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## Abstract

The European Union's structural funds are one of the few options currently available to finance technological infrastructures. This is an opportunity to be exploited by the University of the Azores. The ideal partners of UAC are the FCCN and the universities of the outermost regions of the EU, represented by UNAMUNO association. The OERAAN does not need to be real but can be a virtual network and use the third-party infrastructures. There are several reasons to submit a proposal to the FP7 and just one not to do so.

Keywords: collaborative projects; education economics; digital divide; infrastructures; outermost regions; structural funds.

## Introduction

In the current conjuncture of economic and financial crisis, the structural funds of the European Union are one of the few options available to finance infrastructure as computer equipment, video conferencing systems and internet backbones.

In this paper I focus on analyzing a specific call of the Seventh Framework Programme for Research and Development (FP7), suggesting potential partners and providing relevant information for a proposal to be presented and enable these institutions of European outermost regions of the Atlantic area rely on an infrastructure that reduces the digital divide that separates of the mainland counterparts.

The paper is part of the outputs from the research 'Implementation Strategies and Development of an Open and Distance Education System for the University of the Azores' funded by the European Social Fund.

The main objective of this research was to observe the recent events related to likely paradigm shift in the educational area and propose to the UAC the adoption of solutions that can, at the same time, correct implementations that have already been made, meet their internal demands and respond to these new challenges.

Specifically for infrastructures, in the FP7 there are two relevant calls: ICT and INFRASTRUCTURES.

The call FP7-INFRASTRUCTURES-2013-1 (INFRA-2013-1.2.1: GÉANT), for example, was published on 10/07/2012 with the submission deadline on 05/12/2012.  
(<http://ec.europa.eu/research/participants/portal/page/capacities?callIdentifier=FP7-INFRASTRUCTURES-2013-1>)

In this invitation were provided for the following actions:

- ICT based e-Infrastructures;
- Support to existing infrastructures.

(<https://infoeuropa.euroid.pt/registo/000049557/>)

The calls of FP7 are not of easy comprehension and/or submission. They sin by the lack of clarity, lack of objectivity and refer to an excess of external documents to the text of the call - not compiled - plus an extensive related legislation.

A given document never brings a concise text, but always refers to others. Many of the documents were not rewritten, but are pdf files of legislation publications (such as the invitations).

Not even the submissions of online forms of a specific call are kept at each new call. Not that these changes signify some improvement and/or error correction checked earlier. Most times there is only the store swap of the information requested, with a different approach and often redundant, as if a pseudo-expert (or group) just wanted to show service year after year to justify their positions.

It is a further difficulty imposed to newcomers in addition to rely with a system of evaluation strongly marked by the presence of the status-quo that dominates the European research and education institutions and thus favours the holders and/or beneficiaries of previous calls to the detriment of new propositions.

It is an enormous task and at national level you must use all the information and support that Portuguese FP7 Promotion Office (GPPQ) offers.  
([http://www.gppq.fct.pt/\\_7pq/](http://www.gppq.fct.pt/_7pq/))

Compete for these calls can be an opportunity to be exploited by the University of the Azores (UAC) to improve infrastructure between the mainland and the islands (nine islands). Infrastructures for ICT is a rather vague term nowadays but connections of better quality (bandwidth), means of communications as video-conferencing and computer equipment in order to improve the means for researchers to interact should be within the requirements.

The document Guide for Applicants CP-CSA-INFRA (2013) brings the following information:

1) Participation: “there must be at least three legal entities established in different EU Member States or associated countries (the countries concerned are listed in section 3). The entities must be independent of each other”. (page 6)

2) Target audience: “research infrastructures and their stakeholders, public authorities, technological partners, research institutes, universities, industry, including SMEs, potential end-users”. (page 6)

3) Indicative average duration: “for Integrating activities, the recommended duration of a project is 4 years”. (page 6)

4) Activities: “an integrating activity shall combine, in a closely coordinated manner: (i) networking activities, (ii) transnational access and/or service activities and (iii) joint research activities. All three categories of activities are mandatory as synergistic effects are expected from these different components. It is recommended that at least one third of the EU contribution is allocated to the transnational access/service activities”. (page 7)

Initially Ribeiro (2012) suggested that “it would be interesting to do something like ‘Islands Network’, for example: Azores (Portugal), Canary Islands (Spain), Aegean Islands (Greece)”.

