

DIGITAL CITIES: THE GAIA DIGITAL APPROACH

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ABSTRACT

The paper presents the initial model proposed for the *Gaia Digital* project. This three-year project is currently starting off within the *Portugal Digital* Initiative, within the *Information Society operation program* framework. It provides a digital city counterpart for Vila Nova de Gaia, with around 288000 inhabitants, considering 2001 figures.

The *Gaia Digital* model is briefly described and its main concepts are introduced such as the action areas and the notions of square, building, roads, and citizens.

The *Gaia Digital* project is focused in offering an environment to involve as much as possible both the local population and other people interacting with Gaia related and/or based activities. Additionally, *Gaia Digital* adopts a social approach to the digital cities concept where technology follows information needs and information just exists to support people interaction.

KEYWORDS

Digital Cities, Information Society, Gaia Digital.

1. INTRODUCTION

A definition of what are digital cities may be difficult due to the lack of a common definition (Bastelaer and Lobet-Maris, 1999). However the same authors advance that the term 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 - mostly services available through the World Wide Web - managed by municipal government, businesses, citizens or users and which either present local content or use the urban metaphor to facilitate user understanding”.

As introduced by Ishida, people spend their incomes within a close range from home, as the case of the US, where 80% of incomes are spent within 20 miles from home (Ishida, 2000). The same author defends that networks of people with the same problem are more valuable and that digital cities provide the infrastructure for networking local communities. Although this approach seems to consider physical proximity as the most important fact, one alternative opinion is given by Rheingold, who argues that communities tend to be thematic and surpass geographic restrictions (Rheingold, 1993).

Ishida compares different digital cities according to its goals, architecture, technology and organisation. It concludes that digital cities provide an opportunity to people to create a new information space for their everyday life (Ishida, 2000).

Gurstein defends that digital cities must provide resources to fulfill a number of requirements such as community Internet Access, community information, community service delivery on-line, community participation on-line, community e-commerce, community learning networks, community and regional planning, and telework (Gurstein, 1999). This author defends a strong sense of community within the digital cities context.

Overall, from a number of experiments as reported in the literature, it seems that digital cities can be considered as platforms to fostering the creation of community networks. Additionally, digital cities allow

the development of new forms to local communities reinvent the day to day life in their own place, but connected within a global context where they now can interact, referred as the *glocalisation* phenomenon as presented by Bastelaer and Lobet-Maris (Bastelaer and Lobet-Maris, 1999).

This paper presents the initial approach to the digital cities concept concerning the Gaia Digital project. In particular it describes the general divisions used to organize information about the day-to day life of the community and the main concern of not providing just a technological service or an additional Web image to the local community use.

2. THE GAIA DIGITAL PROJECT

Gaia Digital is a three-year digital cities project. Its main goal is to propose a digital mediation infrastructure to support information exchange that originates or has been conceived to be used in Vila Nova de Gaia. The digital mediation is made possible by the creation of an Internet space named Gaia Digital composed by a set of integrated digital structures. Each digital structure has its own identity and design and follows specific processes to promote both the information collection and its dissemination.

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

- Eases and promotes citizen access as individuals and organisations or been local citizens or people on transit to information, goods and services from the Vila Nova de Gaia region. Gaia Digital acts as information intermediaries - *infomediaries* (Hagel and Armstrong, 1997);
- Promote the communication between local authorities and citizens. This will foster democracy and provides universal information access, that in turn, may increase citizens life quality by offering better services - a typical e-government concern (Gronlund, 2002);
- 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 (Barnatt, 1997);

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.

3. GAIA DIGITAL OPERATIONAL AREAS

Considering the need to provide clear guidelines to support the coherence and global integration of efforts within the Gaia Digital project, each of the operational 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 elearning 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 of 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 (Gaia, 2002).
- 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.

4. THE GAIA DIGITAL MAP

The Gaia Digital model proposes a number of concepts in order to provide a people oriented approach where a special concern with how each individual can perceive the Gaia Digital facilities within the Vila Nova de Gaia context.

Those concepts include a hierarchy description of available information objects similar to their physical counterparts as visualised in figure 1.

The main Gaia Digital concepts concerning the digital map are:

- *Square*: internet portals corresponding to the major operational areas, as described earlier. They are the central virtual places for information dissemination and services integration. The available squares also provide integration to the projects to be conducted in the Gaia Digital initiative.
- *Building*: they are the actual projects to be conducted in the Gaia Digital initiative. The building will be organised around existent squares as these represent the different operational areas to be considered.
- *Road*: the notion of road identifies the infrastructures that allow users to travel among existent squares and information to flow. Examples of such facilities are fiber networks, cable networks, wireless infrastructures, wap/gprs/umts services, Internet, kiosks, Interactive TV and multimedia panels.
- *Citizen*: the inhabitants of Vila Nova de Gaia, tourists, people in transit, enterprises, institutions and other entities that, as in the case of the physical city are the true reason to the Gaia Digital existence. The citizens are the main recipients of the social spaces, the dialog and operational facilities developed around the squares of the digital city.

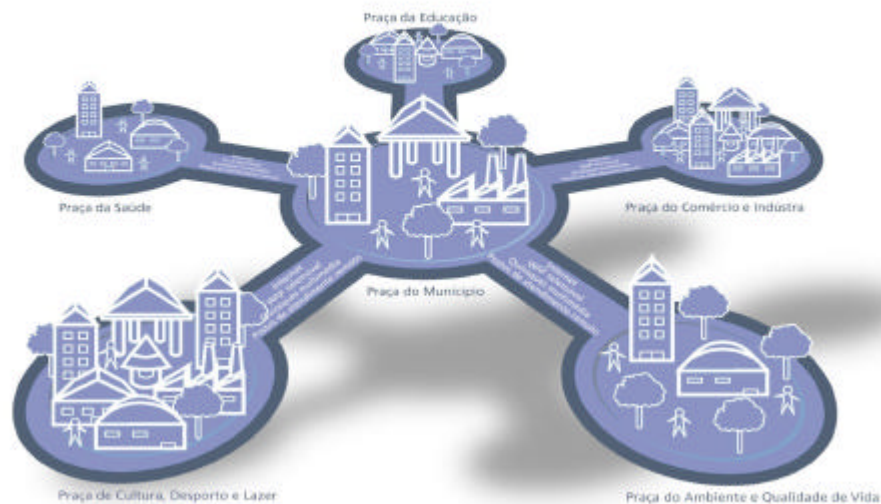


Figure 1: the Gaia Digital map

Such an approach allows for the perception of a global map considering the where to find related information. This follows the need to provide a mental map facility to support individuals both for task (search and browse) and tactics (query and navigate) concerning the use of information (Jul and Furnas, 1997).

To involve people, we also must consider technology access and training issues. In particular, people must develop the necessary skills to map their information needs into actions to achieve relevant information. Note that among these challenges, the biggest seems to be a composed one: *the involvement of a relevant number of Gaia inhabitants and a corresponding increase into their information skills.*

Work is ongoing to access the current status both on the information literacy and technology potential of Gaia inhabitants. Additional effort will be invested in providing a number of indicators to be measured at regular periods to evaluate the Gaia Digital impact. Altogether, these concerns with people, their involvement, information literacy issues and technology access and training provide the roadmap to address the project using a social approach.

5. FINAL REMARKS

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 and extend it to support the community interaction with also 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” (Barnatt, 1997).

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" (Hagel and Armstrong, 1997).

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.

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