**Initiative of NGO Association  AMFM GIS Italia for a White Paper on geo-location**

# LOCATION AS THE UNIFYING ELEMENT
# OF ACTIONS AND INFORMATION FOR CITIZEN SERVICES

# Index

White paper sulla geo-localizzazione per i servizi ai cittadini - versione 29th August 2014
Distributed by  Creative Commons – Attribution (CC BY 3.0)

Page 1

# FOREWORD

Location plays a fundamental role for citizens. Some topics connected to it are info-mobility, knowledge and management of buildings, geo-coding, support for special users, sensor-generated data, access and usability of data and overall services provided by public administrations for citizens.

It is time now to move from the topographical reference, well known by experts only, and to focus on the knowledge and understanding of places by all the people. This process will make citizen services simple to use, efficient, without limits or boundaries and able to speak a common language, while information will easily flow from global to local dimensions and vice versa, in a continuous stream for the overall benefit.


# WHAT IS THE WHITE PAPER?

The **white paper** (WP), being currently developed as an open document in a participated process, will be presented and discussed by working groups during the workshop that will be held in Rome on 24th of September 2014. Afterwards, it will be submitted to specialists and political authorities, who will be asked for opinions and advices. Then, during the conference, on September 25th 2014 the WP will be presented to the participants to be shared and endorsed.

The WP writing process is open and the participation of Italian, European and international communities have been asked since the beginning . All the participants will be mentioned in a list attached to the WP; they are invited to participate to the debate of the WS and to the conference that will take place on 25th, as shown in the program (www.amfm.it).

**How is the WP realized?** Location is a widespread, pervasive phenomenon, integrated in almost all human activities; accordingly, the process that will produce the document is collaborative, open and multi-cultural. This process will rely upon participants' contribution.

**What is the kind of contribution required?** Adding some short notes, better defining the points of the draft or exploring other points deemed to be relevant to the topic of location for public services, will suffice.

**What is in the WP?** The document has two parts:

A.       the first part is focused on location topics ;

B.       the second one collects ideas, opinions, advices to possibly define action plans

A folder available on DROPBOX "*white_paper_conference_Rome_2014*" (at this link https://www.dropbox.com/sh/hq6acr5kwg7d4sa/AADbOJsWGL4Yps0uHSGl6QTKa) contains all the documentation concerning the WP and all the references made available by the contributors.

*This document is published and distributed under Creative Commons License.*

# A - FOCUS ON WHITE PAPER ABOUT LOCATION AS UNIFYING  ACTIONS AND INFORMATION FOR CITIZENS' SERVICES
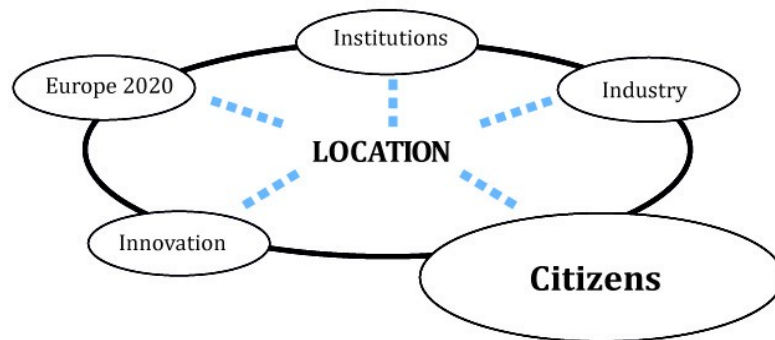


## 1 - POSITIONING AND LOCATION

Geo-positioning through GNSS satellite systems, also known as GPS, is now largely widespread on wearable devices. Geographical coordinates, whose precision benefits of  increased progresses in satellite systems like Galileo, are constantly generated and transmitted. Being mere numerical data such coordinates must be visualized on a map in order to meet the final users' needs.

Location or geo-location is the information which describes a place (its position) and moreover  the related semantic information. Specialized user communities are usually interested in the positioning; citizens, who represent the widest community of users, must know the location in order to fully exploit services. For example, a utility company can be interested in the exact position of the meter, citizens want to know where a specific office is and how to reach it. Geo-positioning generates rough data which require further analysis,  whereas geo-location provides the final user with readily usable  and  fully understandable information.

Geo-positioning gives certainty to geographical and topographical maps; location improves the quality of citizens' life, makes the services more accessible and increases their quality.

