

Towards a social approach to digital cities

Luis Borges Gouveia

University Fernando Pessoa, CEREM,
Porto, Portugal, P4249-004
lmbg@ufp.pt

and

Joaquim Borges Gouveia

University of Aveiro, DEGEI,
Aveiro, Portugal, Campus de Santiago
bgouveia@egi.ua.pt

ABSTRACT

The paper discusses the strategy followed in a digital cities project named Gaia Digital. This project is an ongoing three-year project sponsored by the Portugal Digital Initiative, within the Information Society operation program framework. It provides a digital city counterpart for Vila Nova de Gaia, a Portuguese town with around 288.000 inhabitants, considering 2001 figures. The Gaia Digital project is focused in offering an environment to increase involvement of the local population and other people interacting with Gaia related and/or based activities. As a result, Gaia Digital adopts a social approach to the digital cities concept where technology follows information needs and information just exists to support people interaction. The Gaia Digital lemma is “*Digital Gaia, a cup of ideas*”. This reinforces the role that innovation (both technology and its applications) and people participation may have in all aspects of the Gaia Digital project. The paper defends the need to have a social approach when considering digital cities, in order to define a strategy that takes advantage of people and not of current or prospective technology potential.

Keywords: digital cities, information society, information communities, Gaia Digital.

1 INTRODUCTION

Nowadays, a great concern is given to how digital technology will impact economy and the way we live. In particular, several authors have studied and produced detailed work on how the digital impacts and change everything from the way we work; we shop, organise ourselves, interact and learn. Following Tofler works who was among the first to identify information as the next driving force for civilisation [18].

Considering the cities, a group of studies have connected the digital revolution and the way cities evolve and are organised. These studies introduce new structures and concepts as the ones proposed by Kotkin: *nerdistan*, *Valhalla*, *midopolis*, and *boutique city* [15], and the concept of *dual city* as proposed by Castells [4]. These concepts have in common the fact that they rely on information-based phenomena and how the current information and communication technologies may become key factors on these changes.

Other authors reported on how a new type of community is emerging as a result of information and communication technologies – sometimes named *Community Informatics* [9] – and in particular the Internet. Among these, the work of Castells, who defined the existence of a *network society*, is of importance [5]. Negroponte [17] gave an optimistic view, which has a high impact on how the digital is regarded nowadays.

A number of studies enhance the discussion of the impact of information and communication technologies within time and space, as the work compiled by Benedikt [3] about virtual environments, and its effect on communities as proposed by Gurstein [9] and Ishida [14]. Together, these studies promote the emergence of a new approach to analyse information and communication technologies not for their own occurrences and characteristics but by how they are able to impact the way in which information is used to support and affect how people interact.

2 DIGITAL CITIES

The term “digital cities” has several meanings. Although there is no common definition, it is used to qualify the rapid growth of information and communication technologies that is currently transforming advanced industrial cities as well as to designate on-line services managed by local government, businesses, citizens or users and which either present local content or use the urban metaphor to facilitate user understanding [2]. Digital cities seem to include on its definition both the notions of community and city as well as the appearance of increase available and easy to access digital information.

According to [7] digital cities can be considered as an attempt to build new secured public spaces and regain some characteristics of the cities as places for communication, interactions, economic opportunities, and social and cultural activities.

Ishida asserts that the concept of digital cities is to build an arena in which people in regional communities can interact and share knowledge, experiences, and mutual interests [13]. The same author argues that although no digital city can remain at its current state, they focus on local information and integrate urban information both existing in databases and obtained in real time and create public spaces in the Internet for people living/visiting the cities.

Castells defends that digital cities are community-based networks that are diverse in their constituencies and in their orientation. However they share three major characteristics: (1) provide information from local authorities; (2) organise the horizontal exchange of information and electronic conversation among the participants on the network; and (3) they biased the digital divide phenomena by providing access to electronic services and digital information [5].

Digital cities can provide the social information infrastructure for everyday life, reflecting the real time, real-life feel to the city although each digital city has its own goal [Ishida2]. Gurstein asserts that digital cities are becoming the primary metaphor for organising local information and communication facilities, and to its current offer of electronically mediated services to its inhabitants [10].

An associated concept to the digital cities is the notion smart community. Eger defines the smart community as a community with a vision that involves the use of information and communication technologies in new and innovative ways to empower its residents, institutions and regions as a whole [6]. On this paper, we defend the concept of a digital city capable of support and foster as many smart communities as necessary for representing the digital counterpart of a given region.

3 THE GAIA DIGITAL PROJECT

Motivation and rationale

Gaia Digital is an ongoing three-year project sponsored by the Portugal Digital Initiative, within the Information Society operation program framework. It provides a digital city counterpart for Vila Nova de Gaia, a Portuguese town with around 288.000 inhabitants, considering 2001 figures.

