Analysis of Users of the Citizen Support Offices of the Trás-os-Montes Digital Project

Leonel Morgado
Teaching Assistant
University of Trás-os-Montes e Alto Douro
leonelm@utad.pt

Isabel Bastos
Exploration Team Leader
Trás-os-Montes Digital
itbastos@utad.pt

Márcia Santos, Sandra Rocha, Rui Gonçalves, Alexandra Amorim
Coordinators of Extension Agents
Trás-os-Montes Digital
marcias@utad.pt, smrocha@utad.pt, ruig@utad.pt, aamorim@utad.pt

José Afonso Bulas-Cruz
Full Professor
University of Trás-os-Montes e Alto Douro
jcruz@utad.pt

Abstract
In north-eastern Portugal, the Trás-os-Montes Digital project aims to fight the digital divide in disadvantaged rural communities. To this effect, the project created a network of Internet-Access Points, promoted by a network of professionals – County Extension Agents. This paper presents an analysis of data from the use of such Internet-Access Points, and also some reflection on their use by the population.

There is also a companion paper in this publication, "Exploration Network of the Trás-os-Montes Digital Project", where the organizational and management methods are presented in more detail. Such methods were behind the results presented here.

I. Introduction

The **Trás-os-Montes Digital** project (a.k.a. Cooperative Extension Service in Trás-os-Montes e Alto Douro or SCETAD), created a rural network of rural Internet-Access and Citizen-Support Points in the region. Such points are called Citizen-Support Offices (CSO) or GAC (in Portuguese). This paper presents an analysis of usage data from these CSOs.

The project is cooperative in nature: it was established as a cooperation between the University of Trás-os-Montes e Alto Douro (UTAD), 31 county governments in the region of Trás-os-Montes e Alto Douro, and several regional

offices of national government bodies (agriculture, social security, health, education, etc.).

II. The Citizen Support Offices of the Trás-os-Montes Digital project

i. Extension Mediators

The CSOs are more than just technology-based Internet access Points: each CSO employs a clerk ("Mediator") in charge of user support and access control. The project team determined that a "human face" was crucial in order to ensure that the benefits of technology would reach the entire population. Such human interaction was deemed necessary given the significant numbers of elders, low literacy levels and poor technology awareness. The idea is that even if someone has no clue on how to use a computer or the Internet, the Mediator is there to support everyone, so that these technologies may be of use.

ii. Extension Agents

A basic philosophy of the field approach of the Trás-os-Montes Digital project may be stated as "go meet people, instead of laying in wait for them".

The fulfilment of this idea is a group of people with higher education – County Extension Agents. Their mission is to contact the population, in order to understand people's everyday life and needs.

From this actual knowledge, they must create and foster activities, aimed at showing people how they can directly benefit, personally and professionally, from using computers and the Internet. They must also seek out ways of bridging or solving problems in everyday living, by using computers and the Internet.

County Extension Agents have, therefore, a crucial role in promoting the CSOs and in ensuring that the population uses them effectively: they work, daily, so that each inhabitant in the region (but particularly those living in sub-counties equipped with a CSO) understands in what ways this service can be used.

Beyond this crucial role, since each Extension Agent operates in a single county, s/he is also a pivot between the county's people, the county's institutions and the Trás-os-Montes Digital project. The Agent is a contact, with a deep knowledge of the county.

iii. Coordination Team

Extension Agents are based in each county's local government building. Most of them have not graduated in the computing field, rather in humanistic or social fields. They are supported by a coordination team of 5 people, ensuring: a link between the agent and the computing know-how, in the University; that efforts are combined between all agents, so that they do not

act in isolation; monitoring of the quality of the work performed; goal-planning.

iv. Computer and Communications Hardware

In each CSO, the user finds an ISDN-based Internet access (64 kbps) and the following computer hardware:

