

Information overload:

The case for e-learning within Gaia Global

Luis Borges Gouveia
<http://www.ufp.pt/~lmbg>
lmbg@ufp.pt

University Fernando Pessoa
Multimedia Resource Centre
Pr. 9 de Abril, 349
P4249-004 Porto
Portugal

Tel +351225071306
Fax +351225508269

Abstract

The paper addresses the issues raised by an ongoing digital cities project, coined Gaia Global, concerning how people can learn and use information. Gaia Global main concern is to introduce a 288.000 inhabitant's city in Portugal – Gaia – to the information and knowledge society. The project aims to provide Gaia with a digital counterpart that represents the region in digital format. This digital representation is not only the World Wide Web but mainly the digital interaction between people and local institutions using any possible channel to help people solve their problems and needs.

Among the issues related with this digital cities project, one of the most challenging is to bring people together to use and take advantage of such an infrastructure to deal with information and provide them with the knowledge to know what and how to use it.

As just around 34.000 of the 288.000 inhabitants of Gaia have some higher education degree, a true effort must be on place to introduce the digital cities facilities to the main population. E-learning is seen as a strategic concept as it provides the digital tools, methods and technology to help each individual to learn and support the massive effort anytime, anywhere and any user profile that is required to introduce the Gaia Digital to all their potential users.

In order to Gaia Digital becomes a successful environment to the region it belongs, there is a need to include the greater number of people possible. It is necessary to consider both the required skill that each individual must have and the huge amount of information generated by such an environment. As a result, the paper also discuss information issues that challenging Gaia Global users and the learning requirements that Gaia Digital must obey in order to deal with information overload problems.

The author argues that such an environment can be developed where there is a balanced between the offer of digital services and the people ability to work with it, both the region and their inhabitants benefit from information and knowledge society impact both in economical and social issues. Such a digital cities facility that comprises the need to consider people and try to provide the support for people needs and problems can foster the region and their potential in the same way as highways can act as a competitive advantage to enhance a region' logistics.

Introduction

The concept of Digital Cities 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 (Bastelaer and Lobet-Maris, 1999). 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.

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 (Ishida, 1998). 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 within cities.

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 (Ishida, 2002).

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 (Hagel III and Armstrong, 1997).

A common ground for such digital cities definitions are the proposals for joining people interests in some sort of communities and provide the means for sharing information.

The Gaia Global digital city initiative

Gaia Global is an ongoing three-year project (starting in May 2002) 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 Global acts as an information intermediary hub — following the notion of *infomediaries* reported by (Kotklin, 2001);
- 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 (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 Global 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, although with a strong notion of the territory and its particular characteristics.

The Gaia Global 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 Global adopts a social approach to the digital cities concept where technology follows information needs and information just exists to support people interaction. The Gaia Global slogan is “Gaia Global, 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 Global project.

The Gaia Global 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 III and Armstrong, 1997).

The Gaia Global 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.

For a detailed description of the project its institutional homepage can be accessed (<http://www.gaiaglobal.org>). Other resources concerning Gaia Global project information are available, describing the used digital infra-structure (Almeida et. al., 2004), and a general discussion of the main options for the project (Gouveia et. al., 2004). A book on digital cities has also been published with general information on the impact that digital cities may have on urban organisation and individuals (Gouveia, 2003).

The Gaia Global 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.

The 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, joining public and private interests.

Considering the need to provide clear guidelines to support the coherence and global integration of efforts within the Gaia Global 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 Global projects.
- E-government: offering information and services access to local administration as the use of the World Wide Web 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 Global 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 Gaia region social environment

Vila Nova de Gaia has its origins around 13th Century, but just in 1984 has been officially classified as a city – causing the region to have its own independent government. 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.

From 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 Kotklin (2001).

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 Global 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 Global project intends to cover all the 24 *Freguesias*. Considering statistics from the 2001 Census (INE, 2002), 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, by 2001 figures, 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.

