

Exploration Network of the Trás-os-Montes Digital Project

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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 the model used for coordination and improvement of both networks – what we call the Exploration Network.

There is a companion paper in this publication, called “Analysis of Users of the Citizen Support Offices of the Trás-os-Montes Digital Project”. In it, we provide an analysis of how the population of the region of Trás-os-Montes e Alto Douro has made use of the system.

I. Introduction

For the past few years, a growing number of countries have been devising and implementing well-intended policies to support the development of the Knowledge and Information Society, by focusing mainly on the problem of using the new Information and Communication Technologies (ICT) to modernize governmental services. Examples of this focus (placing the ICT equation in the centre of a state-reform project) are mentioned in Morgado, Ramos, Bulas-Cruz, 2003.

A recent experiment in Portugal was developed by the University of Trás-os-Montes e Alto Douro (UTAD), partnering with several local and regional entities: the **Trás-os-Montes Digital** project (a.k.a. Cooperative Extension

Service in Trás-os-Montes e Alto Douro – SCETAD). This project aimed 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 the model used for coordination and improvement of both networks – what we call the Exploration Network.

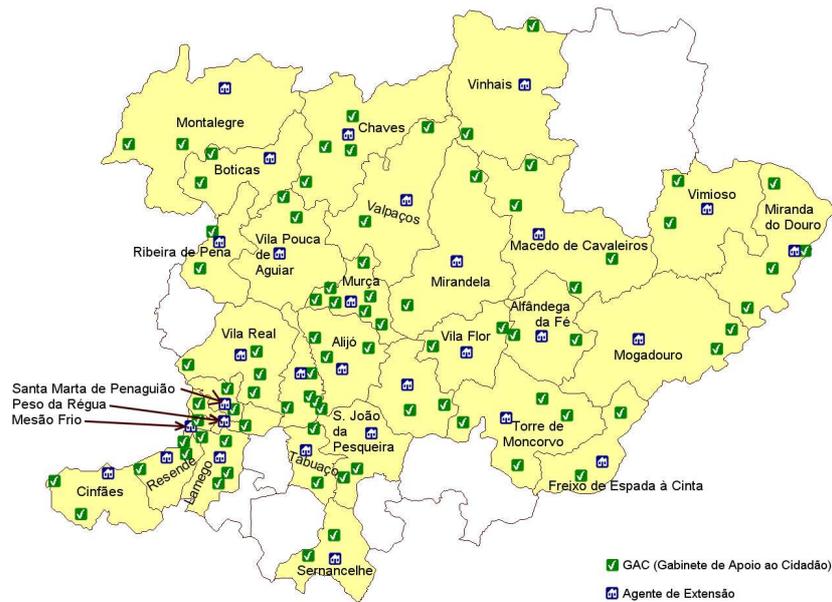
Launched in December 1999, the project's roll-out phase lasted until November 2000. The first execution phase started in May 2001 and lasted until October 2003.

This initiative had two goals: to favour the access to the Information Society by several population layers, and to spread the use of telematics in the local and regional public administration, focusing on the modernization of public services and greater proximity between the governments and the citizens. The fulfilment of these goals included, as aforementioned, the creation, at county capital, of workspaces for professionals involved in the promotion of these new technologies – Extension Agents; but it also included the creation of a network of Citizen Support Offices (CSO), in rural sub-counties far away from their county capitals. These CSOs allowed the establishment of a human relationship between the population and the technology. They also made available (based on local governments and on regional offices of national government institutions), a relevant set of information and public services.

II. Insertion in the region

i. Counties involved

The Trás-os-Montes Digital project is active in north-eastern Portugal, roughly matching the Trás-os-Montes e Alto Douro region. In 1999, the roll-out phase involved the county governments of Alijó, Chaves, Lamego, Macedo de Cavaleiros, Miranda do Douro, Sabrosa, Santa Marta de Penaguião, Torre de Moncorvo, Vila Nova de Foz Côa and Vila Real. For the first execution phase, these county governments were joined by those of Alfândega da Fé, Boticas, Carrazeda de Ansiães, Cinfães, Freixo de Espada à Cinta, Mesão Frio, Mirandela, Mogadouro, Montalegre, Murça, Peso da Régua, Resende, Ribeira de Pena, São João da Pesqueira, Sernancelhe, Tabuaço, Valpaços, Vila Flor, Vila Pouca de Aguiar, Vimioso, and Vinhais.



