National Geoportal.



The screenshot shows the INSPIRE website interface. The main content area is titled "INSPIRE DIRECTIVE" and includes a navigation menu with "Home", "About INSPIRE", "Legislation", "History", "Who's who in INSPIRE", "INSPIRE Registry", and "INSPIRE Conference". Below this, there are sections for "Implementation", "Adoption", "Stakeholder Participation", and "News and Events".

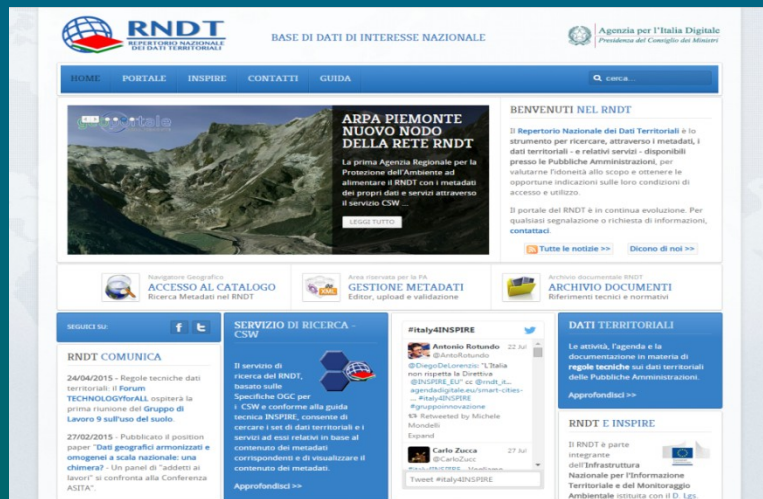
The central part of the page features a map of Europe with a highlighted area in Italy. Below the map is a table of indicators:

Indicator	Country	Year
Indicator 2010	Italy	2010
Indicator 2011	Italy	2011
Indicator 2012	Italy	2012
Indicator 2013	Italy	2013
Indicator 2014	Italy	2014
Indicator 2015	Italy	2015
Indicator 2016	Italy	2016
Indicator 2017	Italy	2017
Indicator 2018	Italy	2018
Indicator 2019	Italy	2019
Indicator 2020	Italy	2020

On the right side of the page, there is a "SEARCH INSPIRE" box, a "LOGIN / REGISTRATION" section, and a "GEOSPATIAL WORLD FORUM 2015" banner. Below the banner, there is a "NEWS / EVENTS" section with a list of recent news items.



According to the European Directive named "INSPIRE - Infrastructure for Spatial Information in the European Community", the ARPA Calabria Agency starts the Geoportal environmental local data, making possible, to various levels, the unification, information and communication of those geographic and environmental data directed to the local authorities and citizens.






The screenshot shows the homepage of the National Geoportal (Geoportale Nazionale). At the top, there are navigation buttons for 'CONVERSIONI DI COORDINATE', 'CATALOGO CSW', 'CATALOGO METADATI', 'CARTOGRAFIA 2D', and 'CARTOGRAFIA 3D'. The main title 'Geoportale Nazionale' is prominently displayed in red. Below the title, there is a search bar with fields for 'Username' and 'Password dimenticata?'. A 'Seguici su facebook' button is also visible. The page is divided into several sections: 'Il progetto del GN', 'Il Geoportale Nazionale', 'Direttiva alluvioni', 'I progetti cartografici', 'Catalogo servizi OWS', 'Multimedia', 'Riferimenti', and 'Enti Cooperanti'. A central map shows the Mediterranean region with blue overlays indicating specific data points.

ARPA Calabria Agency, being one of the reference of the National Geoportal of the Cooperative Cartographic System in Calabria, creates five different's local groups to improve the regional geographic informations of environmental data.



PROJECT "S.T.A.R."



Spatial Territorial Augmented Reality

The "Geoportal" is an open space that can be used by all stakeholders to the geographic informations. We have to remember that "Interoperability" comes from the identification and the sharing of these databases of public interest. It doesn't matters who is the data's holder or the importance they have into the management choices.

GEOPORTALE AMBIENTALE ARPCAL

Home | Geoportale | Catalogo | Mappa | Servizi OWS | Servizi a sportello | login

NEWS

- Comunicazione elettronica ARPA - Via nuova aperta nel sottosella delle Dolomiti: attenzione sulle scosce. 20/11/2014
- Il Comune di Crotone ha approvato il Piano di Gestione delle Acque Intercomunali del fiume Crotone. 19/11/2014
- Presentazione della nuova legge statale per la tutela dell'ambiente. 18/11/2014
- Il Comune di Crotone ha approvato il Piano di Gestione delle Acque Intercomunali del fiume Crotone. 19/11/2014
- Il Comune di Crotone ha approvato il Piano di Gestione delle Acque Intercomunali del fiume Crotone. 19/11/2014

NETWORK

Rate della copertura... La comunità del territorio... Il Geoportale ARPCAL... Servizi a sportello... Web Application...

