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Title

Lessons from the implementation process of Portuguese Digital Cities.

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Abstract

The radical role of information and communication technologies (ICT) is one of the most visible topic in the media today and seems to grow from day to day, as well as telecommunications are gradually becoming the central infrastructure tying together our society. In this new reality it is more and more consensual that cities and their relationships will inevitably be redefined in the so called ‘information age’, but in what concrete ways are cities and communities responding to this challenge and preparing for the future? This paper attempts to show how city management and community development policies can creatively address the complex linkages between ICT and urban prosperity, from the perspective of a small and peripheral european country - Portugal.

This paper examines the way in which reforms brought on by Portuguese Government, specifically concerning the development of Portuguese Digital Cities, have been arranged and conducted in order to influence the objectives of increasing urban living conditions, combating inwardness, promoting employment and economic competitiveness and support social integration policies.

If ICT are important sources of renewal in society, and in many ways ICT innovation have been a key source to human, political, as well as economic progress, in consequence the issue is not whether cities and citizens will be affected by these changes but how they will be affected, and how political leaders will address the challenges that emerge. Under this point of view, there is a general agreement that positive action, on the basis of a strong political commitment, is needed to ensure that urban managers use the full potential offered by the Information Society. For this reason, to understand better and evaluate the main trends related to the Portuguese dissemination of ICT during the past years, it is important to analyse the evolution of government policies in this field, in order to identify some of the main success factors, but also what kind of constraints appeared during the process and should be avoid in other digital cities.

Keywords: Digital cities, urban policies, Portugal, information society

1. Introduction

During recent years attention is increasingly being directed to exploring how the economic, social and cultural aspects of cities interact with the proliferation of advanced computer-based telecommunications networks. Therefore the co-evolution of cities and tele-mediated interactions is progressively emphasised in academic debates concerning the city futures. As a result, the digital city concept has been settled up as a way for creatively integrate telecommunications into urban policy and planning practices and strategies, in order to develop more inclusionary and sustainable urban futures².

One of the first contributions for this debate was made in 1994, when William Mitchell published the *City of Bits*. In this book he suggested a speculative vision by which the remote interactions, provided by the diffusion of information and communication technologies in contemporary societies, would gradually transform urban form and function, in such a way that he points out the need to enlarge our conceptions of urban planning in order to encompass virtual places as well as physical ones. In a latter work, Mitchell (1999) clarified that this latest wave of urban infrastructural networking will not create entirely new urban patterns from the ground up, but refashion the urban patterns that emerged and had been made possible and sustained by previous networks (transportation, water supply, electric power supply or telephone networks). In other words, the city should be seen as a complex and dense place of human activities interrelated by pedestrian circulation and mechanized transportation, as well as a network place within which digital information can flows speedily and freely.

A few years latter after the appearance of the *City of Bits*, when the digital infrastructure development had taken some time to produce considerable effects, and it was clear that the need for face-to-face interactions will not be destroyed but merely and significantly altered by digital technologies, Haron (2000) focuses his attention on how digital technology can be incorporated into the recomposition of our homes, offices, communities and cities, in order to achieve optimal forms of space. As a result of his study he presented practical examples and suggestions (grounded in experiences of success and failure) for urban managers who seek to pursue the potentials of the digital electronic era. With this approach he “treat the emergence of digital places not as a phenomenon to be observed but as a development to be affected and improved by the application of appropriate design principles” (Haron, 2000, p. 6).

The discussion about these practical projects and suggestions is increasingly relevant in such an embryonic policy field³, once the arguments of recent studies are showing us that the use of telecommunications to create gratifying places is a simplistic vision that must be seen with special attention. Graham and Marvin (2001) presented a critically view on this subject based on a deeper analysis of changing infrastructure networks, especially telecommunications, in contemporary urban areas, and clearly demonstrates that electronic networks, far from equalizing opportunities, may act as a non-cohesion force segregating less favoured areas, reinforcing and recreating new forms of socio-economic exclusion. As a result of this conclusion there is a general agreement that positive actions, on the basis of a strong political commitment, are needed to ensure that urban managers use the full potential offered by the complex articulations between urban life, the development of urban places and the use of communications technologies.