Issues on coping with information

Considering the use of information, most of the current challenges are related with the excess of information and the difficult that both individuals and organizations may have in dealing with it.

Information Overload, Info-glut, Infobog and Data Smog are some of the names provided for the Information Age phenomena caused by the volume of information that technology now makes available. This phenomena well represented as reported by Brown and Duguid (2000) on an anonymous and ubiquitous phrase: "*On an average weekday the New York Times contains more information than any contemporary of Shakespeare's would have acquired in a lifetime*".

The end of the XX century sees, for the first time in history, a capacity for producing information greater than the human capacity to process it (Shenk, 1997). In fact, an average worker spends half of a regular day processing documents (Owen, 1999).

However, some authors question if the problem really is overload. Paul Saffo defends that is not the information overload that causes problems but our inability to process information (Owen, 1999). He defends that information overload is not a function of the volume of available information but a gap between the volume of information and the tools we have to assimilate the information into useful knowledge. A similar position is defended by (Shenk, 1997) who argues that people make the mistake of confusing information with knowledge.

Kerka points out that is a misconception to think of the problem of information overload as the result of too much information; she argues that a greater problem may be an explosion of non information (Kerka, 1997). Information overload can also result from the multiplicity of communication channels. Unlike earlier eras, new technologies are not replacing but adding to the host of media choices (Gilster 1997).

With these multiple channels the information flow is now simultaneous and multidirectional. However, most traditional information management practices are too linear and specific as referred by Alesandrini: they were pipes developed for a stream, not an ocean (Alesandrini, 1992). Both the volume and speed which information can be acquired give an illusion of accomplishment (Uline, 1996).

A key issues related with information is its usefulness. As pointed out by Milton a great deal of effort is used to gathering the raw material – information – and almost nothing is spent on the most important job of transforming information into intelligence" (Milton, 1989). As Kerka (Kerka, 1997), also Milton suggests that it is possible to have "negative information" – that may lead to knowing less than before because it is not integrated, applied, and transformed into knowledge.

One important issue is the understanding of the relationships between data, information, and knowledge: data are raw facts and figures; information is data organized into a meaningful context; knowledge is organized data (i.e., information) that has been understood and applied (Kerka, 1997).

Wurman also defends that the problem with information overload can be an explosion of "non information" lacking relevance, quality, and usefulness (Wurman, 2001). As Kinnaman (1994) points out, a better judgment is needed of the quality, accuracy, and reliability of received information.

According to Brown and Duguid, people may perceive overload because the information they receive does not fit into current mental models for understanding the world (Brown and Duguid, 2000). The problem of information overload thus has both technological and human aspects. The solution as stated by Kerka has also two aspects: technological – create better technological tools and make better use of them – and human – revise mental models and sharpen the capacity for critical reflection and analysis (Kerka, 1997).

Information is current, timely, and sufficient for the task at hand but not necessarily complete (Lively, 1996). The goal of information seeking should be finding the answers to personally meaningful questions. It is quite consensual that a way to deal with information overload is to forget about keeping up. As pointed out by Tetzeli, dealing with information becomes easier once it is accepted as a part of life (Tetzeli, 1994).

Davidson believes that most decisions are not of long-term importance (Davidson, 1996). Davidson advises not to keep gathering information when instinct indicates that enough is known for a decision to be made. As Lenox and Walker suggest, it is more important to know where and how to find what one needs to know (Lenox and Walker, 1993). The focus should be less on the acquisition of information than on the execution of information processes – thinking about and interacting with information.

The Internet gives the impression that the pace of change has accelerated (Kerka, 1997). Dvorak attributes that to the fact that the Web has simply removed natural barriers between people and information they would otherwise never see (Dvorak, 1996). Although availability is important does not lend importance, accuracy, utility, or value to the content (Berghel, 1997).

Research has shown that many people feel that information gained through a computer screen is more reliable than that from any other source (Breivik and Jones, 1993). Kinnaman reports companies that published reports on computer printout paper because people were more accepting of their authority (Kinnaman, 1994).