AMMINISTRATORE

C.E. S.A.T.A.R. - ARPCAL - Centro Regionale per la Sostenibilità Ambientale e Territoriale - via Trionfante Carlo, 50 - I. 89018 Crotone (KR) - tel. 0961 732500 - fax 0961 732544 - P. IVA 0235256097

GEOPORTALE AMBIENTALE ARPCAL

Home | Geoportale | Catalogo | Mappa | Servizi OWS | Servizi a sportello | login

Geoportale

In coerenza con quanto previsto dalla Direttiva Europea che introduce "L'infrastruttura per l'informazione territoriale nella Comunità Europea - INSPIRE (Infrastructure for Spatial Information in Europe)" e dal suo regolamento nazionale (D.Lgs. n. 32/2010), con riferimento anche al Repertorio Nazionale Dati Territoriali RNDT, l'Agenzia Regionale per la Protezione dell'Ambiente della Calabria ha attratto il Geoportale dei dati Ambientali, promuovendo a vario livello di accesso l'omogeneizzazione, l'informazione e comunicazione dei dati a valenza geografica ambientale rivolta al Sistema Regione, agli E.E.L.L. territoriali ed ai cittadini.

Divenuta Nodo del GN Geoportale Nazionale del Sistema Cartografico Cooperante, l'ARPCAL, ha strutturato territorialmente i nodi regionali del GN e, quindi, ha implementato l'infrastruttura regionale per l'informazione geografica del dato ambientale.

- Il Geoportale Ambientale ARPCAL è strutturato in due sezioni:
 - il catalogo metadati che costituisce l'inventario principale di accesso alle informazioni geografiche, raccolte e sistematizzate, permettendo di utilizzare servizi di ricerca dei dati disponibili attraverso i relativi metadati, offrendo la possibilità di consultarsi in conformità agli standard OGC e di scaricarli con le relative licenze d'uso;
 - il visualizzatore geografico che consente di navigare

Secondo il principio INSPIRE per cui i dati devono essere raccolti e conservati dove sono rilasciati, il Geoportale è in grado di dialogare con altri cataloghi di metadati ed essere a sua volta interrogato, in una logica di Geoportale collettivo e comune in cui ogni soggetto è responsabile unico dei dati e metadati di sua proprietà.

Il Geoportale rappresenta uno spazio aperto utilizzabile da tutti i soggetti interessati all'interoperabilità dell'informazione geografica in relazione alle attività istituzionali svolte e a compiti a essi attribuiti.

L'interoperabilità si concretizza grazie all'individuazione ed alla condivisione delle basi dati geografiche di interesse comune, indipendentemente dalla tipologia del dato, ed al rilievo che le stesse possano assumere nei processi decisionali o gestionali, nelle seguenti modalità:

- modalità "adesione al Network del Geoportale Ambientale ARPCAL" che avviene, per i soggetti che dispongono di una infrastruttura propria o intendono realizzarla, previa federazione con protocollo cnc, attraverso la condivisione dei reciproci metadati, tramite la propria infrastruttura di gestione, a prescindere dalla tecnologia con cui è implementata;
- tramite la specifica infrastruttura "Geoportale Enti Locali" che l'ARPCAL sta implementando appositamente e che sarà resa disponibile all'interno del sistema per tutti i soggetti che non dispongono di un proprio catalogo metadati, in poche parole disponibile per il maggior numero di utenti possibili con prevalenza non solo degli stakeholder ma dei singoli cittadini.

ARPCAL - Viale Lungomare Loc. Minore snc - 89061 Catanzaro Lido - Tel. 0961 732500 - Fax 0961 732544 - P. IVA 0235256097



It consists of two sections: the first one is a metadata catalogue, representing the main access to the geographic informations that are properly collected and organized. All this makes possible the normal use of the services of research of available data through the appropriate metadata. This offer the opportunity to consult them, in accordance with the OGC standards and to download them with the relative licenses.