- § Personal Multimedia Computer
- § Colour Inkjet Printer
- § Scanner
- § NetPin terminal (Internet access to "Multibanco", the Portuguese ATM network)

v. CSOs Details and Opening Hours

Generally speaking, CSOs where installed in scarcely populated rural sub-counties (see vi., “Installation Points”). However, in many cases, the head villages of those sub-counties had no public agency open to the public, except for the sub-county government headquarters. Space of these institutions is usually quite limited. For this reason, the project had to come up (together with the sub-county mayors) with clever solutions in order for the CSOs to be able to operate. So, while several CSOs are open in a specific office within a building, we also can easily find CSOs installed in: corners of waiting rooms or welcome desks; party-halls and dance-halls; the entrances of sub-counties mayors' offices; at the sacristy/vestry of the parish's church; in town museums; etc.

Regarding opening hours, each case was entrusted to its county and sub-county governments, with a recommendation that the hours should be adapted to the daily life of the sub-county's population (not necessarily matching regular public business hours).

vi. Installation Points

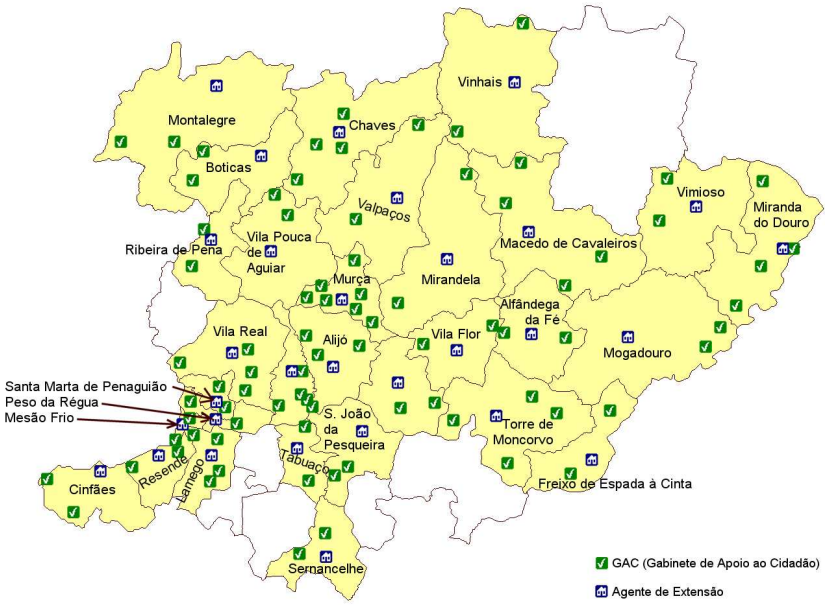
CSOs are currently (December 2003) installed in 82 sub-counties within the region of Trás-os-Montes e Alto Douro, plus an itinerant CSO, in Boticas county, serving several villages of sub-counties lacking their own CSO. The sub-counties to be served were selected by the local governments of each county.

The basic idea behind the selection, within the goals of the Trás-os-Montes Digital project, was to install the CSOs mainly in rural sub-counties with poor access to their county capital (because of the distance or poor road links).

As explained below (Section II), the presence of CSOs in the region wasn't static: since the beginning of the roll-out phase of the project (November 1999) till present day (December 2003), this service has been

available to citizens in 89 sub-counties (plus the sub-counties served by the itinerant CSO); in all, 80,997 inhabitants.

Figure 1 presents the territorial dispersion of the offices that are currently available, as well as the county capitals.



1. CSOs of the Trás-os-Montes Digital project and county capitals

vii. CSO List

Table 1 lists the sub-counties with installed CSOs. The symbol (*) indicates an office which is no longer open.

