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## Transformational Cloud Government (TCG): Transforming Public Administrations with a Cloud of public services

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### Abstract

This paper introduces the novel Transformational Cloud Government (TCG) approach and its enabling tools, techniques and best practices to foster the adoption of cloud computing as well as to improve the maturity level of cloud adoption in public administrations, allowing to transition their own software and services to implement on one hand, a more efficient internal software to be used by the public sector and on the other hand, services that implement what really matters to the citizens and how it really matters by ensuring data portability, data privacy and interoperability.

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**Keywords:** Cloud Computing; Public Administrations; Transformational Government; Cloud Federation; Cloud Security; Cloud Legal Framework

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### 1. Introduction

Cloud Computing has the potential to bring significant advantages to European citizens, businesses and public administrations, in terms of cost savings, efficiency boosts, user friendliness better security, and accelerated innovation<sup>1</sup>. However, access to cloud services in Europe is currently hampered by a number of uncertainties and challenges which vary from use case to use case. In the Public Administration (PA) sector challenges related to data

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protection, interoperability, confidential information, outdated legacy laws, information security concerns, supervision and inspection, national sovereignty, jurisdiction enforceability and procurement rules arise. To overcome them, the “Digital Agenda for Europe” proposes two groups of objectives: 1) A flexible common framework of best practices, at legal, technical and operational level; 2) Systematic consensus building, through public consultations, workshops, coordination groups etc., targeting all stakeholders, including citizens, public administrations, the cloud industry and cloud users.

The adoption of Cloud Computing, as a holistic concept, considering the implications and impact in the technical (legacy public services), organizational (policies), and environmental (citizens and civil servants) dimensions, can promote the transformational changes needed for the future of public services. The approach presented in this paper takes these objectives into consideration, providing a unified framework to cloudify public services (and the underpinning processes), built upon the analysis of the different stakeholders’ (citizens, Public Sector and the cloud industry) attitude towards Cloud Computing.

Throughout this paper, the novel Transformational Cloud Government term introduced by the authors is defined as follows: “A managed, citizen centric, process of Cloud Computing-enabled change within the public sector and in its relationships with the private and voluntary sectors, which puts the needs of citizens and businesses at the heart of that process and which achieves significant and transformational impacts on the efficiency and effectiveness of government”<sup>2</sup>.

The paper describes an approach to facilitate to public administrations a set of tools, techniques and best practices to foster the adoption of cloud computing. This allows transitioning their own software and services to implement on one hand, more efficient internal software to be used by the public sector and on the other hand, services that implement what really matters to the citizens. In this sense, it will ensure data portability, data privacy and interoperability. This approach enables PAs to implement the TCG, supporting a managed, citizen centric, cloud based public services modernization, putting the needs of citizens and businesses at the heart of that process. The research performed aims at improving the access to public services and increasing efficiency of public service delivery by the adoption of the cloud computing in the public sector, boosting efficiency, reducing costs, providing a faster service, improving user-friendliness and accelerating innovation.

The paper is organized in 4 main sections. It starts with an introduction to the context and the problem related. In section 2, the authors introduce the TCG concept and the existing challenges. They continue with the explanation of the design of the TCG enabling framework and conclude with the future research and next steps to implement the solution.

## 2. Transformational Cloud Government

The approach presented here will enable the TCG through the development and provision of a set of tools and assets to improve the cloud adoption maturity level of public administrations. The combination of these techniques presents an innovative approach for the modernization of the public sector using Cloud Computing.

These outcomes can be compiled in the following key pillars (see Fig. 1):

- cGovernment platform to migrate legacy e-Services into cloud-based public services;
- Federation of cloud offerings (FoCO) to ease the discovery, interoperability and adoption of cloud services beyond resource provisioning and storage services in which to deploy the cloud based public services
- creation of a sustainable ecosystem of certified, compliant (against standards and legislation), accredited and thus trustworthy at European level of governmental applications through the cGovernment application store;
- cGovernment Impact Framework to ease the adoption of cloud computing both in the PAs’ side and in the citizens’ side through a maturity model for cGovernment adoption as well as an economic impact analysis of the advantages of using cloud computing and cloud based Public Services.
- cGovernment Regulatory Framework enhancing the “cloud maturity” of public administrations from the legal perspective, along with the creation of uniform contractual terms and conditions for the provision and the use of cloud based public services.

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