G-Cloud in Greece

Report to the European Commission, DG Regional and Urban Policy, Unit I3 – Greece and Cyprus

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January 2016

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1. G-Cloud: Introduction

Cloud computing is the delivery of shared computing resources, software or infrastructure as a service and on-demand through the Internet. It is an Internet-based technology, but mainly a new business model for the provision of IT services. Services can be provided over shared infrastructures (IaaS), platforms offering operating system, database management, storage, network access, development and design tools, hosting (PaaS), and software (SaaS). Other services can be provided over the cloud by different business models (XasS), such as Back End as a Service (BaaS), Storage as a Service (SaaS), Communications as a Service (CaaS), Network as a Service (NaaS), and Monitoring as a Service (MaaS).

Cloud computing has changed the way information systems can be provided and operated. Cloud-based solutions provide a series of advantages which come from outsourcing (the day-to-day administration and support services for IT move to the service provider); quick setup (hardware, software and licenses go away and provided as a service); pay-as-you-go (pay for what you need and use); and instant scalability (scale up or down computing needs).

A core technology that provides these advantages is virtualisation. Virtualisation is software that separates server infrastructure, and makes servers, workstations, storage and other systems independent of the hardware layer and creates various dedicated resources according to needs of the users. Main driver for the development of cloud computing has been the rapid expansion of broadband networks and the dropping of communication cost quicker than the computing, storage and maintenance costs.

Governments across the EU have initiated Government Cloud (G-Cloud) programmes to deliver computing, storage, and software capabilities to central and local governments using cloud computing. It is usual for governments to implement private government clouds (G-Cloud) to be used my restricted agencies and departments of the administration where security and governance requirements cannot be met by public clouds. On the other hand, public G-Clouds offer services to users over shared government infrastructure that is openly accessible over a public network. The G-Cloud is not a single entity, but an ongoing effort that enables the sharing of IT infrastructure and software among a range public administration agencies, and changing the way the public sector procures and operates ICT.

2. Existing G-Cloud infrastructure and services

During the last programming period 2007-2013, the public administration of Greece made some efforts to adopt digital technologies, e-government and cloud-based solutions and modernise the way e-services are operated and offered to citizens and organisations.

2.1. ERMIS Portal of the GS Public Administration and E-Government

The Portal "ERMIS" is the Central Portal of the public administration for providing electronic information services to citizens and businesses. More than 100 certificates are have become available through the web linking many department of the public administration with the network of the Citizen Service Centers (KEP).

Two types of electronic services are offered on the Portal
(http://www.ermis.gov.gr/portal/page/portal/ermis/

- Online services not receiving an immediate effect. Citizens can submit electronic requests for administration services and receiving the outcome (certificate, etc.) at the email or address they provided when submitting the application.
- Online services with direct receipt result. Citizens can submit electronic requests for services and receiving the outcome (certificate etc.) in their mailbox.

The National Portal of the Public Administration ERMIS has been implemented by the Information Society SA (IS SA) on behalf of the Ministry of Interior and the General Secretariat of Public Administration and Electronic Governance.

2.2. G-Cloud of the GSIS

The General Secretariat of Information Systems (GSIS) has implemented and offers an extensive set of e-government services to citizens, businesses, and the public administration through TAXIS. The purpose of GSIS, which belongs to the Ministry of Finance is to create, develop and manage information systems that support the work of the Ministry of Finance. The GSIS includes two General Divisions (a) the Division of infrastructure and Information and Communication Services, and (b) the Division of Finance. Given this structure, TAXIS offers online financial services mainly. Main objective of TAXIS is to facilitate the taxpayers to fulfil their tax obligations online, as possible easier, faster and more accurately.

A new G-Cloud infrastructure is under development to cover needs of the General Secretariat of Information Systems (GSIF) and the Information Society S.A. (IS SA). This project "Digital Services of the Ministry of Finance" is funded under the OP Digital Convergence 2007-2013 with a budget 14.709.570,00 €.

The project includes the supply, installation and commissioning of complete infrastructure and functioning computing devices that will allow offering cloud based services (infrastructure as a service - IaaS) for projects of the GSIS, the IS SA and other bodies of the public sector. Two data centres will entry into full operation at the IS SA and GSIS, which will provide computing and storage power through advanced horizontal ICT hardware and software infrastructure. The private cloud to be created is estimated to utilize at least 90% of the capacity of the procured infrastructure. The public cloud to be created is estimated to utilize at least 10% of the capacity of the procured infrastructure.