Table 1: Sub-counties with installed CSO

County	CSO	Pop.	Usages Oct/01-Oct/03	Average usages/month
Alfândega da Fé	Vilar Chão	326	4346	241
Alfândega da Fé	Vilarelhos	335	4144	218
Alijó	Carlão	882	4890	204
Alijó	Vilar de Maçada	1230	5742	230
Alijó	Sanfins do Douro	1763	5161	287
Alijó	Pinhão	829	3538	186
Boticas	Alturas do Barroso	444	2104	105
Boticas	Itinerant CSO		379	379
Boticas	Dornelas	413	559	43
Carrazeda de Ansiães	Vilarinho da Castanheira	772	4178	246
Carrazeda de Ansiães	Lavandeira	184	822	48
Carrazeda de Ansiães	Selores	171	217	36
Chaves	Curalha	518	1182	62
Chaves	Outeiro Seco	3436	1876	89
Chaves	Vidago	1179	1639	66
Chaves	Vilar de Nantes	2117	2169	114
Cinfães	Nespereira	2217	4011	211
Cinfães	Souselo	3407	3099	163
Freixo de Espada à Cinta	Fornos	323	696	77
Freixo de Espada à Cinta	Poiares	507	1329	78
Lamego	Britiande	1010	4711	188

Lamego	Cambres	2678	5776	275
Lamego	Lalim	920	4431	185
Lamego	Penajóia	1250	1075	63
Macedo de Cavaleiros	Ala	497	11492	605
Macedo de Cavaleiros	Morais	709	8343	334
Macedo de Cavaleiros	Murçós	206	3175	227
Macedo de Cavaleiros	Peredo	366	5759	230
Mesão Frio	Barqueiros	844	3955	208
Mesão Frio	Vila Marim	1475	2565	135
Miranda do Douro	Duas Igrejas	744	2523	133
Miranda do Douro	Miranda do Douro	2127	5220	275
Miranda do Douro	São Martinho de Angueira	359	697	39
Miranda do Douro	Sendim	1432	1810	113
Mirandela	Avidagos	325	1336	84
Mirandela	Torre de Dona Chama	1386	2252	141
Mogadouro	Bemposta (*)	712	1418	118
Mogadouro	Castro Vicente	420	1177	147
Montalegre	Cabril	640	1776	111
Montalegre	Vila da Ponte	255	3655	203
Murça	Candedo	1126	819	82
Murça	Jou	794	716	48
Murça	Fiolhoso	702	193	32
Murça	Noura	780	397	66
Murça	Palheiros	542	541	90
Murça	Vilares	233	302	50
Peso da Régua	Canelas	942	1943	162
Peso da Régua	Sedielos	1307	1576	93
Resende	Freigil	480	1959	196
Resende	S. Martinho de Mouros	1738	85	43
Ribeira de Pena	Cerva	2607	2114	124
Ribeira de Pena	St.º Aleixo de Além Tâmega	447	2851	178
Sabrosa	Gouvinhas	359	1199	71
Sabrosa	Provesende	356	1200	71
Sabrosa	Sabrosa	1189	1708	68
Sabrosa	São Cristóvão do Douro	196	972	65
Sabrosa	São Martinho de Antas (*)	871	236	34
São João da Pesqueira	Paredes da Beira	733	4454	234
São João da Pesqueira	Trevões	639	5333	296
Sernancelhe	Carregal	510	1891	105
Sernancelhe	Ferreirim	562	2141	107
St.ª Marta de Penaguião	Cumieira	1278	1514	76
St.ª Marta de Penaguião	Fontes	1089	3392	141
St.ª Marta de Penaguião	Medrões	645	1485	78
St.ª Marta de Penaguião	São João de Lobrigos	1451	2798	117
Tabuaço	Sendim	867	2476	138
Tabuaço	Valença do Douro	451	4390	231
Torre de Moncorvo	Carviçais	865	4102	171
Torre de Moncorvo	Felgar	1141	4086	163
Torre de Moncorvo	Lousa	508	4380	219
Torre de Moncorvo	Urros	325	3884	185
Valpaços	Carrazedo de Montenegro	1818	3018	137
Valpaços	Lebução	600	3678	184
Vila Flor	Freixiel	821	2734	161
Vila Flor	Santa Comba da Vilariça	473	2039	127
Vila Nova de Foz Côa	Almendra (*)	464	259	43
Vila Nova de Foz Côa	Cedovim (*)	436	168	24
Vila Nova de Foz Côa	Custóias (*)	278	25	25
Vila Nova de Foz Côa	Chãs (*)	370	126	126
Vila Pouca de Aguiar	Capeludos	602	2795	200
Vila Pouca de Aguiar	Sabroso de Aguiar	708	2507	157
Vila Real	Abaças	1075	38	13
Vila Real	Andrães	1511	949	79
Vila Real	Campeã	1627	776	55

