Extremadura's Free and Open Source Software Policy amid Storms of Political Change[i]

Extremadura: Introduction to the Place and its People[ii]
Extremadura is one of Spain's 17 autonomous regions and is located in the west of the country. It has three sizeable urban centres: Mérida, which is its capital, Cáceres, also known as "The Happy City" and Badajoz, which lies much closer to Lisbon than Madrid. Spain's high speed train network has not yet crossed the Extremaduran frontier, leaving this sparsely populated region somewhat isolated. Extremadura is roughly half the size of the island of Ireland with less than a fifth of its population at around 1.1 million inhabitants.

Cervantes name-checked the region in his short story, "The Jealous Extremenian", many of the conquerors of the Americas came from here and the acorn-eating pigs are a source of great pride and wealth. These clichés do not do the region justice, however. The cities are rich with UNESCO-protected Roman ruins and meticulously preserved, sandy-coloured old buildings on whose precipices storks abound. There are also several national parks with an impressive range of flora and fauna. Portugal is close by and Extremadura's cosmopolitan, pluralistic-minded people are regular visitors. It may not be the number one spot on the average Viking's tourist map, as there is no coastal means of egress, but if you are searching for the "real" Spain (or, indeed, any one of the many), perhaps you will find what you are looking for pulsating in this heartland. Neither will you have too much trouble finding an Internet connection or public ICT access.

The Technological Age, unlike its industrial predecessor, has not bypassed this region and instead was captured and put to use for its citizens from 1998. Its public administration now has one of the world's widest deployment of desktops run with free and open source software. Over 70,000 desktop computers are in use in the secondary schools and a further 15,000 PCs running a local GNU/Linux distribution, Linex, are being used in the health service. So far only a few of the region's public authorities have switched over to free software but the current regional government plans for a migration of up to 40,000 computers in the public sector. This would make it Europe's second largest open source desktop migration after the French Gendarmerie's adoption on 90,000 desktops and topping that of Munich, which has switched almost 14,000 to date.

This study focuses on the region's Digital Literacy Plan and an emerging struggle between advocates of technological literacy and proponents of the Age of Austerity.

1. Introduction
This case study seeks to evaluate critically the current state of free and open source software in public administration in Extremadura from its inception at the turn of the twenty-first century to the present day. The purpose of this study is to offer a reflective tract for public administrations considering free software migrations or implementations across a range of public services. It is structured around a broad-ranging questionnaire which was sent to a selection of people who are and/or have been involved in free and open source development in the region, during different political regimes. All responses are assessed critically against available literature and information. The selection criteria for the interviews was to seek varied viewpoints from different disciplines and affiliations, bearing in mind the limited scope of the study. Not all of those invited to participate did so. The fate of various free software projects initiated from 1999 will be clarified, as there currently is some contention over this and recommendations on how best to proceed will be offered.

2. Lay-out of case study
This case study focuses on the Digital or Technological Literacy Plan (these terms are used interchangeably by different interviewees and writers from the region, so the author follows suit), initiated by the Partido Socialista Obrero Español (PSOE) in 1999. Projects under this plan are assessed on a case-by-case basis and explained in so far as possible, with viewpoints from all parties included, where appropriate. Of note is the issue of political change and whether this has affected free software policy, implementation or promotion. The reader should be aware of three distinct political micro-eras: (1) Juan Carlos Rodríguez Ibarra's PSOE Administration up to 2008; (2) the PSOE period after his resignation, 2008 to 2012, and; (3) The Partido Popular's (PP) election in 2012.

The text of the circulated questionnaire is to be found in the appendix and the following alphabetically listed individuals agreed to go on record:

- Luis Casas Luengo, former Managing Director of Fundecyt.
- Teodomiro Cayetano López, The Director-General of Electronic Administration and Information Technologies and the CIO of the Regional Government of Extremadura.
- César Ramos Esteban, PSOE Deputy in the Regional Parliament.
- Manuel Velardo, the Director of Cenatic.
- Jorge Villar Guijarro, former International Representative of the New Knowledge Centres of the Junta de Extremadura.

