

# Smart, Sustainable, Accessible to All: Technologically Designed Model for the Cities in the Mediterranean

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**Abstract:** Heritage value, vernacular architecture, sustainable and friendly surroundings, design technology, accessible smart cities and villages, accessible tourism, all above should become the significant issues in urban and regional planning as well as the characteristics of cities and villages of the Mediterranean region. This paper aims to present the heritage values and beauties, which must be adapted to new market conditions and to succeed in the Tourism market field by improving its accessibility. In a world, which is influenced by social and economic changes worldwide, technology plays a significant role in today's society therefore this new source of information can help modeling the evolving human landscape. What is the peculiarity of the Mediterranean Region? The Mediterranean has been known since ancient times as a large closed sea, located at an important geographical point between the three continents: Europe, Asia and Africa. On the shores of the Mediterranean there located large cities with its major ports. It includes the following countries: Albania, Algeria, Egypt, Bosnia and Herzegovina, France, Greece, Israel, Spain, Italy, Cyprus, Croatia, Lebanon, Libya, Malta, Montenegro, Morocco, Palestine, Slovenia, Turkey, Syria.

**Key words:** heritage value, sustainable surroundings, accessible tourism, design technology, design for all

## 1. Introduction

The Mediterranean Region with its countries, islands, its surrounding seas and, in particular the Greek Archipelago, forms historical peculiarity and belongs to the birthplaces of our Civilization. In almost all Greek picturesque villages we can see paradigms of sustainability, bioclimatic technology, vernacular architecture, material and incoming natural production.

Vernacular architecture in Greek villages, exhibits a sense of building simplicity and environmental determination that corresponds to standard arrangements of grouping for protection and functionability, providing a "household center" site system. This system consists of adaptable and well-coordinated architectural design principles that can be useful as prototype principles for a modern

version of ecological bioclimatic, and sustainable architecture in general.

On the Cycladic Greek islands: The windmill as an architectural structure is a peculiarity that is harmoniously linked to the cubist morphology of the island settlement houses, usually on a high site and projected building similar to a Greek-orthodox church on a hill. In addition, its aesthetic expression is a counterpart to the homogeneity of the residential complex, optically disrupting its repeated, cubical, solid uniformity [1].

The architectural design principles developed in the Greek Archipelago villages, the appearance of a specific character of mechanisms and systems of autonomous energy, require a scientific elaboration by reinforcing the purposes of bioclimatic and ecological sustainability.

The Mediterranean Region raises issues and problems that our planet presents (severe climate changes, the expand of urbanization, loss of

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biodiversity, increase in migratory flows from severe wars, such as Balkan wars, wars in the Middle East, situation between Greece and Turkey, the conflicting interests in Syria, which effect socio political and urban sustainable future.

The climate in the Mediterranean is changing more as it lies between the tropics of Africa and the colder climates of the rest of Europe. In other words, it is in a transitional zone and that is why it is receiving more influences, explained to the Athenian-Macedonian News Agency, on the sidelines of the conference, Mr. Guillot, the Director of Research of the National Center for Scientific Research of France (CNRS) and the European Research Center Teaching Environmental Geosciences (CEREGE) [2].

The Mediterranean Sea with its wonderful coastlines, its picturesque islands, its favorable climate has a lot of beauty to highlight as well as it has become an attraction for the world tourism interest.

## **2. Tourism Disability and Accessibility**

Tourism destinations in Europe and in the Mediterranean are facing increasing global competition in bargain of quality and price. Tourism enterprises and organizations, with the support of the public domain, must find ways to be adapted to new market conditions and renew their competitive advantages and succeed in the market field. Improvement of accessibility can be a way to improve the quality of tourism in total. Better accessibility can expand the range of customers, open destinations to more visitors; it can contribute to long-term sustainability and increase of the quality of visitors' training [3].

The demographic ageing of Europe and of all the Western industrial countries, which constitute the target touristic group, demands appropriate changes in tourism field. The European population, and not only, that constitutes the tourist market, is ageing now and will continue to do so in the future. With increasing age of the population, the tendency of disabilities rises. So,

in order to predict the demands of this market expansion, which is increasing constantly, tourism experts must provide accessibility for disabled and older tourists as the primary and main concern in every part of their business.

Human beings are all different. Individuals are short, young, old, quick, and slow. One's abilities to see, to hear as well as, the speed at which one reacts and moves, all vary. Universal Design or Design for All, considers the widest possible range of physical, perceptual and cognitive abilities, in order to provide solutions for All [4].

Everyone's needs and disabilities are different. It should be noted that Universal Design is a rudimentary approach to creating environments, products and services that anyone can use. Accessibility is an easily achievable goal if simple standards and guidelines are acquired, especially for new installations, and smart technologies are used for intelligent products. As per universal standards, facilities and services are for everyone, not just for people with disabilities.

In our days a disabled person has begun to be used as a model of anthropometry and the Universal Design principles to be applied to many fields of design.