Vila Real	Mouçós	2907	1016	64
Vimioso	Argozelo	809	491	55
Vimioso	Santulhão	508	472	36
Vinhais	Moimenta	184	2233	149
Vinhais	Rebordelo	665	2173	136
TOTAL		**80,997**	**215,861**	**139**

viii. Information-gathering Method

Whenever a citizen goes to a CSO in order to use the available services, the mediators working in those offices record the following information in a StarCalc spreadsheet:

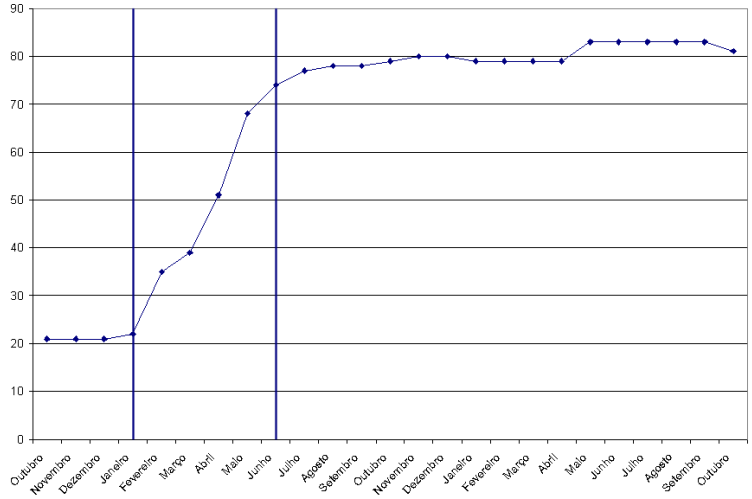
Date; Time; Gender; Age; Literacy; Profession; Town; Requested service

These spreadsheets are then archived at UTAD, and imported into a database, after editing (correction of errors). This was the database used to perform the analysis presented here.

III. Opening of CSOs

CSOs haven't had a static existence: due to realities perceived in the field, several changes occurred from early in the roll-out phase (November 1999) until October 2003: some offices were closed; others moved from one sub-county to another; some were established early on, others later on; (roll-out phase, execution phase); some could only be opened after overcoming logistic, bureaucratic and organizational problems; also, some offices only opened recently, fully supported by county governments (hardware, communications and staff), with the logistic, technical and management support of the Trás-os-Montes Digital project.

Figure 2 presents the evolution of the number of CSOs in operation.



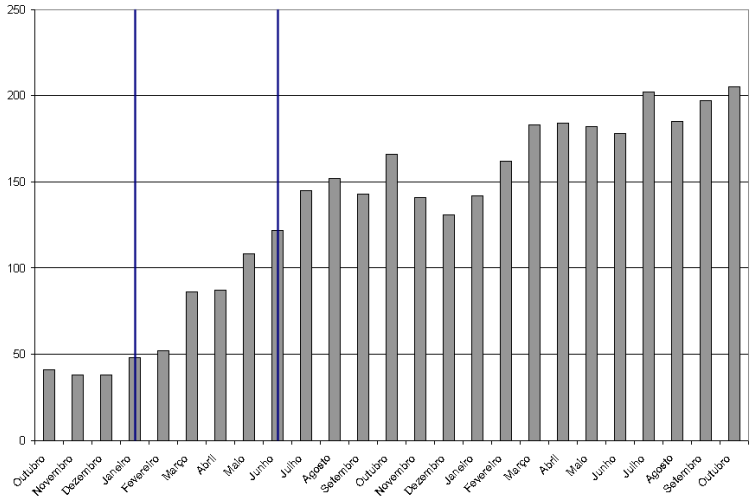
2. Number of CSOs in operation.