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

The project development was based on a multi-institutional partnership promoted by UTAD. This partnership involved a diverse set of local and regional entities; therefore the county governments are a crucial part of this partnership: the partnership with county governments, allowed us to scatter resources throughout the region, by creating the CSOs and the support bases for Extension Agents to work, as we'll explain further ahead.

ii. Internet access: Citizen Support Offices

The Trás-os-Montes Digital project adopted an operational model that allowed it to adapt to the local features and the diversity of goals: a network of Internet-access points was created (the Citizen Support Offices, CSOs), in sub-counties selected by the county governments, each CSO having a support clerk (“Mediator”).

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.

iii. Network of CSO

During the roll-out phase, between November 1999 and November 2000, 20 CSOs were created and managed (two per county). 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 county governments. 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).

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

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)

iv. Connecting to the people: County Extension Agents

Since the Mediators have to be present at the CSOs at all times, they have limited active intervention within the population. A basic philosophy of the field approach for the Trás-os-Montes Digital project may be stated as “go meet people, instead of laying in wait for them”.

To fulfil this idea, we needed to bridge this gap between technology and people. For this purpose, we created, together with the county governments, the role of County Extension Agent. These agents are a set of people with graduate education, whose mission it is to contact the population, to understand their daily lives and needs.

From this actual knowledge, they must create and promote activities, aimed at showing people how each 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.

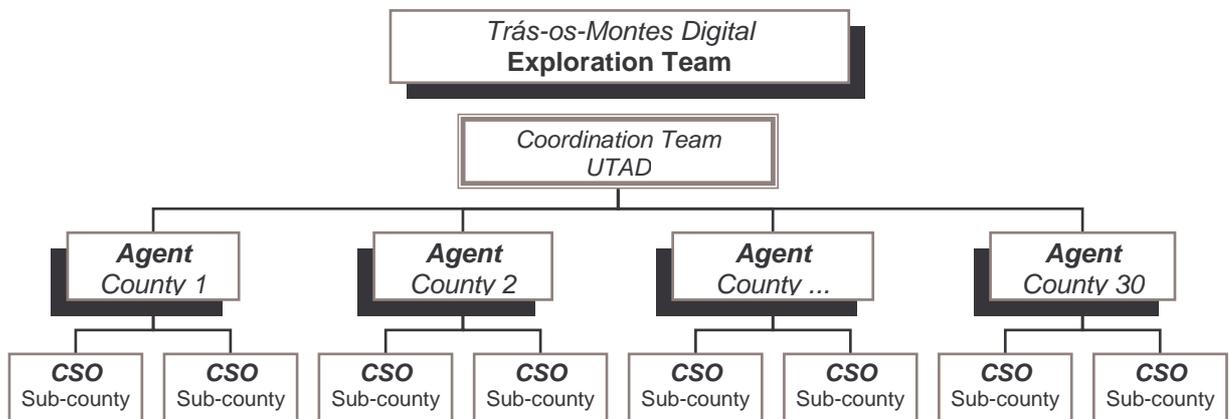
Beyond this crucial role, since each Extension Agent operates in a single county, s/he is also a pivot between the county's people and institutions, and the Trás-os-Montes Digital project. The Agent is a contact, with a deep knowledge of the county.

v. Linking to the project coordination

An Agent's work base is at the county government building, in a rural county. The agent is also in constant contact with the population, the Mediators and the county's institutions, but has limitations regarding the background development of activities, technological problem-solving, updating his/her professional training, etc. On his/her own, the ability to act effectively in the field is limited.

For this reason, the team at UTAD performs a global coordination of all 30 Agents. The agents meet weekly, in groups of 7 or 9 agents, to coordinate efforts and initiatives; the coordination team at the UTAD tracks the work in progress in each county, evaluating its development. This team also acts in a strategic manner, by proposing initiatives, scheduling professional training and defining mid-term and long-term goals.

This field work coordination and development structure is clarified in figure 2.