## 2 – INFOMOBILITY

The rationalization of the mobility of people and goods can contribute to reduce wasted time, fuel consumption and traffic congestion. A service to citizens and businesses is one that works inside some common political strategies.

Adding location within distribution systems supports the policies of intermodal exchange and integration, reducing the need for private transports and improving the management of goods and logistic centers.

As far as goods are concerned, their location data can be exploited in order to optimize the composition of convoys and to avoid empty return journeys. In this way port authorities, logistic centers and railway stations can become "smart centers" in an integrated management of information.

The intermodal transport infrastructure for people's mobility requires two levels of information: parking availability and the integration of trains and local transports timetables. Furthermore an appropriate level of services is necessary for the management of information.

**3 - INDOOR LOCATION**

Recent studies have pointed out that we spent on average 90% of our time in indoor spaces, often in unknown environments. It becomes thus fundamental in different fields (logistic, mobility, smart city's services, health, commerce, etc.) to provide an accurate and continuous mapping of people and objects in indoor spaces. The development of business strategies and mapping technologies that include indoor spaces (e.g. technologies based on GNSS system repeaters, like Galileo's positioning system) is a relevant process for innovation and business in different fields like - among others - logistic, web and energetic management, maintenance and commerce. The ability to easily set people and objects in indoor spaces as well as outdoor can activate a lot of new location-based services (LBS) absolutely important for the economy. The indoor location is also relevant in the emergency management specially for " search and rescue" . Emergency may be managed only by having data quickly available; positioning is the key data being the basic attribute of all physical and chemical parameters monitored. Deep indoor location is an emerging field where some technical issues have to be still solved.

**4 - OUTDOOR LOCATION**

The outdoor life of people is totally influenced by geo-location and can be monitored. When they own and wear GPS devices producing continuous data, citizens can acquire and analyze information otherwise impossible to collect in the same quantity and continuity. Is it possible to take advantage from that, apart from managing our diet or showing the efficiency of city transportation system? What is the relationship between citizens, their location and city or territory's services? Is it a mutual relationship or is it only an opportunity for the citizens to act well and properly using localization systems?

**5 – SMART COMMUNITY AND LOCATION**

Location, as the unifying element of actions and spatial information through which the smart communities act, is a fundamental element of "smartness". Location is linked to other bases for contextualizing other information (topographical bases, ortophotos, etc.), postal addresses and geo-coding services, information on transportation (infrastructures and mobility vehicles). Specific attention should be paid to 3D data and representation (about interior and exterior of buildings) as qualifying elements for smart communities who want to control and manage the city and develop its usability also for disadvantaged people (security, paths, Alzheimer). In the context of smart communities specific attention should be paid to real-time, crowd sourced and sensor-generated data.

**6 - LOCATION AND MIGRATION**

Humans carry constantly the attribute of where they are and of where they have been since they were born. Such information is relevant in order to know and manage a significant phenomenon such as migration. Italian Immigration Office collects, among other data, the birthplace of non-EU citizens who live in our country. The place names are not currently normalized being still in the acquisition phase, meaning that it is possible to link each immigrant with their home country, but not with the city or province of origin. The lack of this information does not allow a detailed analysis of this phenomenon, preventing thus the identification of the areas within each country with a higher contribution to the migratory flows. The National Institute of Statistics, in collaboration with the Italian Immigration Office and supported by some EC funds, initiated a project aiming to recover and geo-reference these information. The

use of open tools and databases makes this process easily replicable also in other fields.

## 7 - LOCATION AND SPATIAL PLANNING

Spatial planning both uses and produces geographic data.

Spatial planning processes use intensively and extensively spatial data. Referring to the 34 spatial data themes identified in the INSPIRE Directive (2007), we can certainly say that, if not all, many of them are involved in planning processes.

Apart from the theme "Land use", that includes the spatial data of planning, many other themes provide support to planning, eg.: "Transport networks", "Hydrography", "Protected sites", "Land cover", "Area management / restriction / regulation zones and reporting units", "Natural risk zones".

As far as planning processes have to deal with the different views and descriptions that different  themes propose for a specific territory, the issue of interoperability (which is the focus of INSPIRE ) becomes crucial, not only as  the technical and semantic interoperability, but also as the topological one. If several layers of information have to be overlaid the problem of geometric consistency between them cannot be ignored and should be treated with awareness: the issue is quite complex because  often overlapping spatial datasets are produced natively with different spatial resolutions (i.e. nominal scale ).