IV. Average usages

CSOs, depending on each sub-county specifics, had different opening hours (in accordance with the population's daily routine) and calendars (local holidays, sick leaves, etc.). Besides these details, they were also affected by technical problems (router or computer malfunction, ISDN lines, etc.) and therefore were open during different periods of time.

Therefore, one must look, not only at the total amount of usages of each CSO, but also at their average monthly usage.

The evolution of the average usage of the CSOs along the timeframe of the project points to a growing integration of this service in the community. We distinguish three periods: roll-out phase and starting up; initiating the activities of the Extension Agents; final period. We will now describe these periods, but would also like to draw the reader's attention to Figure 2, "Number of CSOs in operation".



3. Evolution of the average monthly uses of CSOs

i. Roll-out phase and starting up – Nov/1999 to Jan/2002

This period covers November, 1999 to January, 2000. There are no detailed data regarding CSO use in the roll-out phase of the project, between Nov/1999 and Nov/2000; the total amount, according to the project's final report, is 9,876 usages in this period. As from Nov/2000 a period of uncertainty ensued, until the approval of the execution phase of the Trás-os-Montes Digital project, in May 2001. Since half a year had gone by waiting for government approval of the project, we focused on taking due measures to ensure proper operation: hiring staff, acquiring hardware, professional training, etc. One measure which was implemented (initially on paper, but in digital format since October 2001), was the systematic record of office usage by the population. However, most counties only entered the project in this phase; since the approval was issued mid-year, the county budgets didn't allow for installation of CSOs nor for the recruitment of Extension Agents. So, only

after new offices opened in January 2002 was it possible to initiate all promotion and extension activities (coordination and contact with the population), by the Extension Agents and their coordination team (described in section I).

In this period, the average number of usages was about 40 per month, in each CSO.

ii. Initiating the activities of the extension agents – Feb/2002 to Jun/2002

Up to November 2001, only 4 Extension Agents had been hired; these were coordinated from the UTAD until June 2002. The hiring process of the remaining Extension Agents and Mediators (for the new CSO) began in January 2002; therefore, only from February that year did we manage to have new CSOs in operation, and have Extension Agents on the field. This was also a period during which the people in charge of coordination were hired, and also for development of the management methods of the entire process.

During this period, the average number of usages per office grew from 52 per month (Feb.), to 122 per month (Jun.).

iii. Final period – Jul/2002 to Oct/2002

This period's major feature was the stabilization of the main variables impacting the project performance: the Agents had been hired and were working on the field, as well as the Mediators, and the network of CSOs was fully operating. The growth of average number of usages is less pronounced, as is to be expected of a service that is no longer in its launching phase. There was only one moment of negative growth, which matched the most severe month of Winter in the region; however, it also matched a phase during which the strategy of contact with the population had to change: we had to redirect an approach of “installation/presentation” to one of improvement of the services available, and increasing the local awareness to their usefulness.

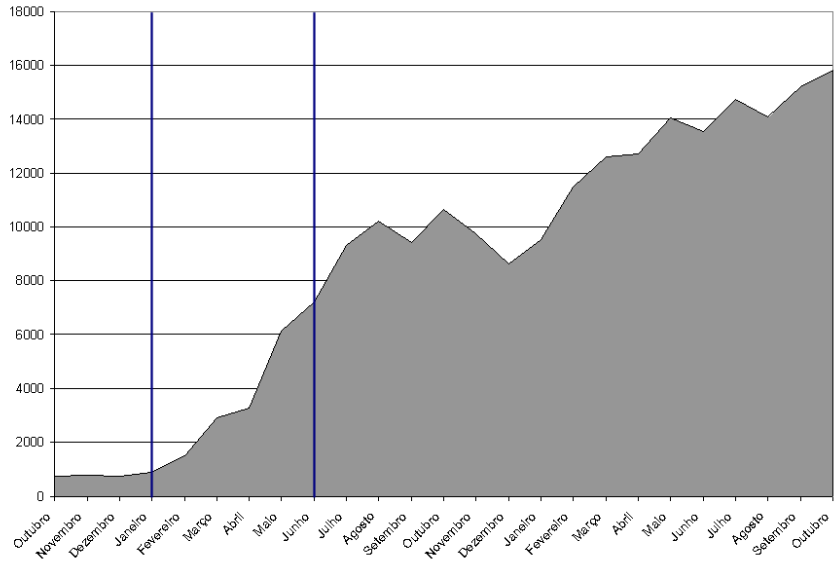
During this period, the average number of usages per office grew from 145 per month (Jun/2002) to 205 per month (Oct/2003).