However, our main intention is not reviewing a set of local innovative projects and the achieved effects in shaping positive synergies between electronically interactions and urban development, but focusing our attention on the creation process of a Digital City as a global programme, in order to reveal the success and blockade factors during the implementation procedure of these kind of political programmes.

This paper attempts to explore the fast-growing wave of urban experimentations with telecommunications, which is currently emerging across the pioneer and most successful Portuguese Digital City (Aveiro). The main purpose of this analysis is to capture lessons, on the broader question of which are the best policy orientations to shape more efficiently the articulation between the changing form and socio-economic development of cities and the spread of electronic interactions within such cities.

This case-study tries to reflect the importance of the national political priorities as determinants to shape the information society at a local level, but it also tries to fit in the newer strands of technology research in social sciences that focus on the context dependency of the uptake technologies, demonstrating that ICT application is embedded in existing economic, institutional, social and spatial structures (Van der Meer and Van Winden, 2003). Under this framework we will start this analyse by the evolution of Portuguese policy priorities for the setting up of digital cities. After that and for the case-study we will analyse the official e-strategy documents, the available information concerning the evaluation of this initiative and other information gleaned from several sources presented at the bibliographic references, completed by qualitative information provided by one interview with the local responsables for the Aveiro Digital City Programme.

2. Launching process of the Aveiro Digital City pilot programme (1998-2000)

The first references to the creation of an Information Society in Portugal were made by the 13th Portuguese Constitutional Government (1995-1999). In 1996 it was created a Committee for the Information Society⁴, responsible for the preparation of a Green Paper. This document was approved in April 1997⁵, combining a wide range of major strategic options and a coherent body of concrete measures to implement the information society in Portugal.

Following the approval of this strategic document, several Task-Forces were set up to establish different programmes that would enable progress to be made on the identified strategic measures. Under this context, the Digital Cities Programme was launched in February 1998 by the Ministry of Science and Technology, as the first political initiative to develop the information society in local levels, aiming the spreading of its benefits throughout Portugal.

In a first phase (1998-2000) the Digital Cities was implemented as a pilot programme, which could eventually cover all the cities in the country during a second phase (2000-2006). For this illustrative purpose it was selected a set of two rural regions, one metropolitan area and five small and middle-sized cities⁶. Each of them with different characteristics in order to collect diversified lessons about the carrying out process of several demonstration projects, with different applications ranging from combating social exclusion, increasing urban living conditions, combating inwardness, promoting employment and economic competitiveness.

In this paper we will only focus the Aveiro Digital City case-study for two main reasons. On the one hand it is the most long-lasting experience⁷ of a Portuguese digital city and is considered as the most comprehensive and successful of all, on the other hand it is based in a more reliable digital city concept in comparison with other experiences.

Aveiro with about 55 thousands inhabitants, is a seaport city nearby the Vouga estuary, some 60km southwards from Oporto. From all encouraged experiences, this city joined up several conditions that early allowed the Government to see it as a political option, providing the opportunity to evaluate concepts and dynamically test new ideas of ICT

applications as tools for local development. Aveiro as a diffuser engine of best practices to other cities and regions, was allowed by the conjugation of the following conditions: a local authority engaged in technical and administrative modernization experiments; an innovative and active local university in relevant subjects for the programme; a telecommunications research centre placed in Aveiro since 1950 (from the incumbent telecommunication operator, PT Telecom); a local business environment with several firms in technological advanced branches; broadband access infrastructures to support R&D and a totally digitalized telecommunication network.

Other reason that justify the selection of this case-study is concerned with the transversal perspective that supports this initiative. If others Portuguese digital cities have been developed with specific purposes (for instance: combating social exclusion, improving economic competitiveness or fighting the effects of inland location), on the contrary the ADC has been developed in order to improve well-being standards and urban life quality in all its dimensions, by the participation of all local agents and the use of ICT's as acceleration tools for a community sustainable development process, in economic, social and cultural aspects (Table 1).