With regard to the theme "Land use", it is useful to remember that INSPIRE , in its data specification (INSPIRE, 2012, *D2.8.III.4 Data Specification on Land Use - Draft Guidelines*) articulates this theme in two sub-themes: existing Land use (ELU, current land use) and Planned Land use (PLU).

The plans, which are the product of the planning processes, fall into the sub-theme PLU.

Data of sub-theme ELU certainly are an important input for planning processes. But so are the data of sub-theme PLU when they are referred to existing plans toother hierarchical territorial level or to special (eg. Plan of a natural park) or sector  (eg. Commercial  Plan) plans, affecting the same territory.

So planners are intense users but also producers of spatial data. However, in general, they are not specifically trained in handling spatial data (and, in general, they do not seem fully aware of  conceptual and technical implications that spatial data interoperability's issues have on professional practices).

The planning processes, and in particular decision-making processes, always involve various institutions (in general articulations of the State). Depending on the specific (regional) regulations,  co-planning boards, services conferences, co-decisions etc. may apply: all these processes are based on flows and sharing of  (mainly spatial) information.

In general terms, citizens are users of spatial planning data, as interested in decisions making about land use and possibly involved in related participatory processes, or as individuals, or as economic players, when interested in the transformation of specific portions of land.

## 8 - PRODUCER , CONSUMER AND PROSUMER OF GI

The role of the "prosumer" (from the union of the two words "producer" and "consumer"), being fundamental  in the digitized processes,  has started a lively debate during the last years, in conjunction with the outbreak of the Web 2.0,.

The prosumer produces, creates, uses, shares, upgrades or remixes meanings, messages, products or services; in other words he is the one who participates to the creation of economic value process through the user generated content (UCG). The prosumer gains authority and autonomy as subject because of what Wellman (2012) indicates as the three revolutions that generated the networked individualism.

The social networks revolution has offered the people the opportunity to move beyond the cohesive group world, diversifying relations and social worlds, giving bridges and opportunities for operations between different and distant contexts.

Then the Internet revolution has provided people with an unusual power of information retrieval and communication, through  the capability of being content users and editors on a large scale.

Finally, the mobile revolution, through the spread of smart devices, has made the technology more and more pervading until it has become part of the human body, giving it the possibility to be connected and to have access to information irrespective of the place. In the contemporary social-communicative context, where there increasingly is  less difference between professionals and amateurs, between online and offline activities, the learning and access processes to knowledge become horizontal and liquid while the knowledge evolves  from centralized to distributed. The prosumer's role seems to be strategic in different fields, not last the geographical information one.


## 9 - LOCATION AS INTEGRATOR OF DIFFERENT LAYERS OF PUBLIC SERVICES

Due to the reduction of the public expenditures and as a result of organizational and political instances, the current trend is to group or to compact the intermediate levels of public administration. Therefore the citizen services can be more direct, but at the same time more difficult to use, because of the changing in PA and because it is difficult to understand where to go and whom to contact for information. Adding to every service the necessary information about the location of the source, of where the service takes place and how to go there, makes everything easier. The upgrade of the public system for managing citizens' and companies' digital identities (SPID / public system for identification) will encourage the spread of web services making it easy for citizens to access these services. Through digital identity (commonly known as unique PIN) citizens will be able to use every service provided by the public administration or by the private sector. The integration of digital identity and information of location becomes the key factor that allows service managers to plan and develop public services, on the basis of the needs and expectations of users/citizens; moreover, it  allows citizens to easily discover and efficiently use the available public services.


## 10 - LOCATION AND PROTECTION OF COMMUNITY LOCAL IDENTITY AND CULTURE

Toponyms are just one aspect of the semantic components of places that alphanumerically refer to the community's memory related to the territory. Everywhere the space is identified, known, remembered and used through locations that can be used every time in different ways. Loosing memory or forgetting the name of a place creates, divides and limits local identities. Services are based on detailed toponymy (on a large and very large scale) and usually this is not described in official maps, in particular the digital ones.


## 11 - LOCATION AND HEALTH CARE

A modern hospital  or a health care centre are highly complex "systems of systems" where efficient and accurate asset tracking and management is vital. The leading principles of today's integrated quality management procedures  predicate that every facet of a delivered product or of a provided service must be subject to continuous analysis and assessment. Ensuring access to geo-data together with other open data can be very beneficial, improving quality of services and reducing costs. It should be noted that, due to the sensitive nature of some of the data (e.g. personal health records) the open data nature of critical information only has to be limited to the boundaries of the health care systems.