In a preliminary proposal (INFRA.Part.A.OERAAN), Roth (2013) suggested some partners as well as the project name, which could be “Outermost Regions of the European Atlantic Area Network” (OERAAN).

My analysis shows that probably the ideal partners of UAC are the universities of the outermost regions of the European Union, represented by “Outermost European Universities Network” (UNAMUNO).

(<http://www.redeunamuno.pt/>, <http://www.redunamuno.es/>)

The UNAMUNO network is composed, in addition to the universities of the Azores, Madeira and the Canaries, by the higher education institutions of the French West Indies and Guiana,

Laguna and Reunion Island.

Recently the University of Cape Verde joined this network, but this extrapolates the call in the sense of not belonging neither to a Member State nor associated country.

The Medium Term Strategic Plan of the University of the Azores (2009-2011) specifies in "1.2. Actions" (page 7): e) The dinamisation of the UNAMUNO network, made up by the universities of the outermost regions of the European Community.

In UNAMUNO the contact details of the UAC are invalid because the university is no longer using the emails that were on the Notes server "@notes.uac.pt" but only "@uac.pt". This aspect requires some attention in maintaining institutional contacts. Should never be used personal emails because people change, and contacts remain...

UNAMUNO Association (7 universities)

([http://unamuno.uma.pt/index.php?option=com\\_aicontactsafe&view=message&layout=message&pf=5&Itemid=77&lang=es](http://unamuno.uma.pt/index.php?option=com_aicontactsafe&view=message&layout=message&pf=5&Itemid=77&lang=es))

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The paper argues that two references can mean a difficulty to be overcome by the UAC, in accordance with instructions contained in the Guide for Applicants CP-CSA-INFRA (2013).

The first reference is in presentation: "Proposals shall be submitted solely by legal entities operating the NRENs or legal entities created by the NRENs to contribute to the deployment of connectivity and services on a pan-European scale (e.g. DANTE, TERENA, NORDUnet)". (item 5)

A National Research and Education Network (NREN) is a specialized internet service provider dedicated to supporting the needs of the research and education communities within a country. (<http://en.wikipedia.org/wiki/NRENs>)

In Portugal the NREN is the Foundation for National Scientific Computing (FCCN). However the FCCN is not responsible for the regional backbone (between islands) and the condition of being in the Autonomous Region of the Azores may give to UAC this possibility of direct application, without intermediaries. (<http://www.fccn.pt/en/>)

Moreover, the requirement of having international partners opens the possibility of the proposal being submitted by NRENs these countries than in the case of Spain and France are successively RedIRIS and RENATER. (<http://www.rediris.es/>, <http://www.renater.fr/>)

In previous calls to the FP7-INFRASTRUCTURES-2008-2 have already been observed the participation of universities (University of Malta), whether in countries that do not have a formal NREN or even when the regions are not met by these (the case of the Azores). (<http://agenda.nikhef.nl/getFile.py/access?contribId=12&resId=0&materialId=0&confId=373>)

In the proposal "Multi-Gigabit European Research and Education Network and Associated Services (GN3)" of 2008 deserves attention the item 1.3.2 '(Proposed methodology): The project has three main technical objectives. The first is provision and operation of the backbone, coordination of the GÉANT NOC and all NREN NOCs etc'.

That is, the first objective was the provision and operation of backbone. And this is exactly one of the things that the UAC needs, a high-speed backbone (connected to GÉANT network via FCCN or other NREN) whose supply and operation is assured.

Another reference is related to the maximum reimbursement rates. Some items are not fully covered, but others are. But the word "refund" always refers to the logic: spend the money first, prove the expenses and receive the payment later.