3. Extremadura's Digital Literacy Plan

For many years, Extremadura was one of Europe's poorest regions, with low literacy rates. In 1998, the European telecoms market was liberalised and the then President of the Junta of Extremadura, Juan Carlos Rodríguez Ibarra was determined that the technological revolution would not pass Extremadura by. He describes his conceptualisation of digital literacy in *The Best Practice Guidelines for Technological Literacy in Extremadura*[iii] - a bilingual manual, in Spanish and English. Ibarra and Luis-Millán Vázquez de Miguel, the then Regional Minister for Education, Science and Technology articulate a clear vision of bringing the Information Society to Extremadura through the medium of New Centres of Knowledge (NCKs) – a kind of Internet café where free digital literacy training was provided. Each centre had two employees: a technical person and an outreach person, both of whom designed both programmes and programs for the community attached to the NCK. The mission was to train the population in the use of new technologies, promote local culture, provide a meeting place for Extremadurans and to assist local people to find employment. Many projects were initiated on demand by the NCK attendees themselves. This accorded with the Junta's understanding of the Information Society as a two way street where information would not just be handed out to passive recipients: instead, knowledge would be acquired through vibrant interactive practices[iv]. Several NCK-based projects were initiated, including an online newspaper and a digital photograph archive. Plans were also made to create an Intranet which would interconnect "administrative centres, schools, health centres, outpatient clinics and hospitals, New Centres of Knowledge, public libraries"[v] and 1,500 Intranet access points were set up throughout the region. Ibarra is no techno-neophyte. In his autobiography, he gives examples of how experimenting with different technologies helped him learn from experience[vi] in order to devise the Plan.

The Digital Literacy Plan was commenced in 1999. A pilot project of six NCKs was expanded to 32 by 2001[vii]. The number of centres peaked at 45 and participation data and targets were available from the outset[viii]. The cost of setting up the NCKs is detailed in the Digital Literacy Manual[ix].

At the initiation of the Plan there was no precedent and so no experience on which to draw either in the schools, electronic-administration or the technological projects[x]. The architects were, effectively, pioneers. It was therefore deemed important to document the processes due to interest shown by governments and other organisations[xi]. A wealth of high quality, sometimes bilingual books on each discrete area of the Digital Literacy Plan was published by the Junta during the mandate of the PSOE (there are 21 titles on file with the author).

The Junta had a keen grasp of the importance of its mission, saying:

"Technological illiteracy is as real a phenomenon and equally as harmful as written illiteracy. The most developed societies have sufficient resources for updating almost spontaneously, just because of the interest of the citizens themselves and the initiative of businessmen and educators. But in the case of societies far from the main focus of innovation, the role of political authorities is crucial in mobilizing energies that would not be set in motion without an outside boost".[xii]

This sentiment has also been echoed by Sérgio Amadeu da Silveira, the former Head of the Brazilian National Institute of Information Technology, who published a book on a related area of the misery of digital exclusion in 2001[xiii].

The Schools
The Administration also implemented a plan to put a computer per every two students in all public secondary schools with a ratio of five pupils per computer in primary schools and this was complete by 2002. This amounted to over 70,000 computers in the secondary schools. Had proprietary software been used, this would have been unaffordable so a version of Debian dubbed GNU/Linex was developed. Each teacher also had a computer and could simultaneously observe all the screens while at his/her desk. There was only one keyboard per two students, the rationale being that rather than facilitating plagiarism, this encouraged students to negotiate with each other. In any case, homework was not done collaboratively[xiv], so education was occurring at several different layers and phases, in a kind of tiered approach.

The schools project was a substantial success and is widely fêted. It has also significantly democratised the classroom because students can show teachers how to carry out a task, in cases where the former are more digitally adept than the latter. This also tapped into an appreciation of the citizen's right to interact with and question those in authority. By embedding this practice early, there will be much wider social ramifications that may help protect children's safety and welfare in the future by giving them a voice which they are not afraid to exercise and by recognising them as citizens from an early age. The literature regularly refers to democratic values, in particular participatory democracy. In this context, it is useful for the reader to bear in mind that Spanish democracy is not yet 40 years old and Extremadura's regional government turns 30 in 2013. The citizen's interaction with the state is still an issue which evokes great passion among Spaniards.

With reference to current debate as to the fate of this project under the new PP Administration, Teodomiro Cayetano, current CIO of the Junta says: "The IT environment at school in Extremadura will remain as it is now and its future evolution will be considered depending on the evolution of Linex, which is deployed in the desktops and laptops for the

pupils. Any consideration about this point will be always taking into account the use of free software".