2. Functional diagram

III. Operational model

i. Development and coordination of field activities

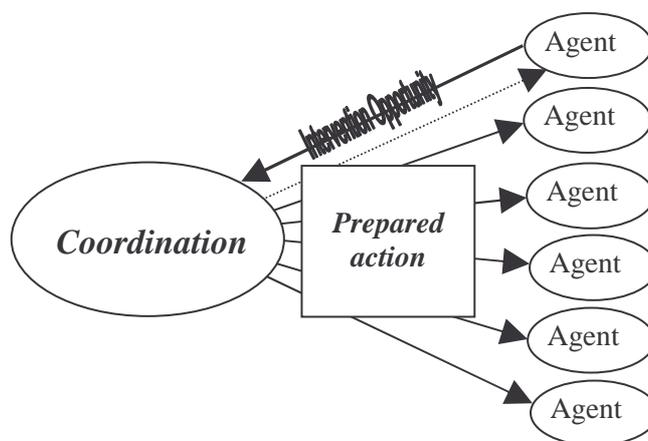
The activities aiming at developing people's awareness to the advantages of using computers and the Internet are enacted on two ways:

- § An agent, through his contacts with the population, becomes aware of a specific need, or of a human activity that can be improved, or made possible thanks to the Internet.

§ The project coordination, which must be watchful of developments in information technology, defines a new field of action, and provides sample activities.

These sources of ideas generate what we call **Intervention Opportunities**. Building from these opportunities, we devise **Actions** (this can be done by an agent, a group of agents or by the coordination team). The resulting model is presented in Figure 3.

The crucial role of the coordination team is precisely this: to receive the constant flow of Intervention Opportunities and proceed to take advantage of them in as many counties as possible, by making Interventions Actions flow to the field.



3. Model for coordination of activities

ii. Goals for coordination of agents and mediators

As we explained previously, the Exploration Team is composed by Mediators (at the CSOs), Agents (operating in the entire county) and coordination elements. In this team, the coordination acts as a chain-link, organizing the work performed by County Extension Agents and Mediators, and ensuring its efficiency. The coordination is also a communication channel with the other areas of the Trás-os-Montes Digital project. This allows for a faster transmission of all problems that arise, and of all answers that are found.

The coordination activities also include the creation of training plans, for both Mediators and Agents. The Agents, on their part, act as county-specific point for delivering the content of the training sessions.

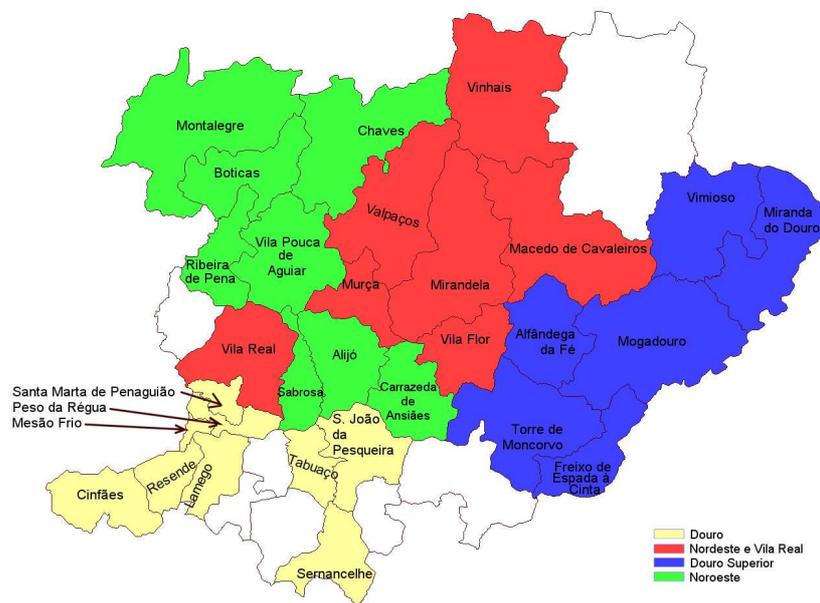
It is the very existence of this coordination that allows agents to act as members of a team rather than just a geographical scattering of human resources and skills.

IV. Coordination

i. Coordination areas

The high number of agents (30) renders it impossible to provide personalized monitoring and support of the daily developments in their activity; for this reason, the coordination grouped the agents in **Coordination areas**, each assembling from 7 to 9 agents/counties, under a specific **Area Coordinator**, who is responsible for his own group of agents.

Such areas are not static: since they arise from a management requirement rather than from field features, they have changed from time to time, and it is expected that they will again, according to the needs of efficient and effective management.



