Chapter 47
Cloud Computing Technologies for Open Connected Government

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ABSTRACT

Cloud Computing is an attractive paradigm for organisations that have a requirement to process large scalable distributed applications. It allows for self-provisioning of cloud resources to develop and host applications as well as acquire storage and networking resources. Connected Government (c-government) is an area where cloud technologies can be effectively used to achieve the benefits that the cloud paradigm promises. Social Media, Web 2.0 and mobile technologies can all help to further enhance the connected government capabilities. Using such technologies, governments and citizens can engage in real time in the electronic participation of a government's functioning. In this chapter, we introduce the cloud paradigm and then discussing the requirements of c-government, we outline how cloud technologies can help to achieve an open and transparent c-government. The aim is to provide the basics of relationship between c-government and cloud computing to set the scene for other contributions in this volume.

INTRODUCTION

Cloud Computing is an attractive paradigm for commercial enterprises and other organisations that have a requirement to process large scalable distributed applications and self-provision other resources *on-demand* as and when required. Cloud Computing is an Information Technology (IT) industry term for anything that involves delivering hosted services over some kind of network e.g. Virtual Private Network or Internet. Gartner (Cearley, 2010) defines it as *a style of computing where massively scalable IT-enabled capabilities are delivered 'as a service' to external customers using Internet technologies*. It is an all-inclusive solution in which computing resources, which reside in a cloud environment, are rapidly provisioned to users as their demand dictates (Amrhein and Quint, 2009). According to Forrester in Rhoton (2010), Cloud Computing refers to a *pool of abstracted, highly scalable and managed*

DOI: 10.4018/978-1-5225-9860-2.ch047

infrastructure capable of hosting end-customer applications and billed by consumption. This emerging paradigm promises the following advantages to the consumers of cloud-based resources:

- Reduced capital investment
- Reduced management responsibilities
- No resources licencing fees and less maintenance
- Increased scalability and availability of resources and applications
- Resource pooling and on-demand self-provisioning of resources
- Measured provision on a pay-as-you-go basis.

Like any other technology, there are also a number of limitations. The Expert Group Report (Schubert, 2014) presents a number of issues, mainly in relation to *public clouds*, including: 1) concerns over security of applications and data; 2) concerns over availability of resources and business continuity; and 3) concerns over data transmission across anticipated broadband speeds. Other shortcomings include: lack of appropriate native security attributes; inadequate security provisioning by service providers; lack of understanding of cloud legal issues; privacy and confidentiality of data; vendor lock-in; inadequacy of *service level agreements*; and the failure to recognize potential liability from either legal issues or due to lack of security. Having mentioned these issues of concerns, frameworks, methodologies and products are being developed to minimise the negative implications of these concerns. Cloud consumers are also becoming more knowledgeable and they are also beginning to demand more and better services.

Connected Government (or C-Government) is Electronic Government (or E-Government) that, in addition to using the old style ICT (information and Telecommunication Technology), also makes effective use of the newer technologies such as the cloud computing, mobile and social media technologies including the Web 2.0. C-Government is also often referred to as *Government 2.0*, a term coined by Eggers (2005) or *Gov 2.0* (a generally accepted abbreviation). According to Logan (2013), *it is about putting government in the hands of the citizens*. This presents a number of additional benefits, as follows:

- Government's functioning is more transparent and open
- There is much more use of open source platforms
- Interaction between the government and the governed is more effective
- Citizens' participation (*e-participation*) is more effective and in real time
- Internet is used as a platform for collaboration
- Service delivery is improved through the use of new emerging technologies
- Allows development of innovative apps, websites, and widgets for use by citizens
- Service quality, availability, flexibility and agility are much improved.

Although, the technology exists to achieve the benefits outlined above, there are a number of barriers that are limiting the adoption of related technologies and their effectiveness. According to Government 2.0 Task Force (2009), *Government 2.0 cannot be realised without high level, whole of government attention to the issue, and the new policy of Open Government being overseen by an agency with sufficient authority to ensure it informs each decision which might obstruct the free flow of government information.* In the report, many instances are quoted where one or another principle is endorsed, but remains largely unimplemented. Thus, with respect to the c-government, there is still a long way to go to achieve the full openness, transparency and effectiveness.