The implementation of the proposed action was divided, for reasons of optimal management and monitoring of all the activities, into two subprojects:

- Subproject 1: "Supply, installation and commissioning of advanced computing equipment, network and storage power - cloud computing capacity". The sub-project includes the supply, installation, configuration and commissioning of complete advanced calculation function, storage and network equipment. Moreover, it includes training services for central managers, warranty service of equipment and commissioning services, pilot operation, and on-site knowledge transfer at the Pilot Centre Operation.
- Subproject 2: "Supply, installation configuration and commissioning software infrastructure of the management node and ISO certification". This subproject includes the supply and development of both infrastructure and software required to manage and monitor the subproject 1 and the provision of cloud services of GSIS and IS AE. Moreover, the sub-project includes training services for central administrators, certification and operational procedures according to ISO, service-desk services, warranty service of equipment and commissioning services for the pilot operation and on-site knowledge transfer at the Pilot Centre Operation. It also includes the provision of consultancy services that cover part of the strategic planning and governance of the new Data Centres and support services in certification of Data Centres operating units.

The project started in 2011. A revised call for tender opened in 2012. The contractor has been selected in 2014 and which is expected to deliver by 2016. A consortium of IBM and Intrasoft International is the contractor that won the tender for G-Cloud computing infrastructure of GSIS – IS SA. With the implementation of the two data centres the GSIS will essentially enter into the era of the Cloud.

2.3. G-Cloud of EDET AE

EDET AE (GRNET SA) is a public company under the Ministry of Education that develops and manages since 1998 the National Research and Technology Network, and provides to Greek universities electronic infrastructure and digital services. The GRNET backbone interconnects more than 100 institutions, including all universities and many technical and research institutes, as well as the public Greek School Network with speeds up to 10Gbps, using its high-speed of leased fibre that spans across the country.

In the field of cloud computing, GRNET SA AE provides to university and research labs cloud infrastructure as a service (IaaS), such as computing virtual machines, storage, networking and firewall. For providing these cloud services, GRNET SA has developed two data centres, located in the Ministry of Education and the Hydroelectric Station of DEH at Louros, which were funded by the NSRF 2007-2013. The latter is a modern data centre with natural cooling and substantial energy saving systems. Since 2015 GRNET SA operates also a new data centre in Crete and offers data storage to 31 hospitals than can store digital MRI imaging. Hospitals can have access to this centre for backup data whenever needed.

The infrastructure of the GRNET IaaS cloud is similar to Amazon AWS; offers scalability to thousands users, nodes and virtual machines (VMs); is open to everyone from the academic and research community; there is no vendor lock-in; and administration costs are low and manageable by a small team. IaaS includes:

- Computing, Python and Django for complete high-level web framework that encourages rapid development; Ganeti software to facilitate cluster management of virtual servers for scaling; OpenStack environment; more than 2,600 VMs and 1,800 users and ready to scale to more than 10,000 VMs.
- Storage (Pithos) with every file as a collection of blocks; content-based addressing for blocks; partial file transfers and independent of storage backend. Also OpenStack Object Storage API plus extensions.
- Networking with no restrictions on deployment; both IPv4 and IPv6 public networks; complete isolation among VMs; and capacity of thousands of private networks.

The IaaS Oceanos (https://okeanos.grnet.gr/home/) has actually thousands of active users from the academic community and has already enabled more than 6,000 virtual machines in the context of research, experimentation or other pilot actions.

2.4. G-Cloud of HDIKA AE

HDIKA AE (Electronic Government of Social Security) is a non-profit organization established in 2007. Since its creation HDIKA took over IT projects on behalf of the Social Security Agencies and their extensions.

A software as a service (SaaS) public cloud is installed and operated by IDIKA SA for the electronic registration and enforcement of drug prescription of the four largest pension funds in the country (OAEE, IKA, OGA and EOPPY) (http://www.e-syntagografisi.gr). The system was co-financed by the Greek Government and the European Union under the Operational Programme Digital Convergence, 2007-2013. The service supports users (doctors and pharmacists) with an online system of e-prescription and the operation of a help desk which is open daily all around the clock. The Working Group of ePrescription organizes and offers continuously training seminars to users.

The project of e-prescribing contributes to a smooth and seamless exchange of information between doctors who prescribe, the controlling agencies that control and accept the costs of drugs, smoothing and accelerating drug prescription procedures.