The Health Service Deployment
Free software was also deployed in the health service with a diagnostic program known as JARA. The deficiency which JARA sought to address was that information storage was previously not confined to one medium, but scattered: on paper and in multiple applications, leading to information overload or, indeed, under-load. SES, the Extremaduran Health Service employed an integrated program[xv] whose implementation to date has been partial[xvi] though it is in use. The migration of software in the health service is quite a different enterprise to the deployment in schools. First of all, there are legal concerns relating to security, privacy, data protection and licences. Moreover, there were pre-existing proprietary programs in place and resistance is often experienced where change is being enacted either from managers or staff, or both. Villar also identifies cultural factors where colleagues are not accustomed to cooperation and where doctors have two computers: one running GNU/Linex and the other running proprietary software.

Other programs included Vivernet which was developed to create a space in which businesses could be fostered, featuring physical, mobile and virtual locations. By 2001, 45 direct jobs had been created through this scheme[xvii].

The Software
A local version of the GNU/Linux operating system known by a witty moniker "GNU/LinEx" was developed for use initially in the schools project, the NCKs and the Technological Literacy Plan. Only later were other potential uses, such as public administration explored, once its feasibility had been established. There is much impassioned debate in blogs as to whether a local distribution of GNU/Linux should have been made at all – discussions which may make the reader think about "The Spains" - but the principal reason was on the basis of cost and also of user-friendliness. Seeing as standard graphical user interfaces use anglicised terminology and imagery, local icons would facilitate learning, especially among those who had not travelled. The inclusive ethos of the Junta's plan was evident: most end users in 1999 were not digitally literate. "Inclusion" meant not ignoring those normally excluded: rural dwellers, the elderly, women, immigrants and the disabled, to name but a few. In terms of cost effectiveness, the development of GNU/Linex cost €300,000 up to 2003 but €1,000 was reportedly saved on licensing fees for each of the computers used in schools[xviii]. An overall saving of €18 million was made when comparing this choice with one based on proprietary software[xix].

It is noteworthy, according to Echeverría[xx], that eighty percent of public administration employees have come to know of free software through GNU/Linex and this distribution of GNU/Linux has served as an entry point to public consciousness of these technologies. Moreover, the dominance of the English language in the realm of technology and its omnipresence in a world of more than 400 million Spanish speakers should not be ignored when endeavouring to evaluate such decisions from the outside. In the author's many discussions with a variety of people involved in all aspects of the Extremaduran plan for the Information Society over the last decade, the keenness to build bridges to avoid isolation is palpable. This is a country which still converts euros back into pesetas on many retail products so, as the saying goes, "they know their own" and the regional government were undoubtedly well placed to make this judgement as to "who needed what".

In an endeavour to assess the extent of digital literacy in Extremadura today, Cayetano pledged to enquire of the Director-General of Technological Innovation. Manuel Velardo, the Director of Cenatic, has confirmed that this matter is being studied at present and information will be available shortly.

Winds of Change
The GNU/Linex development team together with associated workers were all fired in December 2011, under the mandate of the PP. It is reported that these numbered 620 in total[xxi]. The distribution has not been abandoned for now but has been taken over by the management of Cenatic[xxii], the National Reference Centre for the Application of ICTs based on open source[xxiii] and a 2013 version of Linex has recently been released. It has been downloaded approximately 10,000 times to date. When the author asked Cayetano about the job losses, he said: "The job losses were actually artificial jobs, only supported by public funds. For example, Linex is now a project shared by Cenatic, with a cost of 90% less than it used to be. Inside this crisis, the regional Government cannot pay for artificial jobs which provide absolutely nothing to the civil society".

Statistics on costs or how these may have been calculated do not appear to be available. Work on improving various aspects of GNU/Linex is continuing at present, at no cost to the state and with community collaboration[xxiv].

Casas is somewhat more circumspect in his assessment, saying that GNU/Linex development was frozen in 2007 as it was considered by the new Ministry of Innovation, under the second PSOE Administration, to be a mature project not in need of any further support. A cluster strategy was set up in order to boost innovation, which led to the closure of Vivernet. The change in government signalled a slowing down in the technological focus of the previous administration of Ibarra. Regarding the agreement with Cenatic to proceed with GNU/Linex development, Casas also says that on the face of it, it may at first appear to be a logical choice, considering the Extremaduran Government's membership of

Cenatic. "The problem is that the link between the distribution and the Extremaduran public administration is broken and the new Government is not promoting its use any more. Besides, this means that the Government has lost its independence and now depends on reaching agreements with Cenatic to update or modify the distribution".