For Ribeiro (2012) this is a necessary procedure in Portugal: "We have spent many years creating solutions to problems which did not exist with just a senseless waste of resources". Thus, entities that had the problem and want to do something, can do so at a lower cost (but always with a cost).

In the Guide for Applicants CP-CSA-INFRA (2013), Annex 3 (Budget), is broken down what is covered (or not) and what can be considered "indirect costs", "personnel costs", "subcontracting", "other direct costs", "total budget", "requested EC contribution", "other revenue".

There is always some leeway to compensate for what is not covered by the EC through what already exists and what partners can collaborate. And in the case of the Azores, the Regional

Government and Portugal Telecom (PT), among others, may complete what is lacking.

Maximum reimbursement rates of eligible costs by the EC are:

- Research and technological development = 50% or 75% \*
- Coordination activities = 100%
- Management activities = 100%
- Other activities = 100% \*\*

(\*) For participants that are non profit public bodies, secondary and higher education establishments, research organizations and SMEs.

(\*\*) For connectivity services costs, the maximum reimbursement rate shall be 50% for all participants.

The first part (research and technological development) to the UAC has coverage of 75%. The remaining 25% need not come, necessarily, from own resources, but can be allocated by what already exists.

At the other activities are included connectivity services and here there is a limit of 50%, in the case for the leasing of circuits. This is an item where there may be the support of Portugal Telecom and the Regional Government to take the other 50% share, because it is in the interest of both parties. They just need to come to terms...

Veiga (2012) pointed out the possibility of getting a lambda with the PT.

A lambda is an individual wavelength of light for transmitting data on a strand of fibre-optic cable. (<http://www.linktionary.com//lambda.html>)

In a certain way the EC covers many possibilities. So this is not a proposal in which the UAC will have to enter, necessarily, with compensatory measures that depend on the current budget of university. The matching funding from the University may, in some way, be based on what already exists, which includes the existing backbone (between the islands and the mainland) and the existing structure (physical buildings), etc...

If the other partners are called at the negotiating table (FCCN, PT, Regional Government, other universities, other NRENs) will be possible to establish the terms for each and what each part can collaborate in the project.

It is also a way to choose partners (who have interest and capabilities to participate).

Roth (2013) suggests as national potential partners of University of the Azores the FCCN, Azores Regional Government, PT and University of Madeira. As international potential partners, the Spain (Canary universities: ULL and ULPGC), France (University of the French West Indies and Guiana: UAG) and England with their respective NRENs: RedIRIS, RENATER and DANTE. And the UCV (ICPC):

- Foundation for National Scientific Computing (FCCN), Portugal;
- University of the Azores (UAC), Portugal;
- University of Madeira (UMa), Portugal;
- Public Business Entity Red.es (RedIRIS), Spain;
- University of La Laguna (ULL), Spain;
- University of Las Palmas de Gran Canaria (ULPGC), Spain;
- National Telecommunication Network for Technology, Education and Research (RENATER), France;
- University of the French West Indies and Guiana (UAG), France;
- University of Cape Verde (UNICV), Cape Verde;
- Delivery of Advanced Network Technology to Europe (DANTE), United Kingdom. (<http://www.dante.net/>)

Anyway, this is an extensive and complex documentation that must be analyzed by several

people as well as the national support (GPPQ) and eventually the FCCN.

The overall objective of the call INFRA-2013-1.2.1: GÉANT is to advance towards the GÉANT expert Group 2020 vision, enabling data-intensive collaborative research and education anywhere in Europe and beyond, through innovative services and operational excellence. This also implies bridging the digital divide and ensuring the free and unimpeded movement of scientific data and knowledge in the EU.