TABLE 1. The main goals of the Aveiro Digital City pilot programme (1998-2000)

Increase citizens well-being standards
Reinforce democratic participation
Modernization of local public administration
Reinforce sustainable growth
Promote equal opportunities
Foment job creation, social justice and lifelong learning
Integration of handicapped people
Identify the best practices in the ICT use for urban development

Source: Câmara Municipal de Aveiro, Universidade de Aveiro and Portugal Telecom (1998)

The initial thought was to develop a flexible programme, aiming a progressive and broadly society mobilization with a strong institutional and public participation, the consequent formalization of new objectives and the constantly inclusion of new projects spontaneously arranged between local agents. With this approach it was expected to be achieved an ongoing and adjustable digital city construction, with the continuously appearance of new intersection solutions between the technological and the socio-cultural domains.

This open perspective demanded an organizational model with a strong supervision. The Aveiro Digital City leadership draws from a singular institutional framework, established by an autonomous organization formed among the local government, the local university and the incumbent telecommunication operator. It was called the Consortium Aveiro Digital City, with responsibilities in the strategic and political guidance of the programme, the criterions definition for the projects selection and also the final decision about the approval projects.

This public-private partnership presented in February 1998 a strategic programme to guide the launching process of the programme. If the experience of initials digital cities (Barcelona, Helsinki, Amsterdam or Turin) was a source of knowledge to draw the Aveiro strategy, nevertheless it was clearly assumed that the methodology to promote this kind of initiatives do not have to be uniform, since the territorial and institutional contexts are not similar. In consequence it was decided for a three month discussion between the three involved institutions, until it was achieved a common perspective about how to conduct this challenge.

The presented strategic programme was structured in a set of eight complementary intervention areas. For each one of these intervention areas it had been presented concrete objectives to achieve with the execution of practical projects, through an expected complete funding life cycle from 1998 until 2006, but with the possibility of an intercalary evaluation at the end of the first phase⁸.

During the pilot programme phase (1998-2000) it were developed 38 diversified projects, from a total of 40 approved projects. To preserve the programme coherence the proposal projects were selected in order to fit in the global framework of the ADC programme, but it was given freedom to present ideas of ICT application according to the local agents mobilization, their objectives and execution capabilities. Therefore the predefined conditions for the projects eligibility were more related with the need to exhibit indicators to permit an ongoing accompaniment, the rigorous definition of the required financing, and the self-sustainability guarantees of the emerged services after public funding (Table 2).

TABLE 2. Predefined conditions for the projects eligibility

A clear definition of the project motive under the global framework of the ADC Programme
A rigorous definition of the expected objectives with the preliminary two years execution
The presentation of the project methodology and the schedule for the planned actions
An anticipation of the expected results, including the predicable demonstrative effects
The partnerships to be developed as a guarantee for a successful execution and its self-sustainability after public funding
A rigorous definition of the required financing, with a clarification about the proponents participation

Source: Câmara Municipal de Aveiro, Universidade de Aveiro and Portugal Telecom (1998)

The 38 projects involved an executed investment of almost 5 millions and 600 thousands Euros (94% of the predictable investment), which correspond to an amount of approximately 147 thousands Euros per project (Table 3). About 65,3% of all investment was supported by the Portuguese Government and co-financed by the European Union.

TABLE 3. Aveiro Digital City Pilot programme (1998-2000)	N° of developed projects	Executed investment by intervention area	Executed investment by project (euros)	Public funding
Intervention Areas				
IA1 - Building a digital community	5	19 %	208.020	69,7 %
IA2 - Local e-government	4	20 %	284.908	68,4 %
IA3 - School and education community services	7	16 %	129.224	63,6 %
IA4 - University community services	1	4 %	201.078	74,9 %
IA5 - Health care services	1	5 %	267.548	66,9 %
IA6 - Social exclusion aid services	4	4 %	54.154	78,8 %
IA7 - Services for commerce and industry	6	27 %	228.679	52,6 %
IA8 - Entertainment, culture and arts	10	8 %	45.012	77,2 %
TOTAL	38	100 %	147.151	65,3 %

Source: Consórcio Aveiro Cidade Digital (2001)

Services for commerce and industry and local e-government were the two intervention areas that accumulated the largest portion of this investment. On the contrary, and analysing the budgets allocation per project, we may conclude that the social exclusion aid services and entertainment, culture and arts were the two intervention areas with the

lowest budget per project. Both of these intervention areas also involved the weakness proponents participation in the total investment, and consequently the more dependence of public funding.