According to Koniger and Janowitz information is valuable only to the extent that it is structured. In the World Wide Web there are not common structures. This means that the medium is no longer a reliable indicator of the type of information it contains (Koniger and Janowitz, 1995). Because there are no preconceived notions of content, new kinds of information structures are needed (Kerka, 1997). The Internet requires the user to build content from its vast resources (Gilster, 1997).

It is possible to an individual to retrieve information – physical access – but be unable to understand it – intellectual access – (Wurman, 2001). Factors as time pressure and familiarity may make people rely on information sources that are immediately available and accessible, but not necessarily the best (Savolainen, 1995). As stated by Kerka it is both a human and a technological issue (Kerka, 1997).

Current education practice emphasizes navigation of information sources over critical analysis, integration, and application (Kinnaman, 1994). Also, Lenox and Walker (1993) argue that people are not prepared to deal with information overload problems by the old educational paradigm that emphasizes acquisition, access, storage, and retrieval of discrete and fragmentary information (even when computers are used).

McKenzie (1996) presents questioning as the primary technology to make sense. He adds that questioning converts data into information and information into insight.

According to Kerka (1997) we are still using the classic information retrieval model, which attempts to find the best match between mental "boxes" – questions – and structured information "boxes" that contain the answers. According to Hert (1994) we can compare the use of available information sources as follows:

- *superhighway* – learn how to drive, by using the tools;
- *cyberspace* – learn where to go, by navigating;
- *community* – critically questioning. Searching for answers of who, why, where and how information can help;
- *mine* – discover value, find and separate information and refine into knowledge.

Shenk (1997) defends that everyone needs education more than information by saying that "Education is the one thing we can't get overloaded with, the more of it the better". Using information effectively requires a set of skills that includes thinking about the kind of information needed; locating the information; evaluating, selecting, and organizing the information; and then using or applying it (Pappas, 1997).

Information technologies have also created a virtual flood of easily accessible information leading to a greater need for understanding the array of available sources (Kerka, 1997). The activities of information retrieval cannot replace the activities of reflecting on, evaluating, and synthesizing the information (Uline, 1996).

The volume of information available and the many alternatives to access it are one of the causes for information anxiety (Wurman, 2001). Information overload fuels stress and promotes faulty thinking (Shenk, 1997) which is a strong indicator of the need for new tools to deal with it.

Issues on learning

Learning can be defined as any deliberate or directed change in the knowledge structure of a system that allows it to perform better on later repetitions of some given type of task (Fischler and Firschein, 1987). Learning is seen by Seeley and Duguid (2000) as the acquisition of knowledge.

When discussing learning, one important concept is the existence of mental models. Mental models are the images, assumptions, and stories that we have of ourselves, others, organizations, and our experience. It is through mental models that we view reality. Culture can be seen as one of the most basic mental models we have. Added to that is the accumulation of knowledge and experience which brings us to the present day.

Vygotsky (1978) defends that one important aspect to learning is social interaction. Fischer (1996) presents a group of assumptions about learning made in current trends in educational theory:

- learning is a process of knowledge construction, not of knowledge recording or absorption
- learning is knowledge-dependent; people use their existing knowledge to construct new knowledge
- learning is highly tuned to the situation in which it takes place

- learning needs to account for distributed cognition requiring knowledge in the head to combined with knowledge in the world
- learning is affected as much by motivational issues as by cognitive issues

When dealing with technologies some issues must be well planned especially in an environment with great number of systems owned by multiple kinds of users. This can get even more complex as it can be stated that technology are less stable resources then users and work practice are. In complement, technology is developing astonishing fast and the users (especially teachers) have just become aware of a potential drastic change of the (traditional) work practice (Kommers et al., 1996a). This forces a need for a strong support to keep working hardware, software and network resources (both from users and university perspective).