Clearly, there is a strong difference of opinion on the role of GNU/Linex in digital literacy. Its founders often describe it almost as the lifeblood of the entire Digital Literacy Plan and as its brand, whereas the new Administration perceive the matter quite differently. To that end, the Digital Agenda for Extremadura project allows for public input.[xxv] It would be most informative to know what the "non-techie" local population think.

Ownership of the domain name "linex.org" has been allowed to lapse.

GNU/Linex in Public Administration
Plans to put free software on the desktop in the Administration were repeatedly reported but adoption has not yet become widespread. Several reasons for this include the fact that there has been a gap between decision and implementation. Echeverría carried out an extensive study of free software in public administration in Extremadura in 2007[xxvi] and observes that there was a shortage of trained personnel. Moreover, the schools project was much easier to implement as the needs were relatively homogeneous, whereas public administration migration is much more complex, given that proprietary systems are being replaced and more customisation may be necessary. One of GNU/Linex's technical team, Daniel Campos, was interviewed by *The Linuxologist* in 2008 and he explained that in the case of the schools, unlike in public administration, no critical data already existed in this environment so it was a better place to start[xxvii]. The roll out of the Technological Literacy Plan had always been on a phased basis, in any case.

It would appear that relative harmony was achieved between the community of developers and Ibarra's government in relation to speed of implementation and there was an understanding that the latter would often be obliged to proceed more cautiously than the former might desire, both for political and legal reasons. Furthermore, given that Extremadura was the first European region to opt for free software so decisively, the government exercised care when considering new migrations. As it was transparent in relation to its goals, the development community were largely on board on this issue[xxviii].

Cayetano has affirmed his Government's commitment to free and open source software, stating that the regional Minister of Public Administration had made an official declaration in the course of a formal session in the regional Parliament to this effect. The PP have implemented a new scheme as part of its LinGobEx project to deploy a suitable adaptation of Debian to 40,000 civil servants' computers in Extremadura by December 2013 and several key performance indicators can be found in this project. It may be that the PP achieve in public administration that which the PSOE never managed to do. Velardo acknowledges that this task is huge.

It is generally agreed that free software deployments *per se* do not tend in Spain to be made on a party political basis. The PP administration in Valencia, for instance, developed Lliurex during its time in office.

4. "Extraordinary Extremadura"[xxix], awards, recognition and consciousness
The *Washington Post* published an article on Extremadura's Digital Literacy Plan in 2002[xxx] and the project won the European Regional Innovation Award in 2004 for the Information Society[xxxi]. There were numerous other international reports on the project. Rishab Ayer Ghosh of the United Nations University, UNU-Merit, conducted several studies in which Extremadura has always featured as an example of good or best practice[xxxii].

Many other elegiac academic references abound, including one from Marcelo Thompson, the former Attorney General of the National Institute of Information Technology in Brazil and a DPhil candidate at Oxford University. He cites Castells as saying that open source is a social, political and economic phenomenon[xxxiii] and further adds that it is also cultural. These four pillars are fundamental to the principle of democracy, in Thompson's view[xxxiv]. In the same article, Thompson describes Spain's technological leader alliteratively as "Extraordinary Extremadura" for its embrace of the Information Society through the use of free software.

The phenomenon of free and open source software in Spain has generated some literature outside of the press of the Junta and includes *La Pastilla Roja*, or the Red Pill, the idea of which is taken from the film, *The Matrix*. It is claimed by its authors to be the first Spanish book on this topic[xxxv]. Clearly, free software is present in the collective consciousness, in both national and regional media. At the level of the virtual collective consciousness, Teilhard de Chardin's conceptualisation of the noosphere as an evolutionary sphere of simultaneous consciousness[xxxvi] would appear to be manifest both in the NCKs and in the schools. Andoni Alonso, a doctor of Philosophy at the University of Extremadura forms a writing collective with Iñaki Arzoz, an artist with whom he regularly collaborates on works to do with new technologies, including free software and GNU/Linex. They often speak of free software in a metaphysical sense, suggesting to the outsider that in Extremadura, free software may also have permeated the Jungian collective unconscious. Further philosophical perambulations of this nature are, however, beyond the scope of this article.