3. G-Cloud strategy 2014-2020

3.1. G-Cloud in the Action Plan of ICT Projects Implementation for Digital Infrastructures and Development

The "Action Plan of ICT Project Implementation for Digital Infrastructure and Development" includes three axes relating to the creation of G-Cloud, which are designed to limit the excess costs of public ICT projects. The Action Plan recognizes that the public administration has made considerable efforts to reduce the costs of ICT systems without success. While seemingly unit costs fall, the only cost that is essentially squeezed is labour cost, which most often leads to poor quality of ICT systems. The Greek state continues to pay multiple times to obtain identical systems, which often do not provide useful services to citizens, organisations and businesses.

Action 1: Share & reuse of ICT solutions
The Government recognizes that the re-use ICT systems, applications and data and their sharing between institutions is a basic requirement for optimal use of public ICT resources. So far ICT projects of the public administration are described, planned and implemented as 'integrated'. As a result the systems produced are large and complex, covering narrow and very specific needs of an operator, require long times from design to implementation, and end technologically obsolete when they are finally delivered. Infrastructure is closely related to systems, resulting in inefficient use of resources and the creation of silos. Rarely systems cooperate with each other and there is significant spare capacity, especially in data centres and computing resources. Recognizing the need for standardization and the fact that each ICT project is decomposable in build blocks, the Action Plan sustains using reusable components. Therefore, the Greek State should undertake concrete actions (1) identifying components (applications, equipment and resources) that can be reused, and (2) introduce mandatory the re-use and sharing of components, ICT contracts and information which should not be obtained again and again. This axis is institutional in nature and linked to the overall institutional restructuring of ICT production projects and the creation of the Greek ICT Hub.

Action 2: Repository of ICT applications
The Greek Government recognizes that the collection and re-use of all ICT applications developed with public funds is a first step for the optimal use of these resources and the rapid adoption of systems and applications. More and more countries are using government applications repositories (Gov-Github) to facilitate the development of reusable components. The Greek repository of applications will created by new ICT projects of the government; public bodies involved will upload applications and outgoing services, but private organizations and individuals will be allowed to upload software also. Using these solutions, other ICT government projects will be able to compose services at lower development costs and maintenance. This Gov-Github will encourage initiatives and competitions with prizes and promotion that would enrich the repository. The creation of the cloud platform might be included in the OP Administrative Reform, but the design of the action has not progressed due to non-conclusion of the Exante Conditionality 2.1.

Action 3: Strategy and transition plan to cloud technologies
The supporting actions for the implementation of the "Action Plan of ICT Project Implementation for Digital Infrastructure and Development" foresee the elaboration of strategy and transition plan to Cloud technologies, which will be initiated by the ICT Hub under formation with the participation of the GSIS and GRNET. The strategic plan for the G-Cloud should be built on pillars related to organizations that are already active in the field of G-Cloud (GSIS, GRNET, IDIKA) and should integrate any new government equipment under a centralized Cloud.

3.2. G-Cloud in the Operational Programme for Administrative Reform

The Operational Programme of Administrative Reform (OP AR) promotes e-Government for the modernization of the Public Administration by the use of information and communication technologies, including cloud computing. The OP AR recognizes that recent efforts for e-government met many failures. They created rigidities, cumulative chronic problems and delays. IT systems are characterised by poor design and absence of long term planning with regard to financing throughout their lifetime. There is lack of interoperability and a common architecture that could set the framework for public IT under uniform standards and policies of compliance.

In the 2014-2020 period, priority is given to e-government, interoperability, digitalisation of internal administrative procedures, and the internal communication of the administration with data traffic rather than document traffic. The aim is to create a digital environment for cooperation and communication between services and public administration staff over a modern, uniform and common infrastructure; and (1) the increase of agencies and systems in the public sector using effective methods of e-governance, and (2) increase in services, applications and e-government systems provided to citizens and businesses. Though it is not explicitly stated, these objective directly leads to G-Cloud based solutions.

Indicative actions of the OP AR per vertical policy area that might be supported by cloud-based systems are:

- Tax-financial management: Development of information systems and e-services of the GSIS to address the structural weaknesses of the tax administration; refocusing efforts of the tax administration in a centralized and efficient structure improving tax collection and the fight against tax evasion.
- Justice: Judicial integrated case management system for civil and criminal procedure, addressing localised shortages in in the provision of Justice, delays, and the congestion and dysfunction of the Penitentiary System.
- Social security: information systems offering the ability of the insured to apply for pension from a single insurer, accelerating the pension award, speed of applications processing for insurance services, pensions and benefits.
- Health: Information systems of primary health care, electronic patient file, introduction of online purchasing - procurement procedures that can address growing costs and the consequent challenge of the actual model for health provision. Related to cloud technologies might also be the implementation of electronic prescribing in all hospitals and health centres.
- Local and regional authorities: Complete the Kallikrates programme reform with the simplification and standardization of operating procedures of municipal and regional services; provision of better services to citizens and businesses and support in the decision making.