The project promotes the investment on people, actions and organisation skills:

- ? eases and promotes citizen access for individuals and organisations no matter they are local citizens or people passing by Gaia, to information, goods and services from the region. Gaia Digital acts as an information intermediary hub- following the notion of *infomediaries* reported by [11];
- ? promote the communication between local authorities and citizens. This impacts and reinforces democracy and provides universal information access, that in turn, may increase citizens life quality by offering better services - a typical e-government concern [8];
- ? foster the local economy by promoting the use of electronic commerce practices. In particular, allow the necessary conditions for a cultural and organisational revolution concerning processes and practices [1];

The Gaia Digital project follows the digital cities concept. Its main motivation is to propose a social approach to link the current physical place and its community with a digital counterpart. Also to extend it to support the community interaction with other people been in Vila Nova de Gaia or outside the city limits, trying to offer support for people interaction anywhere, anytime, and anyplace. As proposed by Barnatt, within borderless economies, there is a need to be “*globally local and locally global*” [1].

The Gaia Digital project is focused in offering an environment to increase involvement of the local population and other people interacting with Gaia related and/or based activities. As a result, Gaia Digital adopts a social approach to the digital cities concept where technology follows information needs and information just exists to support people interaction. The Gaia Digital lemma is “*Digital Gaia, a cup of ideas*”. This reinforces the role that innovation (both technology and its applications) and people participation may have in all aspects of the Gaia Digital project.

The Gaia Digital model proposes a digital environment that can be easily recognised and mapped with its physical counterpart by the maximum people possible. It provides a strategy for involving people by supporting their social interaction with a set of services that may evolve and change as a result of their use and acceptance. As proposed by Hagel and Armstrong, “*The members of a virtual community are its real creators*” [11].

The Gaia Digital environment does not propose an alternative place or a digital place to be there, but an integrated and linked new medium to foster people interaction. Thus the social approach to the digital cities concept where technology follows information needs and information just exists to support people interaction.

Gaia Digital descriptive goals

The Gaia Digital project seeks to offer the following benefits:

- ? Reinforces the external visibility of Vila Nova de Gaia and its surroundings;
- ? Influences the areas where improvement is needed, such as health, education and environment;
- ? Creates the conditions to increase investment in the local region, by providing an updated and efficient technological infrastructure;
- ? Contributes to the increase to the citizen quality life, and to the citizenship levels of participation.

Taking into account the previous specifications, a number of intervention areas have been defined, following the guidelines provided by both the Portugal Digital Initiative and the Portuguese Green Book to the Information Society [16].

Those intervention areas are: information and local administration services; education; health; commerce and industry, and e-government. Additionally, three other areas were also considered: environment; life quality and cultural heritage; sports and entertainment. Together, they provide a perceived information organisation for Gaia citizens.

Considering the need to provide clear guidelines to support the coherence and global integration of efforts within the Gaia Digital project, each of the intervention area must be enhanced and structured in terms of its main contributions and expected outcomes.

- ? *Information and local administration services*: democratise and decentralise access to local administration services and other public services, within the region. Foster the use of electronic communication facilities as the means for improving the local administration service quality and diminish the distance between people and local administration. Additionally, increase the available knowledge about the region by turn accessible information about local administration decisions and activities (these must consider both the local people and visiting people).
- ? *Education*: the skilled use of information technologies is considered as crucial as core competencies that modern human resources must possess. The training and day to day use of such technologies must include every citizen considering both its scholar and professional life. Also, integration of information and communication technologies must be made during scholar life from early stages. The need to guarantee lifelong learning justifies efforts for updating skills. Technologies such as distance education and e-learning facilities must be used and promoted.
- ? *Health*: foster medicine practice and availability of distance diagnose facilities as means to deal with cost and scale issues concerning human and technical resources involved in health services. Use telemedicine facilities to increase proximity between health professionals and patients, and take advantage o information technologies to offer faster and proximity health services; will foster availability and quality. Additionally, quality health services results also from both the increase of using information technologies and from health professionals’ continuous education.
- ? *Commerce and industry*: the e-commerce phenomena justifies the need to invest in new ways of doing business by taking advantage of information and communication technologies (this is important taking into

consideration the actual situation of traditional commerce and industry that face the concurrence of new forms doing business). Of importance it is also the opportunity to adapt existent enterprises and create new ones within the context of the digital economy. There is also an opportunity to foster the entrepreneurial sector in Gaia by introducing some stimulus actions and involving local enterprises in the tool development and content creation to Gaia Digital projects.

- ? *E-government*: offering information and services access to local administration as the use of the World Wide Web Vila Nova de Gaia portal (<http://www.cm-gaia.pt>).
- ? *Environment, Life quality and cultural heritage*: the region scale and its location added to the demographics growth in the last decades causing a high urban pressure, turn the region very sensitive concerning these areas. Introducing new information and communication technologies can lead the way to increase life quality as is the case of applications in transportation, traffic, security, and in the diffusion of the local extensive cultural heritage. There is also an opportunity to turn more visible best practices within the region concerning the environment, life quality and heritage.
- ? *Sports and entertainment*: there are a high number of local clubs and recreation associations in Vila Nova de Gaia. To those organisations a number of services can be provided bringing together people, events and the organisations. It is possible to frame and turn more efficient the use of available sport facilities, information facilities and sports events. Another effect is to bring the press (radio and journals as well as other traditional media) to a digital merge. The Gaia Digital project defends that information and communication technology must help to democratise the access to the local offer concerning sports and entertainment, contributing the development of individuals in the region.