GEOPORTALE AMBIENTALE ARPACAL

REGIONE CALABRIA

Home Geoportale Catalogo Mappe Servizi OWS Servizi a sportello login

Catalogo

L'ARPA Calabria istituita con L.R. Calabria del 3 agosto 1999 n. 20, opera per la tutela, il controllo, il recupero dell'ambiente al fine di conseguire la massima efficacia nell'individuazione e nella rimozione dei fattori di rischio per l'uomo, per la fauna, per la flora e per l'ambiente fisico provvede ad elaborare dati ed informazioni di interesse ambientale finalizzati alla prevenzione, anche mediante programmi di divulgazione e formazione tecnico-scientifica, nonchè a fornire il necessario supporto alla redazione di periodiche relazioni sullo stato dell'ambiente della Calabria; In quanto Ente Strumentale della Regione, produttore e possessore di dati ambientali da pubblicare sul WEB, con l'avvento del D.Lgs. 32/2010 di attuazione della Direttiva INSPIRE, deve garantire l'interoperabilità dei dati/Metadati Ambientali e Territoriali e fornire i relativi Servizi di Rete, alimentare il RNDT (Repertorio Nazionale Dati Territoriali) anche al fine di alimentare il GN (Geoportale Nazionale);

Il catalogo si presta ad essere alimentato dai soggetti autorizzati, mediante la creazione di opportuni profili di utenza, per l'inserimento di metadati di interesse regionale, provinciale e comunale. Una delle condizioni per la realizzazione di una infrastruttura di dati territoriali che comprenda anche lo sviluppo di soluzioni per l'interoperabilità spaziale riguarda l'adozione di metodiche comuni per la classificazione dei dati e la fruizione dei risultati per tutto l'universo dei fruitori attraverso il repertorio dei metadati. L'implementazione di un repertorio dei metadati dei dati territoriali rappresenta lo strumento mediante il quale è possibile accertare la disponibilità di dati territoriali per l'intero territorio che lo alimenta e lo condivide, le loro caratteristiche e le modalità di utilizzo e di acquisizione. La definizione classica di metadati è quella di "dati sui dati" o metainformazione, trattandosi della documentazione standardizzata destinata a fornire informazioni utili all'utente per comprendere, confrontare, scambiare il contenuto dei dati descritti.

ARPACAL - Viale Lungomare Loc. Mosca snc - 88063 Catanzaro Lido - Tel. 0961.732500 - Fax 0961.732544 - P. IVA 02352560797.

This catalogue was implemented by official workers by creating appropriate user profiles to which address the local metadata inserted (regional, provincial...).

The realization of this local data infrastructure, that permits also the development of specific solutions for "spatial interoperability", was possible by using common methods for classification of data and by making available all the results to all the possible users through this collection of metadata.



 **ARPACAL** **GEOPORTALE AMBIENTALE ARPACAL**  **REGIONE CALABRIA**

[Home](#) [Geoportale](#) [Catalogo](#) [Mappe](#) [Servizi OWS](#) [Servizi a sportello](#) [login](#)

Accesso all'area riservata

— Accesso alla gestione on line —

e-mail:

password:

ARPACAL - Viale Lungomare Loc. Mosca snc - 88063 Catanzaro Lido - Tel. 0961.732500 - Fax 0961.732544 - P. IVA 02352560797.



Edit Metadata Presets

Preset: Custom

Basic Info

Caption: Genova - inserto secolo XIX zona medio ponente

Rating:

Label: Red

Copy Name:

IPTC Content

Headline:

IPTC Subject Code:

Description Writer:

Category:

Other Categories:

IPTC Copyright

Copyright: Davide Pambianchi - FREAKLANCE

Copyright Status: Copyrighted

Rights Usage Terms:

Copyright Info URL: www.freaklance.net

IPTC Creator

Creator: Davide Pambianchi

Creator Address: vico indoratori 2 - 3

Creator City: Genova

Creator State / Province:

Creator Postal Code:

Creator Country: Italia

Creator Phone:

Creator E-Mail: foto@davidepambianchi.it

Creator Website: www.freaklance.net

Creator Job Title: news photographer

IPTC Image

Date Created:

Intellectual Genre:

Scene:

Check All Check None Check Filled Done

The continuous improvement of a metadata inventory is the instrument by which it is possible to check the availability of spatial data for the territory that concern it, the main features and the methods of their use and acquisition. Metadata are data about data, meta-informations because they essentially consist in unified documents used to provide useful informations to all the users, to make them understand and compare and exchange.



Spatial Territorial Augmented Reality

The second section is the geographic viewer or front-end, that makes you able to navigate and consult all the data on the Geoportal.