Final coverage ratio (avg. usages /avg. inhabitants): 22.28%.

V. Total number of usages

The total number of usages presents an evolution quite similar to that of average number of usages. One must, however, point out that this occurs while the number of CSOs changes. This means that the new CSOs, as they were being opened, were generally presenting a behaviour (in terms of population adherence), similar to that of existing CSOs.

This behaviour, definitely, was not to be expected if each county had moved on separately with similarly-oriented projects. In our opinion, it was constant tracking, a close-by management of new offices and Agents, that made it possible to transfer to the new offices the experience and methods developed in those already operating.



4. Evolution of the total number of monthly usages in the CSOs

In July 2002, all offices were open. The left-most section of the chart reflects two types of realities (opening of new offices and an increasing number of usages), that only the previous chart (average usages) can clarify; but the right-most section data (July 2002 to October 2003) were collected with a stable number of open offices, and therefore reflect an effective increase in CSO usage by the population.

The execution phase of the project was then deemed completed in October 2003, with a total number of usages greater than 15,800 per month.

VI. Data used for deeper analysis

During 2003, the overall situation in the field was stable, in terms of:

- § number of open offices;
- § number of hired Extension Agents;
- § level of professional experience, by Mediators, Extension Agents and Coordinators.

Since this was also the final phase of the project, our demographic and typological analysis elected this period, for, in our view, it is the one that best represents the project in terms of results, execution and community involvement.

VII. Demographic analysis

i. Gender

The offices are used, virtually without distinction, by men and women.

Table 2: Usages by gender

Gender	% of usages
Female	49.57%
Male	50.43%

ii. Age

The age group analysis prompts several conclusions:

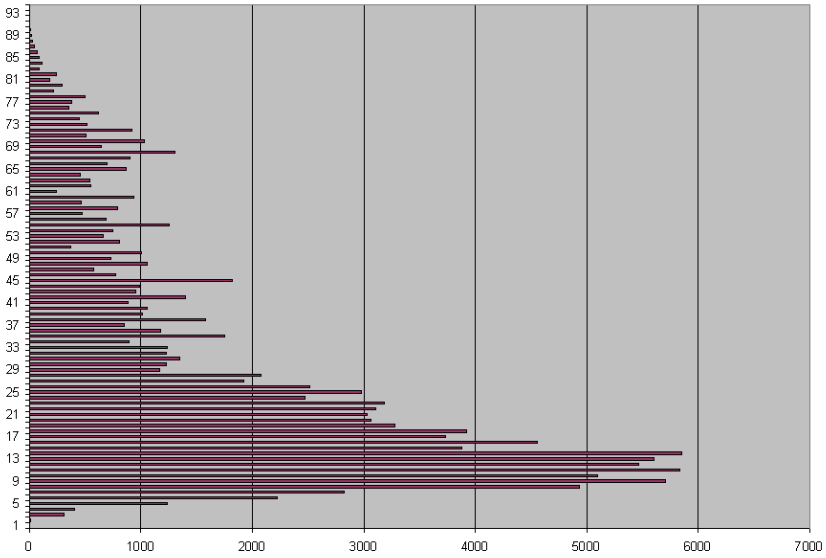
- While young people have a crucial role, as would be expected, senior citizens are also regular users of CSO: citizens over 65 years of age account for 8.25% of all usages.