The social environment

Vila Nova de Gaia has its origins around 13th Century, but just in 1984 has been officially classified has a city. Although these dates are relatively recent ones, it is believed that the place has been populated since the Neolithic. Vila Nova de Gaia (or Gaia for short) is near the city of Porto, separated by the Douro River.

Traditionally, Porto is the centre of economic, cultural and social activity of the region and it is still considered as the second most important city in Portugal. Porto is also an old city, named after Portus Cale and later Portucale, which is the origin of the country's name: Portugal. The roots of Porto date from the 5th Century and its historic centre was classified by UNESCO as World Heritage in 1996.

Since the 2001 census, whose figures are used on this paper, the population in Gaia is greater than Porto. This may be seen as natural phenomena that of urban transformation regarding the creation of new centrality's as the ones reported by Kotkin [15].

The last years bring an increase in construction development and the creating of several new infrastructures that turn Gaia as a more autonomous and self contained city with higher number of services and cultural happenings within their geography frontiers. The following reported figures are not an attempt to characterise the city of Gaia. These figures must be considered as the necessary information to understand the population profile that the Gaia Digital project has to serve and to impact.

The landscape is organised into 24 administrative areas, named as *Freguesias*. The city itself occupies 10 of these *Freguesias*, and a more rural surrounding take the other 14 ones. The Gaia Digital project intends to cover all the 24 *Freguesias*. Considering statistics from the 2001 Census [12], the city has 178.255 inhabitants and covers an area of 56.3 Km². The Vila Nova de Gaia region (24 *Freguesias*) has 288.749 inhabitants, covering an area of 168.7 Km².

The Gaia economic activity is characterised by the small industries (43.7%) and commercial societies (24.5%), with 70% of all the existent societies to have less than 5 working people. People qualifications are very low: 36% have just a basic degree (read and write), and other 26.2% have the actual minimal studies level (9 scholarly years). A secondary school degree has been obtained by 22.6% of the residents, and just 15.2% of the population have a higher education degree.

Other interesting data is the average age of its inhabitants: 37.0 years old, the percentage of population increase is 16.8% and the average number of individuals by family is 2.8. All these values are better than the average for the Portuguese cities. This may indicate that the city is growing as a result of receiving people from Porto, who has now 263.131 inhabitants against the 288.749 from Gaia. Overall, Gaia figures show a region that needs to be prepared for the information and knowledge society challenges, and who still have the sound and feel of a second wave, industrially

oriented, region. A huge challenge is to take slight old and not very well educated population to actually take advantage of digital infrastructures that eases their day to day lives.

4 FINAL REMARKS

Implications of the social approach

Why to follow a social approach? What do we gain from taking this perspective to introduce our digital cities project? Individuals are considered as the information processors, and they have the unique ability to use and develop information to make their own decisions and take actions (and to be innovative). As a result, the best way to take advantage of new information and communication technologies is to include the greater number of individuals as possible into an environment where anyone can learn, use and adapt to the available technology offer.

The social approach favours the learning and environmental issues regarding how individuals use information. A special care is taken in the organisation of information and how ease is to integrate available peoples' skills and to develop new ones to increase people needs to use technology and not the other way around.

This way, the technology infrastructure is seen as a supportive one. We avoid using it as a change engine or changing force to current peoples' habits; neither have we believed that as possible. At least, when we want to involve the largest number of people possible from a city this may be seen as a huge challenge (but also a needed one!). We must remember that all its citizens make any city and that no specific group can be excluded in order to have a true inclusive and complete digital cities project.

Future work

Most of the issues concerning the implications of the digital cities within the physical places remain unknown. A lot must be done in order to know the legal, economic, social and political implications of how such a digital environment can support day to day life in a city.

Just to name some of the many problems that may arise we can place a series of questions that highlight them: how and who will take control of such an infrastructure? What will be the free and paying services? What will be the impact to local government from having a high degree of information transparency? How to defend each individual data rights of privacy and ownership? What are the implications concerning *ipr* (intellectual and propriety rights) issues? What will be the impact on current job profiles? What will be the activities that may cease to exist? What are new activities that can be developed? What will be the relation between the central and local government? How to assure each individual inclusion in such a digital society? What infrastructures will be needed in order to avoid digital divide effects? How such an infrastructure will impact the city regarding its landscape and social organisation? How to manage the necessary learning that population may need to actually use such a system? Who, when and how to provide informational skills to a large number of residents? How to manage the perceived value of the existent system against its real value? How to measure system usage and success?

The above questions both illustrate a number of issues that need further research and the preliminary character that digital cities projects still have. Concerning the Gaia Digital, further work will be conducted in order to produce social indicators that may allow measuring the project success and how people are using digital information for their day to day lives as well as an effort to increase local population informational skills.

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