GEOPORTALE AMBIENTALE ARPACAL

REGIONE CALABRIA

Home | Geoportale | Catalogo | Mappe | Servizi OWS | Servizi a sportello | login

Tematismi

- Layer Calabria
- Igm Quadro Unione Serie 25
- Comuni
- Opere di acqua
- Idrografia
- Geologia
- Librologia
- Usi del Suolo
- Reti Natura 2000
- Discazione
- Smemazione
- Indice Qualita' Gestione Terr.
- Indice Qualita' Suolo
- Indice Qualita' Cima
- Indice Qualita' Vegetazione
- Desertificazione
- Piano Qualita' Aria
- Fondo Radiometrico
- Campi Elettromagnetici

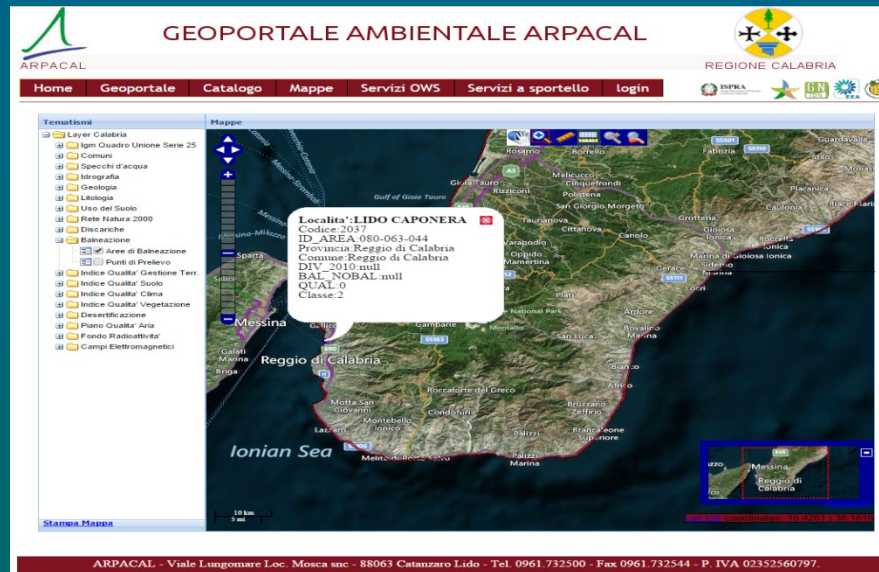
Mappe

Stampa Mapa

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According to the INSPIRE directive, data must be collected and preserved where they are released, therefore the Geoportal must be able to communicate with other metadata catalogues and at the same time it must be able to be questioned like in a collective and common Geoportal in which every owner is the only responsible of data and metadata of his owns.



The screenshot displays the ARPACAL Geoportal interface. At the top, the title "GEOPORTALE AMBIENTALE ARPACAL" is centered, flanked by the ARPACAL logo on the left and the Regione Calabria logo on the right. Below the title is a navigation menu with items: Home, Geoportale, Catalogo, Mappe, Servizi OWS, Servizi a sportello, and login. A row of logos for various services (ISPRA, IAN, etc.) is also present.

The main content area is divided into two panels. On the left, a "Tematiche" (Themes) sidebar lists various environmental data layers such as "Layer Calabria", "Igm Quadro Unione Serie 25", "Comuni", "Specchi d'acqua", "Idrografia", "Geologia", "Litologia", "Uso del Suolo", "Rete Natura 2000", "Discariche", "Baignazione", "Aree di Baignazione", "Punti di Prelievo", "Indice Qualita' Gestione Terr.", "Indice Qualita' Suolo", "Indice Qualita' Clima", "Indice Qualita' Vegetazione", "Desertificazione", "Piano Qualita' Aria", "Fondo Radioattivita'", and "Campi Elettromagnetici".

The right panel shows a map of Calabria with a popup window for "Localita' LIDO CAPONERA". The popup contains the following information:

- Localita' LIDO CAPONERA
- Codice 2037
- ID_AREA_080-063-044
- Provincia Reggio di Calabria
- Comune Reggio di Calabria
- DIV_2010 null
- BAL_NOBAL null
- QUAL_0
- Classe 2

At the bottom of the screenshot, contact information for ARPACAL is provided: "ARPACAL - Viale Lungomare Loc. Mosca snc - 88063 Catanzaro Lido - Tel. 0961.732500 - Fax 0961.732544 - P. IVA 02352560797."



Spatial Territorial Augmented Reality

This project STAR presents the final results of the implementation of Augmented Reality (AR) in the ARPA Agency Calabria Geoportal Environmental Data. The applications of Augmented Reality to environmental data are part of a general trend, which goes to the reproducibility and interaction mediated by information system on the network European Environment Agency (EEA).