Analysing the funds repartition by intervention area, it can also be observed that there was settled up only one University-based project, that used 4% of the available funds, despite the University of Aveiro recognised importance in the city life and in the programme coordination. If this figures can suggest the need of deeper partnerships with other urban entities, it can also reveal the existence of University own funds to support the inclusion of ICT in its organizational procedures.

3. Detected success/blockade factors in the Aveiro Digital City pilot programme (1998-2000)

In this part of the paper we will try to identify some of the main success factors learned from this initial experience, but we will also explore the constraints that appeared during the launching process of the ADC, and should be avoid in the subsequently phase and in other cities that are starting with their digital challenge.

Technological infrastructures

Even before the programme launching, Aveiro was already benefiting from a totally digitalized telecommunication network, a broadband access infrastructure to support R&D projects, and it was also linked to the RCTS (Science, Technology and Society Network). The RCTS consists on a major reinforcement of the network bandwidth, linking higher education and research institutions throughout the country, aiming the creation of synergies between communities and the academic and scientific world.

In its conception, and in same way because of these infrastructures background, the Aveiro Digital City intended to be much more than a merely technological programme, intending to act as a society mobilisation programme aiming the promotion of a perceptible and radical changes in citizens behaviour and institutions performance. Although analysing the achieved results of the first phase, and contrarily to the proposed guiding perspective, we may conclude that it was recognised as a investment priority the diffusion of ICT infrastructures throughout the city institutions, as a preliminary condition to further evolutions of the programme. As a result, if it was achieved good levels of institutional awareness for the benefits of ICT applications, on the contrary it was achieved low levels of citizens participations on the supported activities.

Public participation

Moutinho and Heitor (2003) having studied with more detailed the activities carried out under the executed projects, presented a conclusion suggesting that investments oriented towards the participation and mobilization of citizens for the information society were practically inexistent, and in general ICT infrastructures and ephemeral digital contents were the most important components in the projects execution.

As a result of this option, and at the end of the first phase, the evaluation of many activities claimed for reduced levels of public participation, therefore it was pointed out that for the future there is a need to maximize visible and useful on-line services, with a straight impact in the improvement of citizens life quality. To achieve a deeper participation of the final users of the digital city, investments in promotion and publicising actions, differentiated according to each target specificity, should also be considered in further activities as forms of mobilizing the population at large.

Preceding experiences in ICT applications

Create a digital city is a long adjustment process involving a gradually, persistent and determined intervention. In this case study this political programme did not appear as a totally new challenge, but it was founded in several previous experiences developed by three local institutions.

Firstly, a telecommunications research centre placed in Aveiro since 1950 (from the incumbent telecommunication operator, PT Telecom), known as a national and international reference in telecommunication researches. This research unit was involved in the initial pilot projects, conducted in order to evaluate the ICT applications as potential instruments for the development process of the less favoured regions. For instance, in 1992 it was promoted, in two rural localities, a broadband network to allow e-learning experiences and e-health care experiences even before the appearance of the internet. Also in 1992 it was set up a broadband network to support video conference communications between eight aged people homes and a local charitable institution.

Secondly, a local authority engaged in technical and administrative modernization experiments and revealing a special interest in ICT applications. For instance, in 1988, with the technical support of the local telecommunication research centre, it was established a system of video conference between the City Council and a small locality in the municipality isolated by the Aveiro Estuary (São Jacinto). Aveiro was also the first Portuguese City Council which offered the first interactive kiosk (based in the ISDN technology) available for public use.

Thirdly, an innovative and active local university in relevant subjects for the programme (such as telecommunications; information technologies; urban planning; art and communication; education and training or organizational sociology) and intending to be itself an example of ICT use for its administrative modernization. Curiously, telecommunications was the first degree promoted by this university, 30 years ago.