The detailed real-time localisation technology applied to monitor medical appliances and to manage medical staff and patients can significantly improve operational efficiency of hospitals or health care centres –thus yielding significant financial benefits-, but it also has evident significant societal implications. Improving location and tracking in the public health domain can bring to significant advantages in terms of improved quality of services and lower risks. A notable example of this can be found in Italy, where location of pharmaceutical products through labels, from production to sales at pharmacy, has allowed higher security and control well above average (0.1% risk in Italy against 1% in Europe and 6-7% globally). Additionally, within the public health sector the adoption of open data may have profound implications since, according to recent figures, medical data are now accountable for 30% of the digital information available. Within this field open data can indeed have very significant societal and market relevance, as highlighted by the recent (2012) study on "Redesigning health in Europe for 2020" commissioned by the EC, which strongly advocates the importance (and value) of promoting open data in the public health sector (recommendation IV: "use the power of data").

## 12 - LOCATION AND LESS FAVOURED CATEGORIES
The question "how to go to a place?" has not one unique answer: it depends on the abilities of the single user. Not everybody uses places and routes in the same way. For example people who lose the orientation or who do not remember where and how to go need a special help connected with location. Even in indoor spaces less favoured (disadvantaged) categories of users can take advantage of the management of position and status (e.g. in order to avoid fallings or dangerous situations).

## 13 - LOCATION AND ECONOMIC DIVIDE
The lack of geo-location data may constitute a divide. Data of geo-location create direct benefits for producing and offering goods and services. Enterprises are directly dependent on these data. Denmark represents a positive example about how geo-coded data have improved the capacities of SMEs and extended their services in the sector of the construction industry. On the other hand, missing geo-location data negatively affect the development of the whole society, taking into account the major costs to obtain data that public and private institutions need to run their everyday activities. Also the adjunctive costs encountered by users in presence of not harmonized and interoperable data should be mentioned.

## 14 - LOCATION AND OPEN DATA /LINKED DATA
The availability of open data allows today the access and reuse, in many sectors, of data collected and managed by public administration. Geographical data are surely the most required by users and developers. Beyond the typical geographical data (thematic or topographic), the location of various kinds of points of interests gets a lot of attention. In some cases, the public administration releases some dataset of points of interest without coordinates, but with the relevant postal addresses. However, also the addresses are geo-localized data, because it is possible to get geographical coordinates from postal address (using geo-coding functions). Concerning open dataset of geo-localized data, it is important to pinpoint the descriptive documentation attached to datasets, that should allow users to completely understand the content, to reuse it in the best way possible. Today a lot of open data sites provided by PA describe geo-localized data in the same way of alphanumeric dataset, not considering the specific characteristics of geographical attributes. The experience developed to describe geographical dataset (metadata regulated by international, European and Italian laws) should be part of the

general culture of location, for a wide and general understanding of metadata. Among the open data released by PA, those dynamically produced are not yet considered. However the transportation sector is opening new paths on this subject. Some Italian cities, at municipal level, provide open data on transportation, that include also dynamical geo-localized information. Private citizens and citizen's community have started to make available geo-localized data collected by GPS or similar devices. For example the dataset OpenStreetMap (http://www.openstreetmap.org/) set up by volunteers during direct acquisition campaigns, or the hotspot Wi-Fi dataset (http://www.chefuturo.it/chewifi/). These experiences pave the road of open data to a future when not only PA, but also the community will have a leading role in collecting and providing data.

## 15 - LOCATION AND ENVIRONMENT

The environment protection and management activities require the identification and knowledge of processes which develop in a territory various dimensions, in the time and space. Besides, wide access to the environment descriptive data is a well established principle of the European legislation. Location, being aimed at highlighting semantic relations between territorial objects, is a tool directly supporting these actions. Beyond the creation of graphical representations and geo-referenced databases, location is based on sharing harmonized and interoperable information, derived from a plurality of sources and combined every time depending on the specific objectives.