The horizontal actions of the OP describe a unified policy for the acquisition, use, management and maintenance of basic information infrastructure in public administration bodies, the interconnection of basic registers under a common binding template and single interface, e-Government now. All these will be greatly enhanced and facilitated by to cloud-based solutions. However, this is not explicitly mentioned.

4. Conclusions: Towards centralisation of G-Cloud initiatives

This quick overview of G-Cloud initiatives, realised in the period 2007-2013 and foreseen for the period 2014-2020, allows for defining a number of pillars for the development of G-Cloud in Greece.

1. A new domain in the public administration

G-Cloud is a new domain and culture in the public administration of Greece for the provision and use of ICT infrastructures and services. There are a few pioneer initiatives as IaaS and SaaS, but not as PaaS

(operating systems, database management, storage, design and development tools, licenses, etc.). From the various properties of cloud computing, most promising for the Greek public administration is resource pooling and sharing of computing assets, given the documented exceed capacity in hardware and purchase of identical systems multiple times. Broad network access, online access over the Internet and use by heterogeneous client platforms are also important for the provision of administration services. On the other hand, metering and pay per use gather limited interest. Business models for the allocation of costs across various departments of the public administration using cloud computing have to be developed. G-Cloud solutions will be beneficial for all departments and agencies of the Greek public sector.

2. A few active public stakeholders

Only a few public organisations are actually involved in the development and provision of cloud-based shared resources and online public services. This is an advantage for integration and a fresh start towards the centralisation of the G-Cloud initiatives, which should proceed on the basis of what has been achieved by the GSIS, IS SA, GRNET SA, and HDIKA SA.

3. First priority for the new ICT Hub

The Greek government has realised the significance and potential impact, both on cost and quality of service, of G-Cloud computing, but this understating has not been translated into an inclusive strategy encompassing all departments of the public administration. The need for a strategic plan for the transition to G-Cloud is stated in the "Action Plan of ICT Project Implementation for Digital Infrastructure and Development", but has to be implemented. It is urgent that a strategy for development of G-Cloud is elaborated and put in action before the implementation of ICT actions foreseen in the Operational Programmes of 2014-2020. Clarifications about eligible spending related to cloud computing should be provided and the turn from purchase of infrastructure to the purchase of services. Such a strategy might be among the first actions of the new ICT Hub under formation.

Sources of Information

GRNET SA. Okeanos. (Cloud IaaS of GRNET SA)
https://okeanos.grnet.gr/home/

GSTT (2015). Σχέδιο Δράσης Υλοποίησης Έργων ΤΠΕ για τις Ψηφιακές Υποδομές και την Ανάπτυξη. (ICT Project Implementation Action Plan for Digital Infrastructure and Development). General Secretariat of Telecommunications and Posts).

HDIKA SA. Εφαρμογή Ηλεκτρονικής Καταχώρησης και Εκτέλεσης Συνταγών Φαρμάκων. (Application of Electronic Registration and Execution Drug Prescriptions).
http://www.idika.gr/etaireia/erga/hlektronikhsyntagografhsh

Infocom (2014). IBM and Intrasoft International αναλαμβάνουν το G-Cloud. (IBM and Intrasoft International undertake the G-Cloud).
http://www.infocom.gr/2014/05/13/sthn-koinopraksia-ibm-intrasoft-internationlal-to-g-cloud/16179/

OP Digital Convergence (2012). Διακήρυξη Διεθνούς Ανοικτού Διαγωνισμού για το Έργο «Κεντρικές Υπολογιστικές Υποδομές της ΚτΠ ΑΕ - Κόμβος G-Cloud της ΓΓΠΣ» (Declaration International Open Tender about the project "Central Computational Infrastructures IS SA - Node G-Cloud of GSIS).
http://www.ktpae.gr/index.php?option=com_ktpcontests&task=Details&id=367&Itemid=13

OP Administrative Reform (2015). ΕΠ Μεταρρύθμιση Δημόσιου Τομέα.
https://www.espa.gr/el/Pages/staticOPMetarythmisiDimosiouTomea.aspx

Portal Ermis. Central Portal of the public administration for electronic information services.
http://www.ermis.gov.gr/portal/page/portal/ermis/

UKHM GoveNrment (2011). Government Cloud Strategy.
https://goo.gl/WUz0Q5

Interviews with P. Tsanakas, Chairman and EO of GRNET SA (6 January 2016) and V. Dermosoniadis, consultant to the GSPT (7 January 2016) on Government Cloud initiatives in Greece.