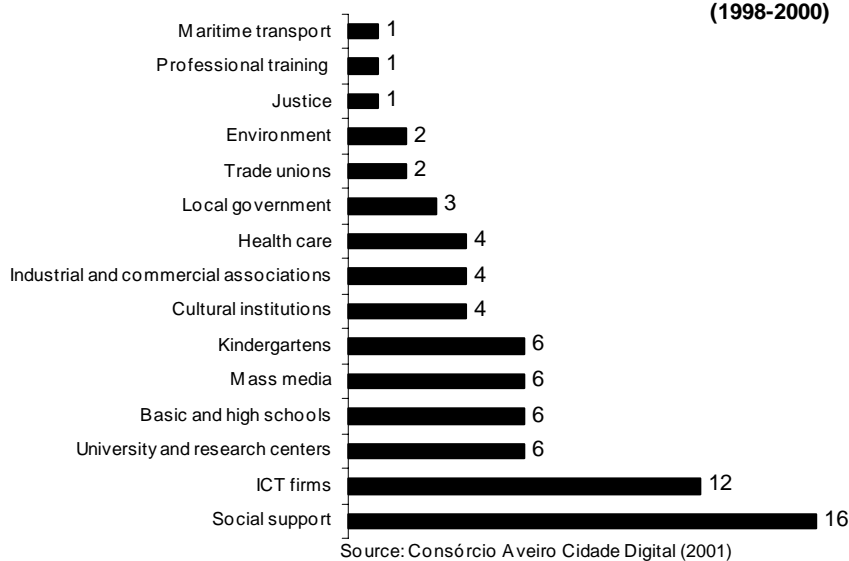
The presence in Aveiro of these three key institutions with experience and interest in ICT applications, and available to all together instigate and command the programme, was definitely a success factor for the pilot programme execution.

Institutional density

Besides these elementary institutions for the strategic command of the programme, Aveiro had also a local business environment with several firms in technological advanced branches, and many other local entities interested in develop activities covering several different aspects of the use of ICT's.

As a result of the accomplished society mobilization, local consortiums were formed to develop each one of the 38 projects, engaging a total of 74 diversified local entities (Chart 1). Those with a deeper involvement in the digital city construction, and more available to benefit from the ICT application in their routine activities, were principally social aid institutions, ICT local firms and education institutions (from all levels).

CHART 1. Local agents engaged in the 38 Aveiro Digital City projects (1998-2000)



Despite the achieved mobilization, at the end of the first phase it was recognised that the partnership principle must get deeper in the next stages of the digital city construction. It must be emphasized that this strategic ambition is strictly dependent of the strengths conjugation of all local agents, which are the driving forces in the modernization process of a community.

Human resources (know-how)

The success of ICT's integration in local entities, aiming better efficiency standards by modernization of processes and services, impose for the future a better evaluation of the internal challenges inside these organizations, specifically concerning the availability of human resources in sufficient number and with specific skills to perform efficiently these new services and responsibilities.

Horizontal integration

With this embryonic phase it was understood that each project was promoted independently, as a focus of dissemination of new services and competences, and it was neglected the intra-projects articulation. The only moments of sharing experiences occurred at the end of the first phase, for purposes of public promotion, results divulgation and future developments, specifically during the week of the "Aveiro Digital City Exhibition" and the meeting "Aveiro Digital City Forum"⁹, when each one of the eight intervention areas operated as reflection platforms for experiences exchange.

In the future, efforts must be made in order to interconnect the created networks and services and by this way generate a more consistent global programme. This coordination activity is definitely a challenge, especially when we are dealing with an enormous group of local institutions, without cooperation habits and with different interests and objectives.

Vertical integration

In Portugal, only national strategic measures will allow some administrative modernization processes and the subsequently appearance of useful services to respond citizens needs (taxes, elections, public concourses...). A more efficient programme in

the citizens perspective demands a deeper articulation between local and central initiatives.

Bureaucracy and Funding access

Some inability to reach the predefined objectives, outcomes from the disadvantages of the centralised model of the Portuguese public administration¹⁰. This constraint was responsible for a troubling start, characterised by budget allocation negotiations and bureaucratic relations between local entities and the Government institution responsible for the financing decisions (Foundation for Science and Technology).

The structure of public funding was definitely the most problematic question in this experimentation phase, especially the inadequacy between the rhythm of financing supports and the material execution rhythms. To understand this problem we need to realize that the Digital City Programme was not planned and appeared during the Second EU Community Support Framework, therefore to allow its beginning the responsible Minister had to transfer funds from the Telecommunication Operational Programme to the Foundation for Science and Technology, which was an institution without experience in managing this kind of funds and projects.