Schools and universities today emphasise working in isolation; however, digitalisation will encourage teamwork (Weir, 1996). This is reinforced by (Goeller, 1998) which states that western business, social and academic culture is ruggedly individualistic; education's focus is on individual performance while employment performance assessment is based almost exclusively on individual performance. Some experiments with group assessment are reported in literature (Gouveia, 1998). To confront students with group work, teachers must explicit teach and model teamwork including it in curricula because as (Goeller, 1998) states, technically competent students are actually deficient if they cannot apply that competence in a team setting. We can say that co-operative learning is a recent concept as a way of thinking about and conducting the educational process. Although co-operation in learning is not in itself new, the idea of "cooperative learning" as a particular system of learning it is (McConnell, 1994).

Co-operation is defined by (Argyle, 1991) as "*acting together, in a coordinated way at work, or in social relationships, in the pursuit of shared goals, the enjoyment of the joint activity, or simply furthering the relationship*". (McConnell, 1994) refers that co-operation "*is seen as central to our everyday lives*" and "*cooperative learning is process driven*". A proposed definition for the group concept is proposed by McConnell (1994) who states that a human group is a collection of individuals, who have interdependent relations, and who perceive themselves as a group that is recognised by non members. Finally, group members have interdependent relations with other groups and whose roles in the group are functions of expectations (internal and external).

In open learning situations where there are many different simultaneous influences on the group including distributed systems and the use of virtual technologies to augment the group environment it is possible to add some influences from beyond the social structure of the group itself (Wexelblat, 1993). Co-operative work produces information products like decisions, designs, and analysis, minimises information loss, operates a finer level of details (Scherlis and Kraut, 1996).

What are the outcomes of cooperative learning? In their work, Johnson and Johnson (1990) looked at 323 studies and concluded that cooperative methods lead to higher achievement than competitive or individualistic ones. Other study, (Slavin, 1990), states that cooperative learning increases the positive affect of classrooms and students working cooperatively become more cooperative; they learn pro-social behaviour such as how to get with others, how to listen and so on. Also, (Sharan, 1990) suggests that cooperative learning fosters knowledge about the learning process.

In addition to the individualistic and competitive learning goal structures, the cooperative one can be relevant to education, learning and training, justifying the introduction of information and communication technologies that support it.

Since the notion of cooperation is inherent in collaborative learning, their research can also be applied to collaborative learning environments. Both cooperative and collaborative learning are built around the idea of socially constructed knowledge.

Collaborative learning can be defined as the interaction of two or more people to engage in value-creating activities based on improving, practicing, and transferring learning skills both within the group and to the organization or group of organizations to which they belong.

The outcomes of collaborative learning activity are improved work performance, strategic awareness, and positive business impacts. (Johnson and Johnson, 1996) have shown that students in collaborative learning environments outperform students in non-collaborative environments.

The kinds of activities referred by collaborative learning are tasks that students perform in groups of two or more. These tasks might include peer critiquing of papers, working together on a project or assignment, exploring content, and practicing skills.

Knowledge is not generated into ourselves in a continuous way. Its change is often characterized by alternating periods of slow movement and rapid transformations. Information and theory help us to outline an alternative paradigm and encourage for further development where knowledge can be developed.

Sipusic and others (1999), enumerates a collection of five theories that have been devised to explain the collaborative learning effect:

1. the small group environment provides more time to each student to communicate. It allows more opportunities for students asking questions and thus acquire new information;
2. during collaborative learning, students make public considerations about knowledge. The feedback from others helps group members refine their ideas even further;
3. the social necessity to communicate their ideas requires students to articulate and elaborate their knowledge. The acts of articulation and elaboration encourage the active use of the conceptual content which, in turn, fosters learning;
4. students in collaborative groups exhibit helping behaviors – offering emotional encouragement, tutoring, sharing notes, etc. – that increase learning;
5. collaborative learning leads to increased receptivity to learning by increasing motivation and attention.

Collaborative learning needs to be distinguished from cooperative learning. Both are noncompetitive forms of learning, and in both the reward structure encourages students to work together to accomplish a common end.