Concerning for example the waste management,, the position of waste disposal plants must be associated on one side with the residential and industrial plans and on the other side with the resilience of the areas around such disposal plants. In order to reduce the waste disposal impact, in terms of prevention, tracking the waste transfer itineraries, differentiated depending on their environmental dangerousness and on the opportunities of economic reuse, is a well-established procedure. Dynamic geo-referencing of every single load transferred is cross-checked with other data such as producers' and disposers' potentiality, allowing a realistic track of production, collection and treatment processes and of their environmental impact. Beside these procedures, clearly valid at a macro level, location provides useful tools also at a local level, like neighbourhoods or roads, toward more point based services for the households interested by these procedures.

Similar considerations can be applied to the biodiversity of species and ecosystems, where the intense anthropic pressure entails the need for protective actions. The complexity of relations (mainly nonlinear) within the different species and between these and the humankind involves the use of geo-referenced information integrated with many other sources.

Also in this field, location allows to find innovative solutions for the management of wide protected areas, for taking care of ecological networks (essential in an very densely populated country like Italy) and for facing new phenomena like the growth of wild fauna in residential areas. However it is interesting to notice that concerning biodiversity, the law clearly defines the possibility to limit the access to environmental data (to which we referred before), when this could compromise the main purpose of preservation. Finally, the idea of location is fundamental to realize processes and procedures of administrative decision making and of citizens involving, like the strategic environmental assessment, the environmental impact assessment and the integrated pollution and prevention control. These activities, that refer to the European directives accepted by the national legislation, are based on multi-disciplinal analysis of status and potential developing (positive or negative) of territory; consequently they need available data connected through geographical reference.

aM FM
Automated Mapping / Facilities Management
Geographic Information Systems Italia
www.amfm.it

## 16 - LOCATION AND CULTURAL HERITAGE

Location of cultural assets guarantees their usability and active protection. The issue of having a robust data infrastructure for managing cultural heritage data at EU whole level was already addressed during Italian EU Presidency Semester in 2003. The usability of cultural heritage is based on the interoperability with other (multilingual) data. The accurate knowledge of an asset positioning allows an appropriate management of its maintenance, preservation and highest usability. For example in case of natural disasters like earthquake or flooding, it is possible to know how many and which assets are involved and to evaluate the modes of intervention before any direct inspection of the site; furthermore, it is possible to evaluate the loss risk of the asset, starting soon enough any specific action required to mitigate the effects of unexpected or enduring events . The integration of geo-information and augmented reality finds a particular application where the asset positioning, consolidated in a "point of Interest", uses the relationship between the position of the asset and the observer and transfers information in order to add more data to his perception: e.g the visualization of virtual reconstruction (*anastilosi*) of archeological monuments on the asset itself depending on the observer's direction, or the visualization of works removed or present in other museums.

## 17 - LOCATION AND INTEROPERABILITY

It is well known that the efficacy of exploitation of public services depends on the level of data and information interoperability. Interoperability is achieved through policy framework, awareness and capacity building, technical standards, adequate technological solutions such as data models, web services, dictionaries, etc. . All components should be made available to public administrations and used by them for the benefit of citizens. Already proposed solutions by INSPIRE Directive and PSI Directive have largely helped the process. The initiative undertaken by the EC named EULF, as part of the ISA (Interoperability Solutions for European Public Administrations) programme action, aims "*to maximise the benefit from the vast amount of money spent on location-related information and services by governments across Europe by promoting a best practice approach for cross-sector and cross-border sharing and use of this information*". Another interesting project ARE3NA, within the same ISA framework and programm, is building a collaborative platform for sharing reusable INSPIRE components to aid INSPIRE implementation and cross-border/-sector interoperability.

## 18 - LOCATION AND ENERGY

One of the most relevant sectors is the energy industry. In 2020 in Europe 25 billions kWh/year will be consumed, and in 2040 they will be 28 billions. In Europe the energy absorbed by the buildings represents 40% of the total amount; the total European building stock is about 30.582 $km^2$, more or less equal to the whole Belgian area, and only the residential sector represents (in terms of surface) 75% of this stock. The European dwellings are energy-intensive users: they consume about 22% of the whole domestic world consume (while the population from the 28 Members Countries is less than 10%). In 2009 the residential European sector has consumed 68% of the entire amount of energy for the buildings: to warm up rooms (69%), to produce domestic hot water (14%), for the lighting and electrical devices (13%) and for cooking (4%). Knowing accurately the buildings in a certain context, the way they are used, their particular physical and thermal characteristics, their energetic performance is essential to define strategies for actually reducing the energetic consumption and therefore for reducing $CO_2$ emissions. In order to achieve this objective, geographical information and interchange data between public (Municipalities, Regions, National Authorities) and private sector (utilities company and energy suppliers) are required. An example is provided by the energy performance certificate: the "Energy Performance of Buildings Directive"