This process conducted to lengthy delays in the financing beginning, irregular financing flows, unexpected budget cuts, and consequently the projects amputation during the implementation phase. Almost all funds execution occurred only in one year, from 1998 until January 2000 it was only executed 5% of the final executed investment¹¹.

This constraint can be combated in future with some competences reformulations within the organisational model. But if it is true that the public funds corresponded only to 65% of total investment (revealing good levels of private mobilization), it is also true that the excessive dependence of this funds to effectively start the projects execution was a blockade factor, that in the future should be avoid combining multiple investments sources in a more financing integrated model.

In terms of practical financing execution, there were also detected some concrete problems concerned with the need to accomplish specific documentation norms to justify expenses with the performed activities, resulting from a recognized lack of experience of local institutions in this kind of requests. This was locally assumed as a blockade factor for the projects execution, for instance one of the approved projects was cancelled (the Net Rotary project) by a demand of its co-ordinator, assuming a lack of ability to respond to all requested documentation. For the future these bureaucratic procedures should be simplified, using for instance ICT's potentialities inside the programme procedures.

Organisational model

If in the beginning it was expected to be a flexible programme, aiming a continuously formalization of new objectives and the inclusion of new projects spontaneously arranged between local agents, during the process it was realised that to achieve this aspiration the public funds should be concentrated in the local command organisation, which responsibilities should be not only for the strategic guidance of the programme but enlarged for funds managing and allocation options.

It was recognised that for the next stages it should be created an administration model with new political and operational competences, in order to obtain a more agile and flexible programme and with financial autonomy.

Monitoring process

Despite the fact that a Monitoring Agency, designated by the Ministry for Science and Technology, had been foreseen from the beginning of the process, it only started functioning in the summer 2000 with the promotion of some meetings with the Aveiro Digital City Consortium and the 38 Projects Co-ordinators (one meeting for each intervention area), which results were presented at the “Aveiro Digital City Forum”. Obviously this subsequent evaluation did not result in profitable learning’s, for a helpful ongoing correction of methodologies and procedures in accordance with the initial objectives.

This meetings were promoted in a self-assessment perspective, and conducted especially to identify the future course of the programme in the perspective of the involved entities.

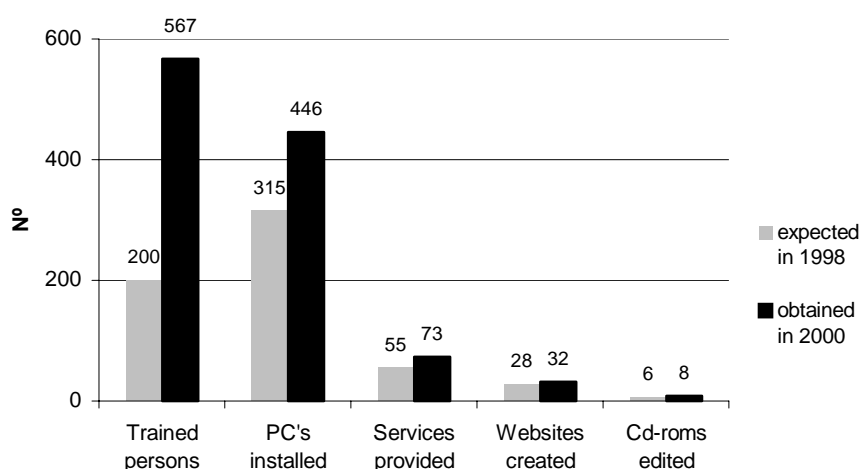
Self-sustainability

Changing behavioural procedures, which is the main objective of a digital city programme, is a long adjustment process that need a gradually and persistent intervention in the evolution process of competences building. However, one main limitation observed during the first phase, was the absence of conditions for long term sustainability of the new services provided to citizens. As we will see, and contrarily to the initially thought, for several circumstances there was not a linear sequence between the first and the second phase of the programme, and almost all these initiatives were abruptly stopped, and consequently all the initial financial and organizational efforts did not have a desirable progression. Moutinho and Heitor (2003, p. 14) underlined that “when the limited public funds dried up some of the projects came to a close, while others kept their presence in the Internet although rarely updated”.

4. A troubling transition to the next phase (Aveiro Digital Programme 2003-2006)

In spite of the reduced time frame of the pilot project and the extent to which public funds were continuously available, the practical results supplanted the expected marks pointed out during the projects submission (Chart 2), what reveals a strong commitment and resources mobilization in order to accomplish the planned objectives.