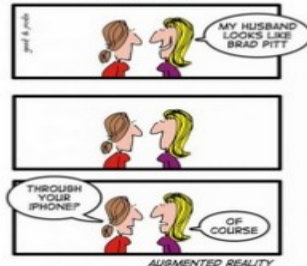


Spatial Territorial Augmented Reality

The territorial and landscaping studies use very different methods for the analysis, interpretation and communication by using digital technologies. GIS, remote sensing, laser scanning, photogrammetry, computer vision, 3D modeling, Virtual Reality (VR) and obviously Augmented Reality (AR) are tools of a complex multidisciplinary system that connects knowledge and competence about contemporary structures, geotopographic and geology elements, socio-cultural models and economic one, urban and architectural analysis, study of materials and finally graphical representation.

Realtà Aumentata (AR)

Rappresentazione alterata della realtà



Alla realtà percepita attraverso i sensi umani vengono sovrapposte informazioni ed elementi virtuali ed artificiali

Realtà Virtuale (VR)



Non si ha percezione della realtà



Spatial Territorial Augmented Reality

Augmented Reality means an improvement of human sensory perceptual skills by using specific devices, usually electronic ones, that would not be perceived by human sense.



Augmented Reality is a particular extension of virtual reality, which it aims to overlap the virtual reality, generated by computers, to the reality perceived by humans. In few words users receives a perception of the world "augmented" from virtual objects that provide additional information on real environment.

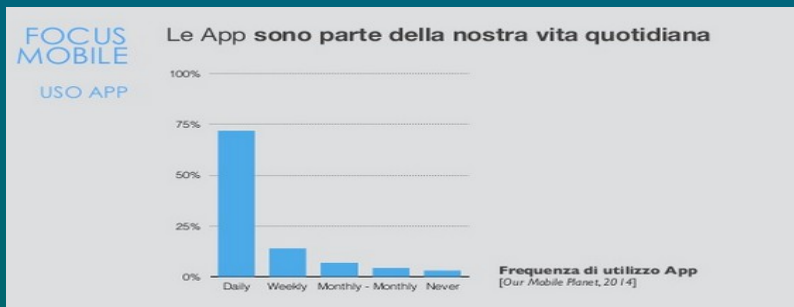
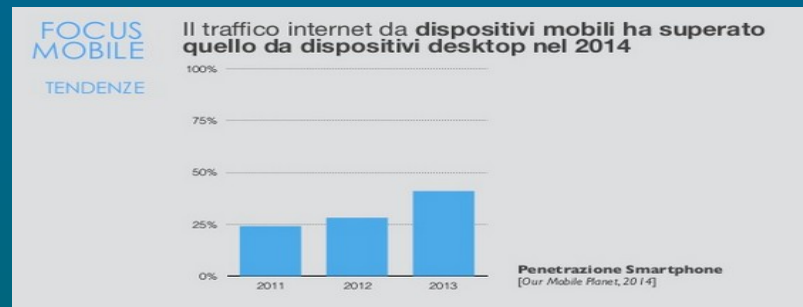
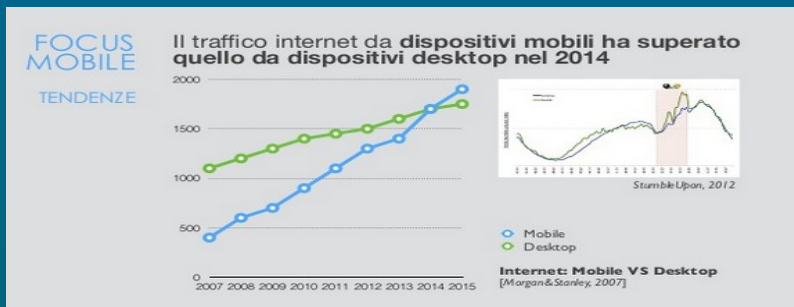


Spatial Territorial Augmented Reality

In 2009, after using it in specific areas (military, medical, research, etc.) and thanks to improved technology, the augmented reality, looks out the general public, both campaigns of communication about augmented advertising, which are mostly published in newspapers or on the network, that many applications for mobile phones.



Numbers of the exponential growth of mobile devices on Italy



FOCUS MOBILE

Mobile internet e App Stores sono piazze dove è importante affermare la propria presenza

PENETRAZIONE In Italia **27 milioni di persone** possiedono uno smartphone
[Osservatorio Mobile Internet, Content & Apps, School of Management del Politecnico di MI, 2013]

PARTECIPAZIONE In Italia i **social** hanno **27 Milioni di utenti, pari al 94%** della popolazione online
[dati ricerca Demoskopia e comScore, 2012]

INTERAZIONE I sensori consentono esperienze di **interazione con le cose**



Spatial Territorial Augmented Reality

All over the world they were sold over 1 billion and seven hundred million mobile devices, smartphones, tablets and so on. For example in 2014 their spread in Italy amounted to 41.3% (smartphone's owners) compared to 2013, when it was at 27.9%.