(EPBD) recast in 2010 has introduced the duty of energy performance certificate also for existing buildings. In 2012, just in Emilia Romagna, the certificates registered in the regional database (SACE) were 314.000 out of around 1.900.000 buildings unit (1,8 million of buildings). Always in 2012 the national figure, instead, was less than 1.500.000 buildings certified (it grew to 2 millions in 2013) over 59 millions of building units. It should be noted that the energy performance is one of the use cases mentioned explicitly in INSPIRE, especially inside the Data Specification "Building", as well as the $CO_2$ reduction (pg.234) "some Member States or local governments are willing to have more pro-active policy and to encourage citizens to improve heating efficiency of their buildings (by better isolation). Better isolation not only reduces the emissions of greenhouse gases but also contributes in long-term to money saving for inhabitants and to reduce the energy dependency of European countries." The use of data related to the real buildings consumption, or about their energetic performance (i.e. the energy class defined by the certificate provided for  EPBD Directive) is quite normal in the English-speaking world, especially in North-American.

## 19 - LOCATION TELLS THE HISTORY OF SETTLEMENTS

The location of physical and immaterial assets allows to increase the content of an information map. The location gives the conventional filing of cultural heritage the possibility to create information and  comprehensive territorial and environmental integrated knowledge. The history of settlements assumes the interdisciplinary and trans-disciplinary combination between heterogeneous sources and therefore implies the use of languages and focused idioms to suit users' plurality. This collection of the fragments through an adequate filing system allows to tell a well-rounded history of settlements and of the territory, giving sense and voice to the stones and to the architectural remains too often seen just only under the aesthetic point of view. The location relationships contribute to enhance the value of the informational content at the complex level of spatial-temporal transformations of the settlements. The potentiality of bringing together information coming from different sources opens two complementary lines. The first one involves the citizen in different moments of his growth: the scholar and the student who links the studies to the transformations of his territory; the citizen who, sharing knowledge, takes part in creation of values and the visitor who understands the time for the creation of the values and of the landscape transformation. The second one is about the community that supervises the protection and the transformation of the land, the planner community, that can interact with citizens on the same cognitive base. The location allows to make richer the urban and territorial landscape values in order to draw the future.

## 20 - LOCATION AND MARINE PROTECTION

Location is important for citizens when the reference is difficult to recognize and to manage. Today it is possible to sail in a conscious way and to access services (informational, touristic, environmental, recreational,....) of ever increasing quantity and quality, but the location remains an activity for expert users. The coastal areas are destination of huge touristic flows; where available, location can support citizens' effort in assisting to safeguard (as the ones where the posidonia is present).

## 21 - LOCATION AND 3D

The third dimension may be very helpful in the measurement of the real world for the outdoor and indoor environment, without discontinuity: there are many resources that share plane coordinates but they have different vertical coordinate (e.g. subsoil, soil, air, underwater ). The instruments of visualization and analysis of 3D geographical data are available for any kind of device, with advanced applications that can include and share in just one scene dynamic data

related to several sources of acquisition in different formats and standards (e.g. ortho-mosaic, lidar, 3D points clouds, video, audio, 3D dynamical objects, 3d city mesh generated by aeral oblique and street mobile surveying, pipelines 3D, ultrasound, GPS, drones, sonar sidescan, re-altime sensors ). A complete 3D information can improve the knowledge of complex phenomena and allows more detailed planning for improving interventions. For example a point based knowledge of building facades can allow to produce a better evaluation of property profitability for tax purposes.

## 22 - LOCATION AND WORKFORCE MANAGEMENT

Geo-location is essential to manage human resources (especially the technical ones) that often are spread on the territory, in order to group them in operational teams, for maintenance interventions and planned activities. The workforce management with mobile instruments allows a better efficiency (optimisation staff, intervention time reduced, better quality of information available on field) and a reduction of the total management costs.