- Even citizens of the eldest senior group, i.e. over 80, are using the offices: they accounted, during 10 moths of 2003, for a total 1,172 usages.

- No age group is excluded from the service: citizens over 30 years of age account for 32.53% (about 1/3) of all usages, without a specific moment where age-related reduction occurs.

Table 3: Usages by age group

Age group	No. of usages	% of usages
0-5	1962	1.46%
6-9	15676	11.70%
10-12	16400	12.25%
13-17	23630	17.64%
18-25	25028	18.69%
26-40	21030	15.70%
41-59	16442	12.28%
60-64	2719	2.03%
65-79	9872	7.37%
80 and >80	1172	0.88%



5. CSO usages by age

VIII. Typological analysis

i. Profession

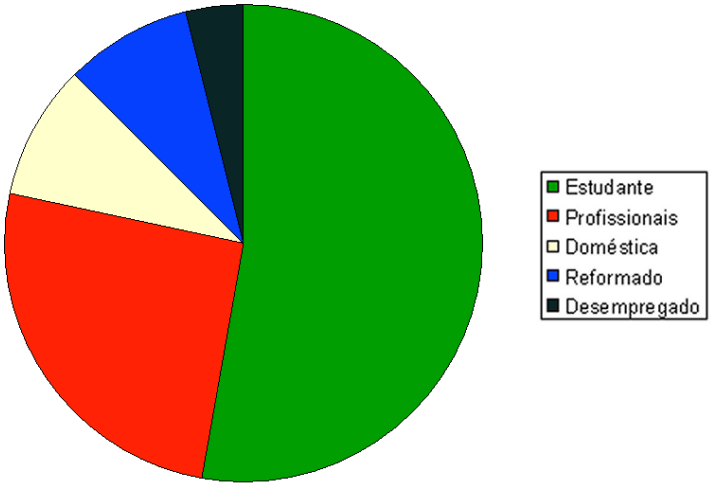
We are glad to say that 47.30% of users (almost half) are not students – which shows, again, that CSOs are strongly integrated into the daily life of the population in these sub-counties. The percentage of students virtually matches the users aged between 3 and 21. However, almost all professional activities in the region can be found in the list.

Table 4: Usages by profession

Profession	% of usages
Students and trainees	52.70%
Housewives	8.93%
Retired	8.76%
Farmers	4.37%
Teachers	4.04%
Unemployed	3.85%
Public servants	2.94%
Salespeople	1.86%
Construction workers	1.71%
Graduated technicians	0.89%
Businesspeople	0.81%
Military/Police	0.64%
Nurses	0.14%
Stonemasons	0.10%
Doctors	0.03%
Others	8.23%

An analysis by major groups provides a simples view:

Profession	% of usages
Students and trainees	52.70%
Housewives	8.93%
Retired	8.76%
Unemployed	3.85%
Professionals	25.77%



6. CSO usage by profession

ii. Requested services

In spite of the percentage of young users, we realized that CSO usage goes far and beyond mere entertainment. In fact, on-line gaming accounts for only 1/5 of all usages. Even if we add Web surfing, chat, Instant Messaging and SMS messages (which are not always for entertainment purposes), we get just 33.78% - i.e., a third of all usages.

We can thus clearly state: the vast majority (63.60%) of CSO usages reflect practical, daily needs of the communities. These activities either wouldn't be done at all, would be postponed until an opportunity to travel to the county capital would come up, or would require a specific trip, with associated costs (fuel/public transportation, time, effort, etc.).

A most significant value is also one that could easily go unnoticed: "Activities promoted by Agents - 0.85%". This figure represents all activities devised by Extension Agents to promote the CSOs, so that the population would realize the advantages that could arise from using them. They were also a way to make the CSOs present in the minds of the community members, and to make them aware of new ways to use the Internet and computers in general.