4. Coordination areas

ii. Key action: weekly agents' meetings

The work methodology was based on the creation and development of actions, as explained previously. In terms of actual operations, this takes place as follows: in each county, the agent prepares some activities, based upon his/her contact with the population; these activities are monitored by the area coordinator, which discusses, evaluates and validates them, in association with the other coordinators.

Phase	Operations
1	An agent identifies an opportunity and devises an action (with or without coordinator support).
2	The action is presented and discussed in the weekly agents meeting.
3	The agents develop the activity in their counties.

4	Throughout one or several weekly meetings, this activity is evaluated and improved.
5	The coordinator provides the other coordinators the final activity, and the acquired experience.
6	The coordinators present this activity during their weekly agents meetings.
7	The agents develop the activity in their counties.

5. Coordination of the activities of Extension Agents

Weekly, an agents' meeting takes place (within a coordination area). During these meetings, the work performed during the previous week is presented and discussed, as well as ongoing activities, aiming at improving them, solving problems and try out activities in new counties. Planning of future actions also takes place, with all agents taking part.

This way, activities are developed and tried out in a small group of counties, which identify the major troubles and operational methods, what worked out and what didn't, how can the activities actually be carried out, etc. Afterwards, the other coordinators forward the activities to the remaining Extension Agents (during their own weekly coordination meetings).

This way, each action reaches the population already improved and better adapted to each county's special features. We have therefore managed to have our initiatives reach a higher number of people than we would if activities were restricted to their original county.

Another important aspect is the fact that these meetings take place weekly. It's this pace that allows for the fact of it sometimes only taking a month, from identification of an opportunity to implementation of an action takes place in all counties. Figure 5 presents a table with the general meeting-based sequence of coordination.

iii. Tools supporting the coordination of agents

The process of coordination we just described proved to be quite discretionary, given that performance assessment for this kind of operations is always subjective.

Our hands-on experience made us adopt a set of tools that allowed us to better manage the agents' time, but also provide similar and fair degrees of comparison.

- § During the weekly meeting, mandatory topics are the analysis of activities developed during the previous week, and the planning of the coming week.

- § In each county the agent's activities are continuously integrated with the CSO activities, seen together as an autonomous county team.
- § **Agent's Monthly Plan:** it is a schedule template, providing the work organization for an agent (meant to support time management and effort coordination).
- § **Area Coordinator's Monthly Plan,** similar to the agents', but regarding the coordinators' performance.
- § **Daily Logs:** brief record of each day's actions, in order to quickly produce monthly reports, in due occasion.
- § **Monthly Report Template,** both for agents and mediators

iv. Sample of activities by area coordinators

The coordination actions, due to their nature of response to the field evolution and intervention opportunities, are diversified and hardly categorizable. Nevertheless, in order to provide a better understanding of this role, we chose to present a few actions performed by coordinators in the project.

- § Creating monthly plans for area coordinators and agents.
- § Meetings with the Agriculture Offices in each county, with Area Supervisors of the Regional Agriculture Directorate of Trás-os-Montes e Alto Douro (DRATM) and with DRATM "Family Technicians", alongside Agents and Mediators.
- § Improving integration between Agents' activities and CSO activities, in order for each county to work autonomously.
- § Meeting with and contacting several local and county-wide institutions.
- § Preparing and monitoring the professional training actions.
- § Organizing a general meeting of mediators, to raise awareness for the work done at the CSOs, the major problems, and ways of overcoming them.
- § Organizing general meetings of Agents, to ensure a general coordination of all aspects of the Agents' activity.
- § Supervising a Web site for Service Reception, where all *e-government* service requests submitted at the CSOs can be found.
- § Contacting project partners, in order to accelerate the replies to submitted requests.
- § Monitoring all activities taking place in the counties.
- § Unannounced visits to CSOs and Agents, for quality control.
- § Devising procedure manuals.

V. Connecting to the people

i. The work of County Extension Agents

The Agents' major role is contacting people – talking to people – in order to detect the citizens' needs, thus allowing them to prepare new activities and expanded services. It is crucial that an Agent doesn't take a passive role, that s/he does not lay waiting for people to say what they want. Rather, an Agent must investigate what kind of activities can be useful.