Every day in the world are activated 1 million and five hundred thousand smartphones running Google Android and in September 2013 were traded over seven hundred million devices Apple iPhone 5S and SC.

The simple interfaces to icons and touch screen mode allow the management of complex geospatial data such as maps, POI, waypoints, fact sheets, multimedia.





Spatial Territorial Augmented Reality

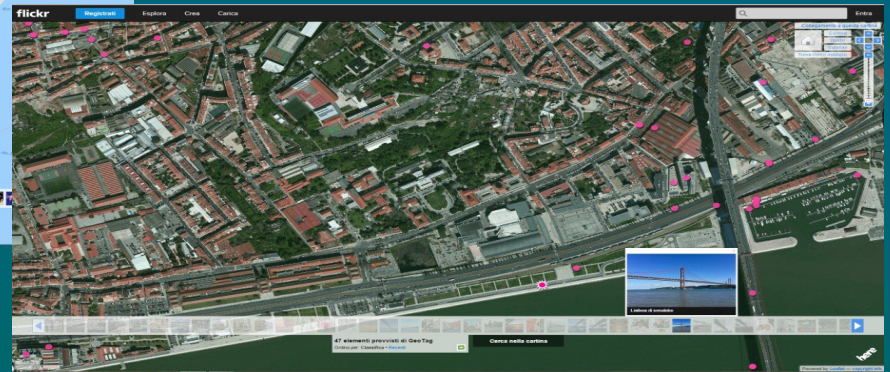
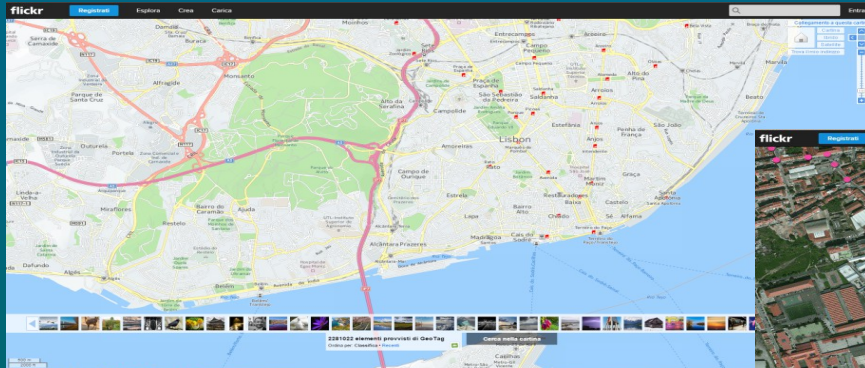
Augmented Reality can be read by generic devices such as smartphones and tablets or by dedicated equipments like helmets, visors, digitally enhanced glasses. Also in Italy the research in this field is real active and promises the development of prototypes and short solutions "made in Italy".





Spatial Territorial Augmented Reality

Thanks to augmented reality, today it is possible to find some informations about the place where you are (such as hotels, bars, restaurants, metro stations, etc.) to search and visualize some photos, obviously overlapped to the reality, into various social networks like Flickr or Wikipedia items. We can also find neighbors Twitters or our parked car, we can tag places, put "augmented reality" informations in a specific place and so on ...



Spatial Territorial Augmented Reality

The project STAR idea, was born from the intuition to make available all the wealth of environmental data of the ARPA Calabria Geoportal, through the new augmented reality technology, in an easy and intuitive mode.