It is significant that this number is, nowadays, so small: in the roll-out phase (a time when there were no agents, only CSO mediators), the number of usages was, as we have already mentioned, extremely low. The fast growth of CSO usage is strongly linked with the activity of the Extension Agents among

the sub-counties' population. Since this figure is small, this means that the activities are, nonetheless, quite efficient, because their absence during the early stages on meant that CSO presence in sub-counties was not being taken advantage of.

Services	**% of usages**	
Web surfing + Seeking specific information	20.62%	10.83%
		9.79%
Playing games	19.22%	
Paying bills and using the NetPin terminal	15.62%	
Scanning and printing	10.91%	
Using e-mail	10.00%	
Plain computer use, no Internet	9.03%	
Using on-line services	6.71%	
Chat	1.65%	
Sending SMS messages	1.26%	
Reading newspapers on-line	0.78%	
Receiving training	0.66%	
Basic Information Technology Skills Diploma	0.43%	
Making a phone call	0.10%	
Instant Messaging (ICQ)	0.05%	
Building Web pages	0.01%	
Other services	2.95%	

IX. General conclusions

We find that the project was a remarkable success, considering the level of penetration in the daily lives of the population, under all analysed perspectives: gender, age, profession and literacy. All these variables indicate a strong degree of acceptance.

Also in what regards the kind of usage, we find that the large majority of usages if not for entertainment purposes. The services that are performed by this service would therefore, if it didn't exist, cause a trip to other towns, or possibly not occur at all, not benefiting the people.

The high number of collected data allows for quite a large number of different analyses, following distinct perspectives. For instance: reading newspapers on-line, while not being significant in general, is quite significant for the age group of 80+; 62% of all usages took place in the afternoon; after students, the professional groups that uses chat the most are musicians; on-line shopping, while almost non-existent, was performed, mainly, by housewives; the on-line services of Portugal Electric Utility company (EDP) are used, without any noticeable distinction, by people between 48 and 74 year of age; etc.

Keeping within the scope of the presented analyses, we find that the most relevant conclusions are:

- On-line services do not possess, culturally, neither a male nor a female image, thus contributing for equal opportunities.

- The offices of the Trás-os-Montes Digital project managed to achieve a high level of integration in the community, by looking at the usages performed by community members, both in terms of age and professional group.

- The activity of Extension Agents in the community, while limited, was essential for service use to effectively occur.

As a **key idea**, we can state that **rural communities** in Trás-os-Montes, in all sectors, **effectively use** new technologies and **the Internet, as long as the advantages for their daily lives are made clear**.

These good results were, however, strongly limited by technical restraints: the rural sub-counties in the region of Trás-os-Montes e Alto Douro only have narrowband Internet access (phone lines and ISDN). The speed limit causes a severe constraint to usage of on-line services: frequently, one must try and retry, until a request or form can be submitted; videoconferencing between the people and local government representatives can only be done with one or two participants at any given time (and even so, with bad quality); the communication costs are prohibitive, and communications are frequently unavailable, due to various technical deficiencies.

In order to achieve higher levels of efficiency, **so that the populations can use the Internet in a more reliable and engaging way**, using services that require a fast and constant connection, **its an absolute necessity for the region to have an adequate broadband communication infrastructure**.

X. Bibliography

Morgado, Leonel; Bastos, Isabel; Vilela, Jacinta; Machado, Jorge; Santos, Márcia; Ramos, Luís (2003). *Trás-os-Montes Digital and CES - A Case of Social Benchmarking*. Proceedings of the IADIS International Conference e-Society 2003, Vol. II, pp. 978-983, IADIS Press, Lisbon, Portugal. [An on-line version is available at http://www.utad.pt/~leonelm/papers/iadisesociety2003/e-society2003.html]

Morgado, Leonel; Ramos, Luís; Bulas-Cruz, José Afonso (2003). *Um Projecto de Combate à digital divide e de Modernização da Administração Local: Trás-os-Montes Digital*. Actas da Conferência Ibero-Americana WWW/Internet 2003, IADIS Press, Lisbon, Portugal. [An on-line version is available at http://www.utad.pt/~leonelm/papers/iadisalgarve/iadiswwwinternet2003.html]