Extremadura was duly recognised by Bill Gates as one of the world leaders in new technologies and free software[xxxvii] in 2009.

5. International outreach: a non-partisan approach
The author conducted a semi-structured interview with Luis Casas Luengo, the then Managing Director of Fundecyt in 2006 in which he clarified that the Junta did not specifically seek to work with governments in other countries as there was a profound belief throughout the Administration that free software went much deeper than politics. However, it could, through means of its distributions serve as a technical solution for a given problem. Of course, the Junta's teams did work with several governments, such as the Colombian, Brazilian and Andalucían but they did not initiate this collaboration. The latter was the most productive with the creation of Guadalinex.

There seemed to be a widespread *de facto* recognition of a human right to digital literacy in Extremadura, perhaps as a sub-section of a modern right to education, and that it was the government's duty to facilitate this. By way of contrast, in other jurisdictions, there is no public discussion of free and open source software and little, if any presence on the desktop. Nor are there similar levels of computer access[xxxviii].

Elsewhere, Casas *et. al.* have said that the adoption of any technology is a political decision[xxxix]. To untangle this seeming contradiction, when digital literacy is conceptualised under a broader umbrella of the right to education, we find ourselves in the terrain of human or natural rights, with which the state cannot really interfere. In fact, it may have a duty to facilitate such rights, depending on their legal grounding: whether it be constitutional or under international law. Therefore, any subsequent checks and balances in relation to costs may be *ultra vires* the state's power if assessment is solely utilitarian and not human rights-orientated - unless put to a referendum. In Professor Tierney's view[xl], some issues are of such importance that they cannot be decided by government alone[xli] and must be put to a vote. Moreover, if a constitutional or European Convention test case were to be brought, for instance, against any radical change in policy, it may end up costing the state dearly, both monetarily and in terms of reputation. Whilst political decisions may have to be made to kick-start the recognition of a right when new technologies manifest themselves, once recognised and acted upon, such rights cannot simply be rescinded on a whim. Having engaged with the community and benefited from their support at so many levels, government may not be legally free to disentangle itself abruptly.

On the question of engagement, however, Cayetano assures that the principal issues about free and open source software are proposals at the regional Parliament, "where the civil society and the political parties are represented. And there is a state commission for the IT coordination of the regional governments, in the Ministry of Finances and Public Administration, where all the regional strategies and experiences are shown and shared".

6. The PP's plan: A Shift from Citizen-Centred to Cost-Centred?
Cristina Teniente, Vice President of the Junta of Extremadura was reported in *El Mundo* in 2011 as having said that the Administration would move away from a focus on open code to models of open knowledge, that these could equally be proprietary and that assessments would be based on cost[xlii]. Cenatic has just published a report on the cost effectiveness of free software reuse[xliii], which quantifies the associated savings to be in the region of €114,000 million a year[xliv]. Cayetano has firmly denied that the change of government signifies any change in policy regarding free software and referred the author to the PP's Strategic Plan[xlv]. Cayetano assures that technical prescriptions for each public contract for new IT systems value free software implementation. Casas states, however, that under both Spanish and European law, whilst a public call for free and open source solutions is possible, what normally happens is that public administrations do not express a preference for either free or proprietary software but, rather, describe the services they want.

The Court of Auditors concludes that public procurement in Spain always benefits a group of big enterprises[xlvi].

The New Strategic Plan
The PP's Information Systems Strategic Plan (2011-2015) is a 100 page document in Spanish outlining the current Regional Government's roadmap[xlvii]. It outlines its goals as including more effective responses to public needs and expectations, cost efficiency, improving public services and establishing short, medium and long term plans to achieve these. The language of cost efficiency and the market dominates but it is not clear what factors will be taken into consideration in the calculation of these costs. Throughout the document, an emphasis is placed on conformity with European Directives and European, national and regional strategies. A strong interest in cloud computing is professed.

One of the principal cost inefficiencies identified is in the use of electricity[xlviii] and the need to save costs on licensing is also mentioned[xlix]. No mention is made of the New Centres of Knowledge. The electronic administration platform is to be totally redesigned, promising a better delivery of public services[l]. New forms of participation and accessibility will be explored[li], although it is not clear who the target audience is.