CHART 2. Practical results achieved by the Aveiro Digital City pilot programme (1998-2000)



Source: Consórcio Aveiro Cidade Digital (2001)

As we already pointed out, despite this quantitative success, at the end of 2000 there was a commonly consensus about the few situations of direct impact in processes modernization and regarding the offer of new and useful services for the Aveiro citizens. By that time it was quite clear that the creation process of the ADC had only started, and it was assumed that all strategic objectives delineated in 1998 remained with actuality and validity and should be reached in next years, even because some of them did not benefit from any investment. But surprisingly, the second phase which was planned to start in January 2001 and to last until December 2006, has only begun on September 2003 with the selection of 40 new projects, involving 134 local and regional entities and a global investment around 14,6 millions Euros. For this almost three year delay we can point out two main reasons.

Firstly, during 2001 the last Portuguese Government was formatting the Cities and Digital Regions Measure (presented in October 2001), to be supported by the Operational Programme for the Information Society (financed by the Third Community Support Framework 2001-2006). This delay in the arrangement of this new political measure can only be explained by the need to wait for the conclusion of other Portuguese pilot programmes, in order to incorporate more lessons in this new strategic measure.

Secondly, suddenly at the end of 2001 it was set a date for extraordinary elections, which conducted to the switch of Portuguese Government in March 2002. The new managing team of the Operational Programme for the Information Society was designated only in September 2002 and brought relevant changes in the political objectives of the Programme. In the Cities and Digital Regions political measure, instead of urban projects, developed by each municipality, the new Government chosen to support projects within the sub-regional scope and controlled by supra-municipal entities (ex: associations of municipalities)¹², as a way to diffuse the ICT applications throughout the country and promote economic competitiveness, increase well being standards and consequently reinforce internal cohesion of the regions.

To help in the transition to the second phase, the Aveiro Digital City Consortium prepared one project (Estaleiro 2001) to be functioning until the end of 2001, but as a result of this troubling transition it was extended until the end of 2002, as a way to preserve the technical team and to maintain the main equipment of the previous phase (Montra Aveiro Digital). The Montra Aveiro Digital allowed the public access to ICT infrastructures during these two years¹³ and the promotion of some horizontal initiatives close by Aveiro citizens.

Nevertheless the importance of the Estaleiro 2001, it is obvious that this extended interruption, guided by external motives, brought great disadvantages for the digital city creation process in Aveiro. Especially because we are dealing with a challenge that involves a gradual and persistent intervention in order to reformulate routines, create competences and modify procedures. Therefore, the renovation dynamic, locally assisted during the year 2000, was broken, and some investments were definitely spoiled. The only reason why we did not assisted to a really retrocession until the point of departure, result from a non measurable indirect impact of the applied funds in the first phase, specifically in consequence of the decision that did not give the programme execution to the three main proponents, but instead opted by implicate a huge number of local entities into the programme execution, and following this strategy it was achieved good levels of institutional awareness for the benefits of ICT applications.

In spite of all these obstacles the second phase started and we can already point out several relevant differences, which can be grouped into three main domains: the organizational model, the geographical extension and the strategic guidance.

Organizationally, the Aveiro Digital Programme 2003-2006 is commanded by an Executive Commission, which results from a protocol established between the Aveiro Digital Association (constituted in January 2002 as a way to integrate more effectively the three initial local proponents of the programme and the others entities engaged in the first phase) and the Association of the Estuary Municipalities. But contrarily to past lessons, specifically the problematic financial allocation performance of the previous phase, and as a consequence of the Portuguese centralized administration, the responsibility for the funds managing is not a competence of this Executive Commission.

