Introduction to the Cloud Infrastructures and Interoperability Minitrack

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The availability of ubiquitous networks and bandwidth enables us to access services online using all kind of devices from anywhere at any time. Most users have multiple devices from which they want to access their services. It is increasingly possible to rely on systems that are not on the same premises as the end user of the system. Cloud services are a new way of providing services based on virtualized resources meeting security, privacy, reliability and scalability requirements. In a cloud software and data is distributed over many low-costs and generic servers operating in a distributed architecture. Distributed architectures ensures that if a server fails or there is a need to change or upgrade software this happens without interfering with the functioning of the cloud. Clouds provide the opportunity to share resources and provide shared services over the Internet, so that administrations, enterprises and citizens can benefit from having a reliable infrastructure for opening and processing their data and sharing services.

Clouds should be available anytime from anywhere from any device. Software programmers and users do not have to manage the hardware in any way anymore. Typically these applications leverage a modular type of software architecture, in which applications need to be linked together in which interoperability is a key requirement. A service-oriented architecture (SOA) is created in which everything is linked together.

There are many different types of clouds. The concept of clouds has been embraced by more and more governments as information exchange and processing are at the heart of any e-government effort. Furthermore governmental processes are often data-intensive, consume many resources and contain similar elements that can be shared. These efforts require vertical and horizontal interoperability, and integration of government operations. Interoperability is a property referring to the ability of diverse systems and organizations to work together.

Interoperability is required to enable public and private organizations to collaborate. Infrastructures are public and quasi-public utilities and facilities that are typically used by large numbers of different users, such as the Internet, clouds and libraries.

The cloud infrastructures and interoperability minitrack covers a variety of topics related to cloud infrastructures and interoperability. This year two papers are accepted in this minitrack. The first paper in this minitrack is entitled “Organizational Requirements for Building up National e-Government Infrastructures in Federal Settings” and is authored by Marianne Fraefel, Thomas Selzam and Reinhard Riedl. The paper addresses the relationship between organizational aspects and the development of national e-government infrastructures. Challenges related to the decentralized and central development of infrastructure components are identified. A framework is developed to deal with these tensions which can be used to guide, design and governing public infrastructures. We expect that this topic will gain in importance as public infrastructures will further evolve and are influenced by a variety of developments.

The last paper “Role of Standards in Cloud-Computing Interoperability” by Grace Lewis, explores the role of standards in cloud-computing interoperability. This paper provides an overview of the large amount of active work in the development of standards for the Cloud. Standards should overcome vendor lock-in and ensure that one can shift easily from one cloud provider to another. Four basic use cases for cloud computing interoperability are identified and the standards that support these use cases are discussed.

Cloud infrastructures and interoperability will likely remain important topics in the coming years due to the opening of data, the use of social media, data analytics and so on. Services will dependent more and more on each other and the entanglement result in a need to manage and govern these infrastructures better. This will require the development of socio-technical approaches and methods having a solid theoretical foundation.