According to Article 21 par. 6 of the Constitution of 2001 in Greece, the term "People with special needs" has been abolished and replaced by the term "People with Disabilities" which has been used everywhere since then in the legislation. The typically correct designation today is "people with disabilities" or "disabled people" or even "people with learning difficulties". The term "handicap" is no longer used in Europe as a resistance to anything that implies social discrimination.

By this term we refer to persons who have permanent or temporary injuries, disabilities, weaknesses, or a combination of the above, resulting from physical, or mental disability. The category of disabled people with reduced abilities also includes people of the third age.

People with disabilities in mobility and perceptual problems increase in percentage in relation to the total population, both in Greece and in other EU countries. People with any form of disability such as the elderly constitute for modern technological research a wide range of applications aimed at developing innovations, researches and patents to solve their practical problems at their home and leisure time.

### 3. But What Is Disability?

Most diseases lead to impairment, which leads to a disadvantage, which limits or prevents the fulfillment of the activity we call normal.

PirkI defines this disadvantage as cumulative effect of disability barriers between the individual and the maximum functional level. Society or the environment, rather than disability, almost always causes the disadvantages of disability [5].

Three factors determine the existence of disability. Each is a potential obstacle that restricts the individual's freedom and independence: the goal, the ongoing effects of medical or traumatic conditions, and the third, discrimination in our environment.

Complete social emancipation for people with disabilities must ultimately be the goal of a humane and democratically enlightened society. In order for people with disabilities to be fully integrated, there are certain factors that allow effective emancipation and social inclusion. But who can be considered emancipated?

People who can choose to participate in life. They are accepted by society. They have the option to work, to have a paid job. They have a social life, friends, family, they can shop, travel and get what they need to live without help and be visible.

Accessible design seeks to meet the needs of people with disabilities (such as wheelchair users, the elderly and the blind) by providing specific access and solutions. However, an accessible design tends to lead to separation of facilities for the disabled.

In global Universal design is an alternative to accessible design that can provide access to a larger

amount of population.

What do we mean by “accessible” and who are the tourist customers who need accessible facilities?

Access means “capable of being used by people with disabilities”, but we can realize that the benefits are not just for them. The accessible facilities will really benefit all citizens. The Customers with special needs are:

Wheelchair users with or without wheelchairs, with or without an assistant, with low vision or blind, people with difficulty in walking, with limited use of arms or hands, people with hearing problems and allergies, their needs of food packaging, beverages, drugs. The percentage of population with disabilities ranges from 12% to 20% worldwide [6].

Design for All, Universal Design, is preferable to accessible design. It is: less expensive, with more benefits, aesthetically preferable, encourages full integration and participation of users [7].

Globally a huge amount of money is spent on accessible design, Edward Steinfeld writes in his publication [8].

In the concept of universal design, forty-six billion dollars were spent between 1970 and 1980 to provide access to specialty products for thirty-six million people with disabilities. \$ 50 billion in 1975 rose to \$ 170 billion in 1986 [9].

Accessible tourism is not a small market. Older people, are the 25% of the European population. Added to 50 million people with disabilities only in Europe, disabled people dream to enjoy holidays with their friends and families in the Mediterranean, to enjoy the vernacular architecture to bathe in the gurgling waters of the sea and the sunlight. Around 130 million people in Europe could benefit from improved access in tourism services [10].

Making accessible tourism, for all, reply to a demographic trend, and give a big economic break in many society domains, is giving a good example for non-discrimination and equal participation of all stakeholders.

Around 460 million incoming tourists which are attracted in cultural, natural, architectural, heritage or sports make Europe the world's number 1 tourism destination. European destinations have advantages, which we have an obligation to protect and provide access to. Therefore, governments and tourist experts need to set and follow the law standards, evaluate accessible tourism policies that ensure compliance with the laws.

There is a pressing need for all the Mediterranean countries and especially for those that belong to the European Union to realize and adopt a "Road Map for Accessible Tourism" with the help of technology and professionals, in order to bridge the gap between people and environment with the universal design criteria.

If we do not adopt access to all sectors, the route or the accessibility chain may be broken somewhere making travelling quite confusing difficult and complex. All the elements from their daily life must be accessible from the public transportation, the buildings, the streets, the accommodations, the shores.

As professional people, we have knowledge of the nature as well as of the wider situation and clearly operate within it. It is our responsibility to save and protect the invaluable heritage of our countries and use all the knowledge provided. It is our moral duty to maintain, organize and make all these beautiful places accessible to people with any kind of kinetic difficulties, such as disabled and elderly people, by keeping the character of the place and using technology as a tool for our success. It is our responsibility to use, develop and manage it.

To accomplish these goals, two main aspects that need to be explored, social and practical.

Our role as designers is to find an answer to both. To combine ergonomics with aesthetics and human needs. Designers should apply "Design for All".

#### **4. Design Technology and Accessibility**

Design technology, Communication technology,

Information systems and Social change are interconnected. Technology poses fundamental challenges to society and can lead to the development of Smart Cities

The usage of Information and Communication technology has the fundamental role for a Smart City. It makes the critical infrastructure components and services of a city — which include city administration, education, healthcare, public safety, real estate, transportation, and utilities — more intelligent, interconnected, and efficient [11].