## 23 - LOCATION AND EMERGENCY OPERATION CENTER

Location is an essential component in operation rooms for the emergency management or the control/monitoring of social phenomena, anthropic and natural ones connected to security. An example where location finds an important application is the prearranged deployment of firefighting equipment during the summer. E.g. firefighting aircrafts, should be deployed in certain positions defined by the relationship between the operational radius and the location where the fires have happened or where they could happen. The spatial analysis techniques already present within GIS may perform such displacement activities. But how to geographically decode the warning addressed by a normal citizen (possibly not having a very smart device or ignoring how to use it) about the location where the fire is occurring ? To support an immediate intervention, it is needed an efficient decoding of locational and routing information. Before being an issue of geographic coordinates this is an issue of how to exploit the knowledge and the territory.

## 24 - LOCATION AS DRIVER FOR SME BUSINESS OPPORTUNITY

The study "Report on the market potential for Geo-ICT SMEs in relation to INSPIRE" recently produced within the European Project FP7 smeSpire and available in an integral version (http://www.smespire.eu/publications/?did=32) and in a shorter one (http://www.smespire.eu/publications/?did=31), shows the existence of a relevant growing opportunity for PMI in the Geo-ICT sector. This opportunity exists not only for PMI that count geospatial activities among their core business, but also for the SMEs related to the ICT sector that strive for expanding their business looking at location as qualifying factor. The main recommendations to create business opportunities for new and existing SMEs in ICT sector are about fostering policies and creating "good practices" for the re-use of information data in public contexts. Furthermore, stronger synergies between public and private actors could improve efficiency and efficacy in the implementation of a lot of European and national policies based on location. In particular, more openness and flexibility of the Public Administration towards SMEs in tendering procedures would encourage PMI contributions with an advantage for the PA itself. Not least, investments especially focused on human resources to fill up the existing gap in knowledge and skills in the range of location would allow SMEs to play an essential role in every application field to which this white paper is referred.

## 25 - LOCATION AND QUALITY OF LIFE (QOL)

aMFM
Automated Mapping / Facilities Management
Geographic Information Systems Italia
www.amfm.it

Many studies devoted to measure the degree of satisfaction of the needs of residents in a certain territory (a recent contribution is Mohit, 2013) are today available. Those contributions belong to the QOL domain.

A primary need of many experimental studies belonging to such a broad domain is to measure the distance between the dwelling of the citizens and the so-called points of interest (see, for example Tesfazghi et. Al, 2010), that correspond to public utilities (such as, for example, hospitals, schools, banks, post offices, etc.) located over the territory.

It is often assumed that the generic citizen reside in the centroid of the polygon that expresses the boundary of the city where he lives. Such a hypothesis makes equivalent to each other all the geographical locations where he might actually reside within the reference geographical area. This simplification introduces a maximum measurement error equal to the maximum distance between the centroid and the boundary of the selected geographic area. It is important to contain this error because it can lead to incorrect conclusions. To reach such a goal, up-to-date and complete geo-localized data about the fractions of the various Italian municipalities as well as those about the points of interest active in the administrative units of the Italian territory are of primary importance.

# B. WHAT TO DO? NOTES, OPINIONS, RECOMMENDATIONS

In progress

## The following experts have contributed at the date to realise the White Paper

Gian Paolo Artioli, Laura Berardi, Giovanni Biallo, Mariateresa Bucciante, Vittoria Buratta, Renzo Carlucci, Gabriele Ciasullo, Alessandro Cimbelli, Piergiorgio Cipriano, Cinzia Conti, Guglielmo Cresci, Andrea Deiana, Paolino Di Felice, Paolo Di Giacomo, Luciano De Licio, Piergiorgi Degli Esposti, Luca Incerti, Mario Di Massa, Athanasios Karaloupulos, Sergio Farruggia, Andrea Fiduccia, Luca Giansanti, Tonino Guerrieri, Corrado Iannucci, Luca Marescotti, Giacomo Martirano, Giuseppe Mattiozzi, Claudio Mingrino, Ugo Morenzetti, Paolo Osso, Francesco Pignatelli, Alfonso Quaglione, Calogero Ravenna, Maurizio Revolti, Antonio Rotundo, Mauro Salvemini, Giuseppe Scanu, Monica Sebillo, Stefano Toparini, Maria Valese, Franco Vico, Mikkel Wendelboe Toft.

(...)

To download the document Associazione AMFM GIS Italia :     www.amfm.it

Contacts :  amfm-eulf@amfm.it

Editor : mauro.salvemini@uniroma1.it