The Plan goes on to talk about the Open Government Law[lii]. When asked to comment on the PP's approach to participatory democracy in the original Digital Literacy Plan and the centrality of free software, the author was directed to this law by Cayetano who agreed that participatory democracy was most important to him, as constituted in the

original plan. This law was a parliamentary initiative of Izquierda Única which gained cross-party support to encourage transparency, collaboration and participation: a sign of great political maturity on the part of all politicians involved.

The Plan says that information has been dispersed in a very decentralised way to the citizens and through different media and now all information will be delivered from a single point. The original reason for decentralisation was that the authors of Ibarra's digital literacy plan saw Extremaduran citizens and their region as very diverse, having three main urban centres, with different social issues, varied ethnic makeups, scattered populations and hence different informational requirements. A young North-African female Muslim immigrant in Badajoz will not have the same needs as an elderly olive farmer in a far-flung corner of the region. This diversity is not mentioned in the 100 page plan and it may be that financial constraints prevent such consideration. This is not clear. There is also a plan to create a paperless Public Administration[liii] in line with practice in Europe.

Some problems with the Plan
The very first page of the Prologue asserts that this is the first plan of this type published and does not acknowledge any of the aforementioned literature published by the Junta of Extremadura press, which is puzzling. The document is peppered with repeated negative references to the previous regime's handling of this area. It gives only one nod to past projects which have permitted the evolution of information systems and services such as education or health but these are also criticised for having been independent and excessively costly – although how these cost claims are calculated is not clear. Elsewhere the PP are on record as questioning the cost effectiveness of the computers in schools, saying that where funds are not spent on licences, they go on training teachers[liv] but these costs are unlikely to equate.

The Plan claims that other projects of the Junta have been a total failure[lv], refers to its vices and bad habits and the decentralisation of the delivery of ICTs is also criticised. It is most unfortunate that this plan was not more rigorously edited. The author sought to compare a selection of similar plans and studies on related areas, such as free software public administration migration plans from Zaragoza's city council[lvi] and for Spain[lvii] and found the writing style to be, putting it very mildly indeed, somewhat unconventional. This serves to undermine profoundly the value of the Plan as a roadmap for digital literacy.

7. Recommendations
1. Given the heated debate over Extremadura's digital literacy agenda, a new Plan should be devised on a cross-party basis where a full revision and robust critique is made of the region's current ICT needs. Ibarra states in his autobiography that it is now possible to design a single programme based on the proposals of different parties and that this will affect politics in a radical way[lviii]. A precedent already exists in the Open Government Law legislation. This should be put to the test.

2. Such agreement should then be put to a public vote. This would actualise Professor Tierney's aforementioned claim that some matters are of such social import that they cannot be limited to parliamentary debate and decision alone – and digital literacy is surely such an issue.

3. This following quotation is taken from an OECD report on Spain's *Plan Avanza* in relation to information society strategies in 2009 and really speaks for itself about the need to capacitate the uptake of ICT by making it accessible, comprehensible and also, of course, affordable.

"[E]xperience in OECD countries has shown that the availability of ICTs does not necessarily translate into economic growth, efficiency, innovation or improved quality of life; other key catalysts are essential to capitalise on the potential benefits of ICTs such as: training and capacity building, organisational change, technical support, interoperability, security, affordability, communication and awareness, and knowledge-sharing. For instance, despite growing availability of public services online, take-up has plateaued in recent years, and some ICT tools have remained under-appreciated and under-used due to a lack of a combination of the aforementioned factors[lix].

It is always important to recognise and address weaknesses in public policy where cost saving migrations have not occurred, for instance. Equally, strengths should be built upon and not arbitrarily criticised or ignored. All public bodies and servants have a duty not to waste resources and should conserve and reutilise them, where possible, in an e-ecological fashion. The best interests of the citizenry should also always be at the forefront of policy-making and negotiation. With cross-party agreement, this will be possible.

Appendix
Questionnaire re the use of free and open source software by the Regional Government of Extremadura; the use of LinEx, and; the use of proprietary software in public administration

a) To what extent have the plans of the Extremaduran government been realized – and not realized - in relation to the use of free software to energise the Information Society in the following areas:

(a) education; (b) public administration; (c) e-democracy; (d) the New Knowledge Centres, and; (e) the Plan for Technological Literacy?

b) Can you comment on the relatively recent abandonment of the development of LinEx? What are the reasons for using another form of software, either proprietary or another distribution of open source?

c) Did the change in government signal a change in policy? If so, how and why?
d) What is the approach of the Partido Popular to the use of free/open source in public administration?

e) From the outside observer's point of view, there are two different streams of information regarding policy differences brought about by the change of government.