Another approach to the definition of a Smart city is: "We take the particular perspective that cities are systems of systems, and that there are emerging opportunities to introduce digital nervous systems, intelligent responsiveness, and optimization at every level of system integration." [12].

Where the usage of Information and Communication technology plays an important role, "a city may be called 'Smart' 'when investments in human and social capital and traditional and modern communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance'" [13].

Smart Cities have been further defined based on the following from six dimensions:

- Smart Governance
- Smart Economy
- Smart Environment
- Smart Mobility
- Smart People
- Smart Living [14]

The integration of design, technology and development process will contribute to promotion of tourist places as alternative tourism destinations, will extend the tourist season and will support the functional interconnection of primary, secondary and tertiary sectors in the context of transition of the local economy to a smart, sustainable and environmentally friendly productive model.

Design, of course, plays a critical role in creation and manipulation of space, form and technology, solves many building problems which people can tolerate and enjoy. Technology and social change are relevant. Technology is commonly linked to historical developments of society in an economic and political way and is integrated into the development process.

Various support programs have been developed between the European Union and its Member States. In Greece, Dafni is a recognized network on a national and European level. Based on 52 members of which 46 are island municipalities and region of Aegean and Ionian islands, Dafni supports islands to integrate management of natural resources, uptakes sustainable tourism, enhances interdependence in the primary, secondary and tertiary sectors. Areas that give a convinced result are: sustainable mobility, sustainable tourism, green energy, circular economy, employment and education [15].

ENAT is the “European Network for Accessible Tourism”, published in 2008 a proposal for accessible tourism policy and is created to limit the variation in access standards between countries leading to lack of access to the EU citizens and the feeling of non-suitable protection or guaranteed levels of service [10].

In Greece the Hellenic Greek National Tourism Organization (GNTO) acts as the state authority agency for ensuring quality control, through consumer attraction and market attention. The GNTO makes recommendations to the Ministry, promote campaigns by using results of its researches.

Disability poses unique challenges and can affect participation in many activities of life. Tourism is an activity that many people with disabilities feel they must give their best, as it requires the cooperation of mental, physical and social capabilities. These disabilities are automatically affected or limited by the Disability. The disabled people face many social and practical obstacles that can block their full participation in the tourism sector [16].

Accessibility (to the built environment and free spaces) is the possibility that is given to every person, in every city of every country, to move in an independent way, with comfort, security and autonomy in all spaces, in order to participate equally in the social and economic events of life. Access the sea shores is also part of the accessibility to the environment. The construction and installation of special ramps as “Seatrac” is, has been in recent years a solution to a major problem for people with mobility problems.

A Ramp for the disabled, or walkable ramp, as it is called, allows access to people or wheelchairs, connecting two different levels of surfaces. The ramps depending on their use are divided into:

- Building ramps, which are: **external**, as long as they connect the external surrounding area with the entrance of the building. **indoor**, as long as they connect indoor spaces. **danger**, if they serve as a means of escape.

- Outdoor ramps, which connect parts of outdoor areas, such as squares, gardens, fields, beaches, etc.

The ramps, depending on the way they are made, are divided into permanent, mobile or portable.

Looking for examples representing the value of accessible coastlines of all the Mediterranean countries, we can present the Seatrak autonomous power access devices (an example of green technology) which was built to function as an auxiliary equipment that can be used by people with mobility disabilities or limited mobility, to facilitate their access to the sea. The main idea behind its creation was to give people with disabilities the opportunity to enjoy a simple activity such as swimming without any other help.

This special ramp consists essentially of a mechanism consisting of fixed track rails in which a specially designed seat can move in and out of the water. It uses solar energy as the only source for its power supply and is controlled via a remote control.

Thus, there is no need for user training. This ramp is not permanent. The device can preferably be installed at the beginning of the summer season and uninstalled

at the end. It does not cause changes in the environment nor does it have a permanent effect on it.

The idea of swimming in the sea, which offers beneficial effects to body and mind, and an extremely difficult process for people with mobility problems, became the trigger for creating and offering a wonderful tool that helps the daily lives of people with mobility problems.

Every year more and more ramp models are being installed on the beaches of Greece. There are already some in Cyprus and Italy. With the help and use of technology more beaches will become independently accessible to all people [17].

#### 4. Conclusion

There are 89 million people in Europe who want to go swimming in the sea and have no way. There are also other kind of lifts which help disabled or elderly people to access swimming pools in rough seas or in natural lakes. To have a coastline or a structured environment accessible there is a need to set of specifications and design that are essential elements.

Technology assists in visual guiding system, in navigation for blind and visually impaired users, in web-based route planner, assists to especial visually impaired or wheel chair users who want to reduce mobility. There are programs based on virtual reality in which people could travel in virtual way. There is big difference between these programs and a real traveling using all the human senses and getting all the information that the surrounding environment gives to a human being. It is our duty to create accessible public transportation, squares, entrances, accommodations, sea shores. Our objective must be to solve all the obstacles for mobility for all and to certify methods using technology in a smart and “human” way.

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