Geographically, this programme is extended to the region of the Association of the Estuary Municipalities, composed by 11 municipalities and 340 thousand inhabitants. This enlargement was a condition imposed by the managing team of the Operational Programme for the Information Society, but a territorial extension of the programme was already foreseen at the time when it was established the Aveiro Digital Association. Strategically, the Aveiro Digital Programme 2003-2006 is guided by the same concept and the same eight intervention areas set up in the first phase, however it is structured not in general guiding objectives but throughout a set of 42 totally explained projects¹⁴, to be developed by local consortiums arranged between local and regional entities¹⁵. In spite of being supported on the conclusions, about the first phase of the programme, provided by an Independent Evaluation Committee, and also by the enlarged discussion between the local involved entities and carried out at the end of the first phase (about what initiatives should be conducted in the future), the Aveiro Digital Programme 2003-2006 definitely obey to a more rigid and conditioning strategy. Specially if we attended to the initial expectations, which pointed to a flexible and open programme, with a constantly inclusion of new projects, spontaneously arranged between local agents.

5. Conclusion

As a conclusion from the troubling experience that have been characterizing the Aveiro Digital City Programme, we may underline three risks that should be avoid during the implementation process of digital cities.

Favouring the diffusion of ICT infrastructures as well as the produce of ephemeral contents throughout local entities, may be positive as a way to guarantee good levels of institutional awareness for the benefits of ICT applications, but it may have a negative impact concerning the reduced participation and mobilization of citizens for the information society.

Presenting and supporting a large variety of practical projects, which for some reason may have to be interrupted (for instance by the lack of financial support or the need to geographically extend the effects of the initiative) is extremely negative, once we are dealing with the difficult intention of create new competences and reformulate routines. Setting up conditions for long term sustainability of new services provided to citizens is crucial for the success of this kind of initiatives, which impose a systematic and persistent interventions led by human resources with specific skills.

Aiming to achieve a consistent and coherent digital city should involve an organizational model with real competences (also concerning budget allocation negotiations) and a strong supervision, specially when we are facing a network of local agents developing individual projects and without cooperation habits.

Avoiding this blockade factors during the implementation process of a digital city, we think that there will be a chance to achieve better results concerning the integration of telecommunications into urban policy and planning practices.

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Notes

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² In other words, digital cities can be considered as "community-based networks" (Castells, 2001, p. 144), or networked communities, pursuing a strategic vision that involves the use of ICT's in new and innovative ways to empower its residents, enterprises, institutions and the city as a whole.

³ Especially when "new telecommunications initiatives are still often intimately connected with utopian and deterministic ideas of technology's beneficial and liner impacts upon the social, environmental and spatial development of cities" (Graham and Marvin, 1999, p. 15).

⁴ Membership of this Committee included experts appointed by several Ministries.

⁵ After a phase of public debate organised to discuss specific issues arising from a previous draft.

⁶ In Lisbon Metropolitan Area it was developed a project in order to support social integration policies in a large and expanding conurbation. The two remote rural regions were Alentejo and Trás-os-Montes where projects were designed to create new opportunities for the local population, mitigate social and economic disparities and promote regional networking. Bragança, Guarda and Castelo Branco are three peripheral cities that intended to mobilize resources in order to fight the effects of inland location. Marinha Grande is an industrial city specialized in moulds and dies industry, that tried to promote projects to increase productivity and improve the competitiveness of this economic cluster. Lastly Aveiro is a city in the littoral center where projects were designed to integrate several services through telematics networks, in order to improve city life in all its aspects.

⁷ The idea of create a national digital cities political programme occurred during a visit, in November 1997, from the Minister of Science and Technology to the telecommunication research centre in Aveiro, in which he heard practical results of ICT application projects, not by technicians speeches but in the perspective of the final users (teachers, medical doctors, social assistances, parents of hospitalised children's...).

⁸ In 2000, at the beginning of the Third EU Community Support Framework 2000-2006

⁹ Followed by thematic weeks for each intervention area.

¹⁰ In Portugal there are not regions with administrative autonomy.

¹¹ The programme started in 1998 but Aveiro received the first financial support only in June 1999, and some projects only started their activities in January 2000.

¹² Besides this general orientation, the strategic guide to facilitate a deeper harmonization in the projects submission and evaluation, was only presented in September 2003, when 40 projects were already selected in the first concourse Aveiro Digital 2003-2006.

¹³ In 2001 and 2002 the users average of the Montra Aveiro Digital was around 3500 users per month.

¹⁴ With reference to the concrete marks to be reached in each one of them.

¹⁵ In addition to these 42 proposal projects the Executive Commission is responsible for the execution of six structural and horizontal projects from the first intervention area (Building a Digital Community).