(i) One claims that the PP's approach has resulted in hundreds of job losses. Can you comment on this?
(ii) The other stream of information is that the PP is going to put free and open source software on every desktop. What can the PP do that remains unfinished?

f) What can other public administrations learn from Extremdura's experience? Are there lessons to be learned about the importance of communication with communities such as the free and open source software community from one administration to another when governments are in transition?

g) Are there any technical or general requirements or specifications in public procurement documents that would suggest that free and open source software solutions are preferable? Are such documents available to the public, either in Spanish and/or English?

h) What checks are built into the policy of the PP? Are there key performance indicators for free and open source software desktop migration over a certain time period, for instance such as 20 per cent of all PCs in the first year, 30 the next, and so on?

i) Is there a governance plan, and governance structure?

j) Who or what governmental body is in charge?

k) Is there a communication strategy or is information distributed on a piecemeal basis? Are consultations with civil society groups or advocacy organisations carried out when decisions regarding the use of software are being made? Are experiences from other Juntas taken into consideration?

l) What do you say to Juan Carlos Rodriguez Ibarra's claim that opting for free software would have avoided the freezing of pensions? To what extent will cost factor in future decisions of the PP in this matter and how will these be calculated?

m) Is participative democracy, which was stated to be a key goal of the original digital literacy plan, important to the present government and how central to this is free and open source software?

n) How widespread is technological literacy today in Extremadura? Do you have facts and figures available? Has free and open source software had a role to play in this in terms of costs, or anything else?

i   1 Legal Notice: https://joinup.ec.europa.eu/page/legal-notice

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iii   Aupex Technical Team, *Best Practice Guidelines for Technological iteracy in Extremadura*, Mérida: Junta de Extremadura and Asociación Regional de Universidades Populares de Extremadura, September, 2001, (hereinafter *Best Practice Guidelines*).

iv   Gómez Antúnez, A. M., *Vivernet*, Mérida: Junta de Extremadura, 2002, p. 111.

v   *Best Practice Guidelines.*, 127.

vi   Rodríguez Ibarra, J.C., *Rompiendo Cristales*, Barcelona: Editoriales Planeta, 2008, p. 240.

vii   *Best Practice Guidelines.*, 126.

viii   *Id.*, 228.

ix   *Id.*, 101.

x   *Id.*, 128.

xi   *Id.*, 129.

xii   *Id.*, 131.

xiii   Amadeu da Silveira, S., *Exclusão Digital*, São Paulo: Editora Fundação Perseu Abramo, 2001.

xiv   Author's visit to the IES Hernández Pacheco school in Cáceres in 2004.

xv   http://www.astic.es/sites/default/files/articulosboletic/tecno3.pdf.

xvi   The author has received conflicting evaluations of its success. It is, however, acknowledged in the Strategic Plan of the Partido Popular 2011-2015, at www.gobex.es/filescms/cons001/uploaded_files/DDGG_ADMON_ELECTRONICA/Plan_de_Sistemas_-_Proyecto_SysGobEx.pdf.

xvii   *Best Practice Guidelines*, 146.

xviii http://www.elmundo.es/navegante/2005/08/12/softlibre/1123857715.html.

xix   https://news.tehworld.com/operating-systems/6558/spanish-region-goes-entirely-open-source/.

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xlviii *Best Practice Guidelines*, p. 36.

xlix   *Id.*, p. 37.

l   *Id.*, p. 79.

li   *Id.*, p. 90.

lii   *Id.*, p. 91.

liii   *Id.*, p. 80.

liv   http://www.elmundo.es/navegante/2005/08/12/softlibre/1123857715.html.

lv   Examples can be found on p. 5, p. 7 and p. 13 but these permeate the entire document.

lvi   From the Ayuntamiento de Zaragoza http://www.zaragoza.es/contenidos/azlinux/migracionescritoriosl.pdf,

lvii   http://observatorio.cenatic.es/index.php?option=com_content&view=article&id=39:software-de-fuentes-abiertas-para-el-desarrollo-de-la-administracion-public.

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