The Agents' role is based on the following goals:

- § Creation of ways and strategies for promotion of the new Information and Communication Technologies amongst the population.
- § Ensure the flow within the county governments of all services requested at the CSOs.
- § Tracking the processing of e-services requested at the CSOs, pursuing a fast reply from relevant institutions.
- § Promotion of the Trás-os-Montes Digital project and of the services available at the CSOs, thus being a chain-link between the people, the CSOs, the county governments, the partner institutions and the project's coordination team.
- § Creation of ways and strategies for promoting new technologies and the Trás-os-Montes Digital project amongst the population.
- § Assessment of needs and goals of the population, aiming to improve the quality of current services and planning activities to be launched.
- § Taking part in the weekly meeting with other Agents and Coordination, to plan activities, receive guidance and exchange ideas, to further improve the project and provide an ever more useful service.
- § Guide, help, sort out problems and clear doubts for the Mediators, during the developed activities.
- § Promote the use of the CSOs, by making new services available and creating new activities.
- § Regularly perform street interviews and contacts.
- § Using daily logs and presenting monthly reports.
- § Making available information and news that are useful to citizens.

ii. Sample activities

The presented model allowed, through direct contact with the counties' citizens, for the development of actions that were directly inspired by actual

needs of the population. Due to the huge variety of these actions, we chose to present but a few, that provide nice examples of the thematic richness that this operational strategy promotes.

§ **Seasonal Job Gallery**

The lack of employment in the region, the lack of workmanship in a few areas, and the lack of announcements regarding job offers and job seekers, led to the creation of a job gallery. As usual, this took place in one county first, but is now available in all 30 counties. All interested parties contact an Agent or CSO and fill in a form. This gallery was initially managed by plain e-mail; but once the relevance of the service was confirmed it quickly evolved into a Web-based management and operation interface.

§ **Post Office services available at the CSOs**

Some sub-counties don't have a post office, so we used the Internet connection at the CSOs as a basis for a cooperation protocol with the National Postal Service ("CTT"), providing this company's services through the CSOs. The citizens can thus avoid a trip to the county capital.

§ **Support to war veterans**

The agents found out that a large number of colonial war veterans couldn't manage to get information on the legal aspects for applying to extra pension and retirement benefits. Therefore, the agents collected all necessary information, so that by using the Web site of the Ministry of Defence (among others), they could help war veterans fill in and submit the required requests.

§ **Street interviews**

The major goal of this initiative was improving the method used by agents when contacting the population and assessing its needs, resulting in CSO-provided and Agent-provided services.

§ **Net-Radio Show**

The counties involved in this activity promoted the Trás-os-Montes Digital project by radio (presenting all services, all activities and events).

§ **Recycling campaign**

Raising awareness in the population to the importance of recycling, by placing bins in the CSOs for garbage-separation and collection of ink cartridges, batteries and paper.

§ **Library extension**

An activity particularly relevant for the sub-counties farther away from county capitals. Usage of the CSOs as a mini-extension of the county library, allowing for book requests through e-mail.

§ Activities for people with special needs

Aimed at the elder and the disabled, these activities are framed within the continuous effort by Agents to take the Internet to all age groups and social status.

§ Activities with elementary schools and preschools.

Promotion of new Information and Communication Technologies (ICT) in the younger age groups – an opportunity for children to develop their abilities, socialize and meet each other, besides fostering social development.

iii. The role of the Mediator

The main role of mediators is keep the CSO operational, by helping people use the hardware and software. It's also the mediator's task to represent the public institutions whose *e-government* services are made available through the Trás-os-Montes Digital project, by filling in the forms and working with the Agent, in order to track the requested services.

Thus, the mediators' role is based on the following goals:

- § To ensure the CSO is opened as scheduled.
- § To receive the public.
- § To pass on service requests performed by the citizens (track the reply process and make the reply reaches the requester).
- § Promote the CSO.
- § Help people whenever they have doubts.
- § Create a monthly report of the CSO operation.

VI. Conclusions

By implementing a technological project in a disadvantaged region, the regular path would be to focus on technical requirements, on hardware, software and professional training – these aspects where not forgotten.

We believe, however, that without a proper structure for human management and support, the technical resources installed cannot be employed efficiently, neither can the skills gained through professional training: professionals, if isolated, unaware of the resources available – sometimes in their home town – without strategic guidance, tend to stagnate or act in a limited way. Given the geographical scattering of skills and resources, it is quite common for a professional to feel isolated, “the sole runner”, unless s/he is integrated in a network providing management, technical support and transmission of know-how.

