

## Foreword: Towards Trusted Cloud Ecosystems

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## **Foreword: Towards Trusted Cloud Ecosystems**

Businesses are using Cloud, hosting and managed services to facilitate growth, not just cut costs. For business critical applications to move to the Cloud, however, significant challenges to widespread adoption still remain, mostly concerning security, assurance and compliance, notably data protection, control, availability and resilience. The UK government, for example, also created the G-Cloud Digital Market Place (previously CloudStore) that includes products and services that have been assessed and classified against standardized level of assurance and other sector specific requirements such as Public Services Network (PSN) connectivity. As cloud services mature, European providers such as Atos, BT and Telecom Italia start to differentiate their Cloud and IT services by specializing them to specific vertical market sectors. Trust, transparency and governance remain both significant challenges and opportunities for Cloud services. Those who manage to produce high-assurance Cloud services that allow businesses and consumers to have transparency and governance of their assets in the Cloud are more likely to attract Cloud-enabled business in the future. For Cloud business to flourish this has to be combined with vertical market sector specialization and policy harmonization, as is noted in the report “Trusted Cloud Europe: Have your Say” by the European Cloud Partnership (ECP) on Trusted Cloud. Harmonizing levels of service quality and assurance, compliance requirements, supply chain relationships and streamlining procurement and contract management underpins sector specific clouds that emerge in Government with Health and Finance following.

Another significant characteristic of the market evolution towards the Cloud-enabled business of the future is the explosion of personal data and personal information in the Cloud. The amount of such data that is generated and collected on a daily basis is rapidly growing due to the increasing number of activities performed online especially following the commoditization of smart phones and tablets. The availability of such big data represents a novel opportunity for organizations and individuals to benefit from business intelligence and innovative services relating to an emerging “market of data”. As is also recognized by EIT ICT Labs who have established a High Impact Initiative on Trusted Cloud, the enablement of an eco-system of trusted services and application that allows individuals to gain visibility and control of the exploitation of their data in the Cloud is another important to address.

The papers presented in this invited session of the IFIP Trust Management Conference present innovations that enable the realization of Trusted Cloud ecosystems for data, platforms, applications and services in vertical market sectors such as Government, Health, Finance, Retail and Consumer Services.

In the first paper, Ana Juan Ferrer examines the role of Service Level Agreements (SLAs) in building a Trusted Cloud for Europe by providing the mechanisms that allow both users and providers to establish a common understanding of the services to be provided and enforce guarantees around performance, transparency, conformance and data protection. It proposes a taxonomy of terms to support more tight and detailed SLA definitions that help improving reliability and transparency in the Cloud.

In the second paper, the STRATEGIC consortium present progress towards the vision of a Cloud store or a marketplace of Trusted Cloud applications, services and infrastructure that offer sufficient assurance for use in the public sector. The paper focuses on the “STRATEGIC Cloud Orchestrator” – a key innovation that underpins the automation behind such market place of governmental services – and explains how such innovations have been enabling local governments in Europe to use a Trusted Cloud in order to offer services to their citizens.

In the third paper, Joshua Daniel and Fadi El-Moussa focus on innovations that enable organizations to enforce homogeneous security, patching and application management policies across multiple Cloud environments and to analyze and remediate threats of cyber-attacks or data loss. Such innovations increase the confidence of organizations of all sizes in using the Cloud while enabling them to keep visibility and control of their assets and to limit their reliance on the Cloud providers offering such assurance guarantees in proprietary ways that cannot be easily inspected, validated or harmonized and controlled by the Cloud user. Embedding such innovations in platforms for Cloud application assembly, deployment and life-cycle management can potentially create a Trusted Cloud platform upon which future eco-systems of Trusted Cloud applications and services are built.

In the fourth paper, Pramod Pawar and Ali Sajjad explain how a federation of the European Future Internet experimental facilities has been used for validating, proving and analyzing Cloud-based security services at a large scale and over heterogeneous environments. Such experimentation results guide the evolution of Cloud-based services aiming at the protection of data and applications in the Cloud.

In the fifth paper, Michele Vescovi et al. focus on the complementary challenge of managing the exploitation of personal data and information in the Cloud. It examines the emerging market of personal data and presents innovations leading towards the development of an ecosystem of trusted applications, which offer individuals transparency and control on the exploitation of their data in the Cloud.

All these papers share a common vision of a Cloud-enabled market over a Trusted Cloud ecosystem. Freedom of choice prevails, stakeholders compete on differentiation on service delivery, businesses can use Cloud services to fulfil “concept-to-market” processes without compromising assurance and compliance and while maintaining visibility and control of their applications, processes and data. In this vision, enterprises of all sizes can create high-assurance application and business services efficiently at lower costs and can manage complex supply networks from heterogeneous providers. Individuals benefit from the higher assurance and better transparency and control of how their data is exploited in the Cloud.

We hope you will enjoy the proceedings of IFIPTM 2015 and that you will find this invited session informative and useful for your ongoing and future research.

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Special Session Chair