Cooperative learning, however, generally leaves established authority structures unexamined and untouched. The end is defined in the beginning by an instructor-in-charge, who also prescribes the means by which the goal is to be obtained and evaluates the entire exercise, without his/her own role being seriously questioned or open to significant change in the process.

Collaborative learning is comparably cooperative, but it takes all of the participants one step further: involving all of them in self-reflection of a kind that generally raises serious questions of "meaning" and "power" and forces all of the participants to confront issues implicit in any classroom learning regimen but rarely explicitly defined and dealt with.

Collaborative learning fosters an openness to change that enables participants to work together closely and self-critically, toward eventual improvement in the effectiveness of their teamwork.

Such a system characteristically evolves beyond cooperative and adaptive learning, i.e., learning needed to survive and develops generative learning capabilities – a process by which (participants) enhance their creativity, and rationally direct their evolution.

For a class to become such a learning system, the teacher must become a collaborative member of the system without surrendering the unique powers and responsibilities of leadership that can and must facilitate and guide the learning process. To collaborate in exploring, describing, interpreting, explaining, providing generative knowledge is to work to change human systems for the better.

Underlying nearly all collaborative learning experiences is a distinctive set of assumptions about what learning is, and what the nature of knowledge is. Perhaps the most pivotal of these is the assumption that knowledge is created through interaction, not transferred from one to another, as the case of from teacher to student (CELT, 1994).

It follows that instructional activity must begin with students' current levels of background knowledge, experience, and understanding. Also follows that the teacher's role is to create a context in which learners can make their own progress through an active process of discovery (CELT, 1994).

The knowledge thus gained is acquired in a down-to-earth, proactively "hands-on" way. Such knowledge is empirically testable and practically useful. It can be validated and/or disconfirmed (as need be) through further action research; it can be codified and communicated in ways that make it accessible to those who need to use it. Although such ideas are focused in scholar environments, they may provide some insight when we consider learning in society.

Final remarks: putting all together

Gaia Global promotes such learning in society by acting as a common platform to ease information sharing. Along with a number of services and applications provided for use by citizens and enterprises, it focuses information as the main resource to share and made available and explored by who want it. This way, an environment where opportunities to apply information are more valued, the more educated people are, the more they take advantage of existing facilities.

In particular, who are capable of using information and, specially, be able to find and use critical information has also the ability to produce, innovate and understand which in turn makes the environment more competitive and gain a dynamic of more information,

more knowledge and more economic activity. But there are not just economic motivations for a digital cities project like this: one of the most important items come from the quality of life and the quality of the application that we may provide of each of the available knowledge workers. Thus provides a modern equation of the less time people spends dealing with information, the more time is available to apply to knowledge issues.

The opportunities to use information and turn it accessibly to a high number of people, can provide a higher number of informed people and lower information overload problems (remember that one of the issues regarding information overload was about non information, and not necessarily the lack or excess of it).

What about bringing people to the use of Gaia Global. This is a true challenging pursuit. As the systems needs some sort of technological literacy and educated people to understand what information can convey at the first place, a movement turning information and the Gaia Global as part of peoples' life is needed. There is a temptation for such transformation, that may take a long time, to be reinforced as a result from some regulation from local authorities. We believe that using day to day utility services and the need to each one of us to cope with information overload, may provide a better path for Gaia Global goals. A clear bet on increasing the number of interactions between people using Gaia Global will provide more users to the community and also augment the perceived value of it.

Taking advantage of local communities and the perceived value that sharing information among them may have, people will adhere to Gaia Global and use it when needed. The same communities may provide a regular platform for the learning issues that occur regarding the huge transformation such digital facilities will necessary have in society. The current situation of Gaia Global is that the main organisation and technical development has finished and its time to start the social development.

However, as in many other situations, the merits of Gaia Global ideas still need to be proved and its real potential may result from such traditional and old issues as how people use and deal with information issues and how they are available to learn with each other and the Gaia Global proposal. Even the already educated people.

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