Given the region's characteristics (geographical dispersion, low development ratios, lack of human and financial resources), this management model allowed for the pooling of human and technical means, achieving results and impact within the population.

VII. Acknowledgments

The model we presented originated from an initial idea of this paper's authors, later refined through daily contact with the problems of working in the field and having to coordinate all human and technical resources. However, this experiment would not have taken place without the effort and commitment of all members of the Exploration Team: coordinators, agents and mediators. For this reason, we would like to thank: Íria Ferreira, Jacinta Vilela, Márcia Santos, Jorge Machado, Sandra Rocha, Rui Gonçalves, Alexandra Amorim, Adelina Batista Teixeira, Albertina Maria Santos Dias Lopes, Alexandre José Meireles Lopes, Ana Maria V. P. Gonçalves Teixeira, Ana Raquel Pinto, André Henrique da Rocha Alves, António Augusto Lara de Sousa, António Jorge de Sousa Pereira, António José Carvalheiro Aldeia, António José Faustino Constâncio, António Júlio Castanheira Mendonça, António Manuel Andrade Araújo, Armindo Manuel Santos Macedo, Betina Marisa Gomes Ruivo, Carla Sofia Pinto Botelho, Cláudia Alves Amaral Pinto, Cláudio Batista Vitorino, Doroteia Joaquina Brasileiro, Elsa Maria Martins, Eulália Valadares, João Paulo Almeida Abreu, Luís Fátima Gonçalves Liberal, Maria de Fátima M. Silva Ferreira, Mário António Teixeira Pinto, Mário Pedro Figueiredo Daniel, Paula Cristina de Oliveira Cordeiro, Paula Cristina dos Anjos Vicente, Paula Cristina Reis Salema, Paula Maria Quadrado Pires, Pedro Miguel de Sousa Rocha, Rui Manuel Serqueira, Sónia Maria Correia Oliveira, Susana Maria da Costa Pinto, Zélia Maria Pires Fernandes, Abel João Carvalho Xavier, Alexandra Ferreira Leonor, Alexandra Patrícia Lopes Gomes, Alexandra Rodrigues Mendes, Alexandre da Silva Moura, Alzira Maria Teixeira Sousa Pinto, Ana Cristina Coxito dos Santos, Ana Cristina Exposto Rei, Ana Cristina Sousa, Ana Maria Guedes da Costa, Ana Patrícia Moreno Pena, Ana Paula Balsa da Silva, Ana Paula Oliveira Carvalho Lourenço, Ana Paula Pereira Batista Catarino, Ana Portal, Anabela Sofia Alhais Aguiar, Andreia Maria Pinto Meireles, António Augusto Xavier Alves, António José Peralta Pereira, António Manuel Sousa Soares, Aquilino da Cruz Carvalho Afonso, Arelino Augusto Alves Preto, Carla Maria Pimentel, Carla Pereira, Carlos Manuel Alípio Lucas, Catarina Amaro, Catarina da Conceição Paiva da Fonseca, Catarina Isabel Lavrador Gonçalves, Celina Susana Oliveira Coelho, Cláudia Sofia Eusébio da Silva Ramos Fernandes, Cláudia Sofia Rodrigues Castanheiro, Cordália Paredes, Cristina Isabel Barreira Seródio, David Paulo Cruz Madureira, Deolinda da Conceição Ferreira Morais, Diana Conceição Caetano de Castro, Dina Alexandra Mota Gomes Soares, Dina Cidália Veiguinha Guedes, Elisa Ana Margalho de Campos Salgado, Elisabete Pinto Barreira Alves, Estela Marina Rodrigues Ribeiro, Eugénia Maria Milhais Oliveira Miranda, Eva Sofia Pereira Lopes, Fátima Dias, Fernando José Salvador, Fernando Luis Carvalho Cardoso, Gonçalo Frederico Sousa Costa, Helena Maria da Silva Santos, Hugo da Silva Ferreira, Idolina Cândida Fonseca Nicolau, Irene da Cruz Ruano Fidalgo, Isabel Maria Neto, Isabel Maria Oliveira Morais, Isabel Maria Oliveira Morais Catarino, João Alberto Oliveira Silva, José António de Seixas Meireles do Carmo Cardoso, José

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