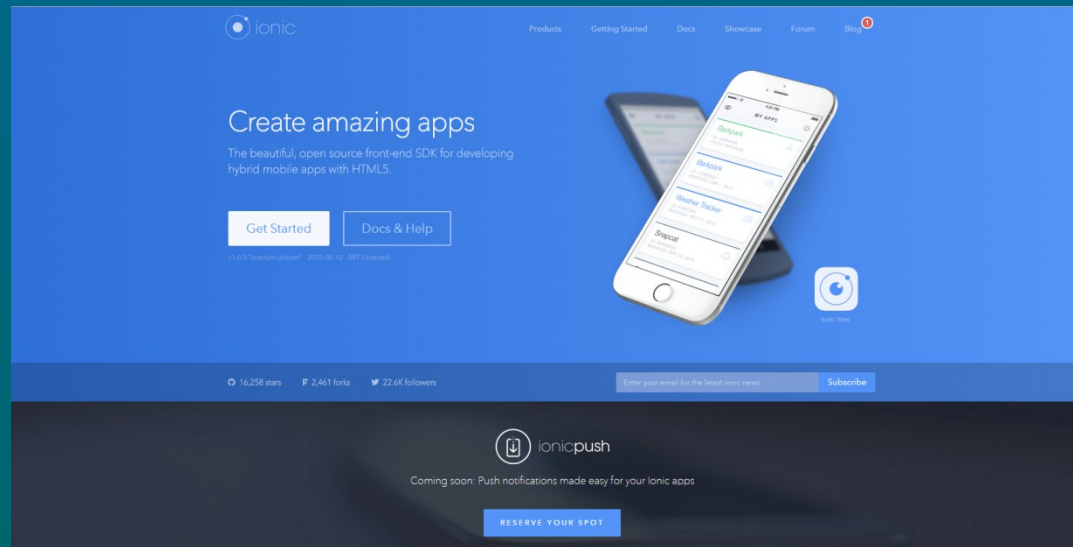


You can download the free app directly from the pages of the official website of our Agency for both iPhone and Android. The app is built with open-source Ionic Framework technology.



Spatial Territorial Augmented Reality

Ionic Framework is a complete open-source SDK for hybrid mobile app development. Built on top of AngularJS and Cordova, Ionic provides tools and services for developing hybrid mobile apps using web technologies like HTML5, CSS, and Sass. Apps can be built with these web technologies and then distributed through native app stores to be installed on devices by leveraging Apache Cordova.

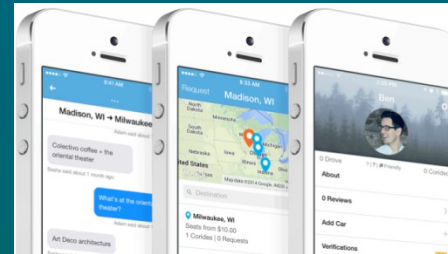




Ionic provides all the functionality that can be found in native mobile development SDKs. Users can build their apps, customize them for iOS or Android, and deploy through Cordova.

Ionic includes mobile components, typography, interactive paradigms, and an extensible base theme.

Using Angular, Ionic provides custom components and methods for interacting with them. One such component, collection repeat, allows users to scroll through a list of thousands of items without any performance hits. Another component, scroll-view, creates a scrollable container with which users can interact using a native-influenced delegate system.

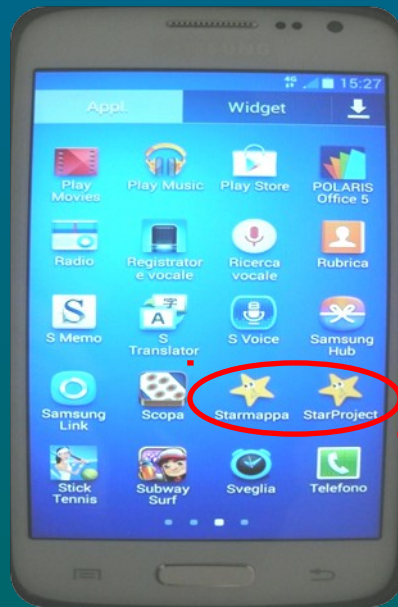




Spatial Territorial Augmented Reality

Once you start the app STAR, near territorial area of interest, the user can choose between different levels in the local browser.

By choosing the STAR application, it will start your phone's camera, and you can surf in the Augmented Reality mode.





Spatial Territorial Augmented Reality

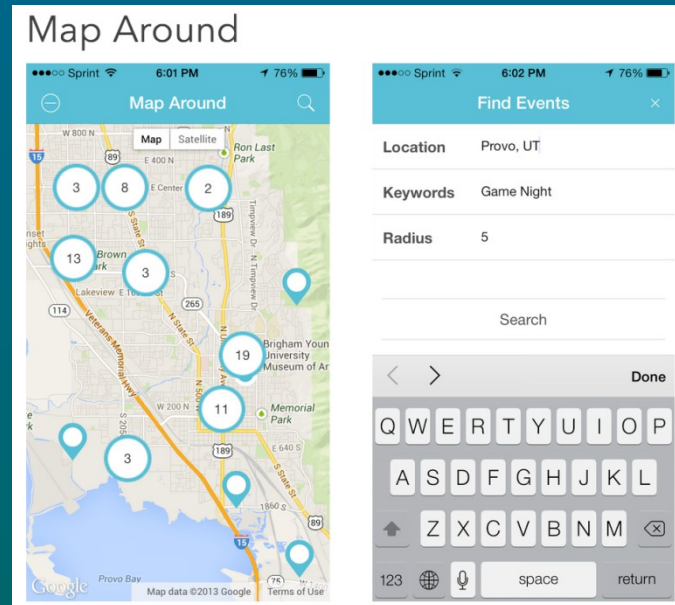
The user, moving camera in front of him in "Reality Mode" and in different cardinal directions, will see different icons overlap to the real images. These one represents in the space "the Points Of Interest" of an activated level. Each of these points is located on a radar map and provides a series of interactive informations available to the user.