Specific objectives to be addressed are (Guide for Applicants CP-CSA-INFRA, 2013):

a) Support knowledge communities' growing requirements, address the approaching data tsunami and evolve GÉANT by:

- deploying the 100 Gbits/s technology across Europe and improving peering;
- developing, testing and operating innovative user-centric services; decisions for investing in new services should be based on a clear business case and commitment to deploy by several NRENs;
- strengthening the EU added value of GÉANT: adopt federated authentication and authorization infrastructure (eduGAIN); define decision-making procedures for aggregating demand, brokering services and joint procurements at European level on behalf of NRENs; and aligning to the most recent regulations, for example, in terms of data protection;
- reinforcing Europe's position as a hub for global research networking, by ensuring intercontinental as well as neighbourhood connectivity;
- seeking synergies with public services at European and national levels when appropriate.

b) Ensure GÉANT stays at the forefront of innovation, boosting the innovation potential of research and education network communities by:

- R&D activities that are open to academia, industry and user communities, for example, implemented through open calls, public-private partnerships or pre-commercial procurement; this includes exploring innovative business models, for example, for clouds, federated AAI and mobility; and contributing to international standardization, such as in IETF.
- deploying an open, advanced, virtualized, multi-domain testbed facility and expanding it globally and to cloud testing;
- exchanging staff between NRENs, academia and industry, and training;

In order to stimulate competition, the R&D activities that will be open to participation by external partners and implemented through open calls should amount to at least 50% of the EU contribution requested for the JRA. Where such activities concern applied research for developing new services, they will be supported only if tested over the GÉANT infrastructure and if there is commitment by at least three NRENs to use the services developed.

Achieving these objectives will require improving governance through greater end-user involvement and strengthened coordination with other e-Infrastructures in Europe and globally.

#### Funding scheme

Combination of Collaborative Projects and Coordination and Support Actions (CP-CSA)  
GÉANT 2020 would turn the European communications common, where talent anywhere is able to collaborate with their peers around the world and have instantaneous and unlimited access to any resource for knowledge creation, innovation and learning, unconstrained by the barriers of the pre-digital world.

Europe is a centre of excellence to global research networks, the GÉANT Community produces innovative solutions, drives the evolution of the internet and its regulatory system is able to cope with the changing environment.

#### GÉANT Network

The GÉANT network is a pan-European communications infrastructure through which advanced services are provided to the national research and education networks (NRENs) of European countries.

This network also meets two other key objectives, which are to serve as platform development and testing of new advanced services and ensure adequate interconnection with counterparts' networks in other parts of the world.

The GÉANT network started its 3rd generation (GÉANT3) in April 1, 2009, through a project of co-financing of the 7th Framework Programme. The connection to GÉANT network is a key element of integration of the scientific community with its counterparts in Europe and other regions of the world, through services that support the highest demands of these communities. Without the link to GÉANT, there would be a digital divide hostile to the main agents of national innovation.

The GÉANT network is an extension of the research and education networks that are connected, and hence is also one of the main destinations of communications made via RCTS. ([http://www.fccn.pt/pt/index.php?id\\_menu=378](http://www.fccn.pt/pt/index.php?id_menu=378), <http://www.geant.net/>, <http://en.wikipedia.org/wiki/G%C3%89ANT>, <http://en.wikipedia.org/wiki/G%C3%89ANT2>)

An excess of partners reduces the chances of the budget for each institution.

Even so, the UAC has more points to be attended and this will always have to be kept in mind. The archipelago of the Azores is composed of nine islands situated in the middle of the northern part of the Atlantic Ocean roughly 1,000 miles (1,600 km) west of mainland Portugal.

The choice and definition of partners and contacts are institutional issues...

But Roth (2013) considers that, at least, a French partner and a Spanish partner would be appropriate.

Cape Verde can be included as an "International Cooperation Partner Country" (ICPC).

The only submarine cable that currently connects South America with Europe passes by Cape Verde. Only one cable passes by the Azores. No cable passes through the Madeira Island.

As said Veiga (2012), this network does not need to be "real" (no one will put cables especially for it, because it is not justified), but "virtual" because you can use the third-party structures (cables that already exist).

I conclude by suggesting that there are several reasons to study, work and submit a proposal and only one not to do it.

The main reason to do this is to learn from the process, because it is not always a project is approved on the first attempt. But the reason for not doing so is the inertia and passivity that remains in the institution, always waiting for a magic solution or even destinations of outright grants from the Azores Regional Government.

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