Spatial Territorial Augmented Reality

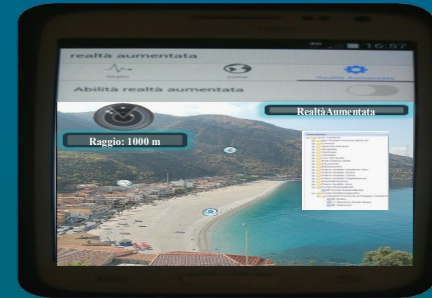
Every "point of interest" (POI) is located from Google Maps Program, depending on the latitudes and longitudes provided by the programmers. In the "Map mode" you can take the user directly to his point of interest, thanks to the support of the device with the GPS which tells to the system his exact location. The personalized Google Map is also used in the network according to different modes.





Spatial Territorial Augmented Reality

Items that "augment" the reality, included in the planning stage, should be viewed through any device of the latest generation. The overlap between real and virtual elements creates a "mixed reality", that increases the user's perceptions.










Spatial Territorial Augmented Reality

ARPA Calabria is working for a fast classification of all the territorial activities and of all the inherent environmental elements. We are going to carry out to macro-areas, that will includes all these activities and their related elements.








Some symbols used in the reading of Augmented Reality

ACTIVITY

-  Control (ARPA staff)
-  Analytical laboratory report
-  Enviromental monitoring
-  Issuing authorizations
-  Measurement campaigns with mobile laboratories

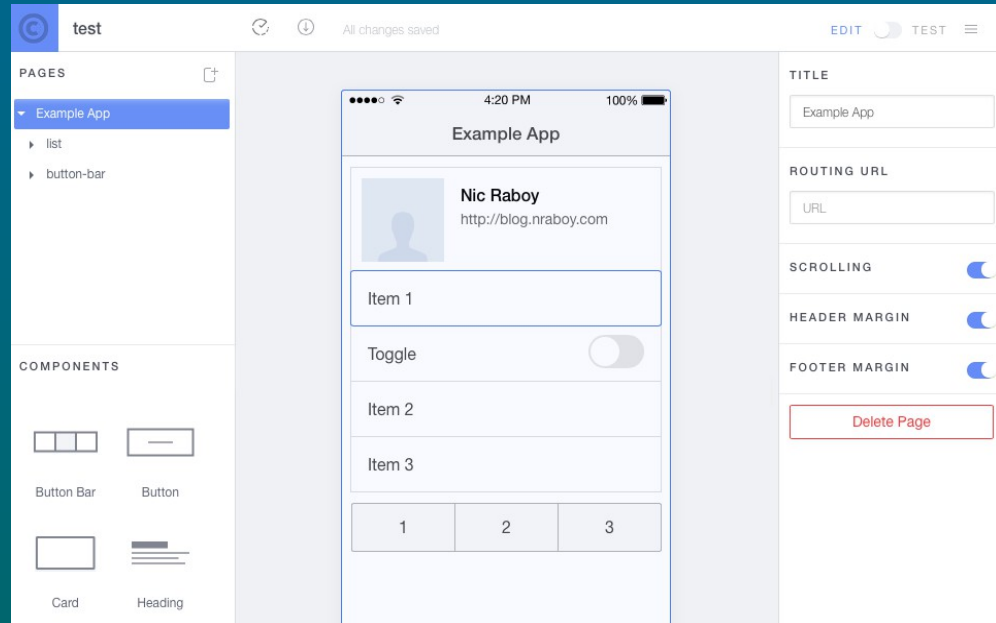
TERRITORIAL ENVIRONMENTAL ELEMENTS

-  Emissions - control point
-  Drinking water - control point
-  Bathing - control point
-  Radio Base Station
-  Polluted sites



Spatial Territorial Augmented Reality

The mode can be activated with STAR, are those concerning three mode displays:
Map, List and Augmented Reality.





Spatial Territorial Augmented Reality

Through an appropriate and dedicated user interface, you can display territorial 3D models, in few words, in the scene of the device there are some points of interest that allow, approaching the webcam at a predetermined distance, to perceive text informations and photographs, related to environmental data, that you are watching.





Thank you for your
attention !



Grazie per la vostra
attenzione !



PROJECT "S.T.A.R."

Spatial Territorial Augmented Reality

